



NETWORK PROMOTING E-LEARNING FOR RURAL DEVELOPMENT

CONFERENCE PROCEEDINGS

INTERNATIONAL CONFERENCE

ICT for inclusive learning: the way forward

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ICT for inclusive learning: the way forward
CONFERENCE PROCEEDINGS

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INTRODUCTION

This conference aims to promote discussion of inclusive learning in Europe while providing networking and collaborative opportunities for continuing education and training professionals, providers of e-learning, social partners and policy makers in lifelong learning and related fields.

The conference focuses on the role of ICT in increasing access to lifelong learning, in particular non-formal and informal learning, in territories facing the risk of education exclusion due to geographic remoteness, social disadvantage, deprivation or poor facilities. Improved access to inclusive learning would facilitate economic development and enhance quality of life in disadvantaged communities, including disadvantaged rural areas.

The conference builds on the results of the Euracademy Observatory – e-ruralnet project and network, www.e-ruralnet.eu, which address the issue of supply and demand of ICT-enhanced learning in Europe. The research carried out by the e-ruralnet network in 11 countries focuses mostly on rural areas, looking closer at technological and pedagogical innovation that would facilitate inclusive learning.

The conference themes, which reflect the conference sessions and correspond to the chapters of this volume, include:

- ICT for inclusive learning – setting the scene
- Building an inclusive learning society
- Introducing innovation in the learning environment
- Best practice in rural areas
- Innovative learning methodologies
- Different facets of inclusive learning
- Guiding, motivating and mentoring learners
- Technological and delivery innovation
- Pedagogical innovation

We would like to thank all the contributors to this volume, coming from 16 countries across the world, who kindly sent their papers prior to the conference, so that this volume of proceedings could be printed in advance and delivered during the conference.

The Scientific Committee of the conference

CHAPTER 1

ICT for inclusive learning – setting the scene (Plenary 1)

THE E-RURALNET PROJECT:

E-LEARNING SUPPLY AND DEMAND IN RURAL EUROPE - TRENDS AND CHALLENGES,

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Abstract

This paper presents some of the results of e-ruralnet, a network project funded by the Lifelong Learning Programme, under the Transversal strand, ICT-KA3. Previous research of the European e-learning market identified constraints that do not allow the inhabitants and enterprises in rural areas to take full advantage of ICT-enabled learning. Building on this experience, the e-ruralnet team investigated further the demand and supply sides of e-learning in rural areas across Europe, conducting online surveys in 11 countries, both old and new member states. The surveys addressed e-learning providers, e-learners and a control group who have had no experience of e-learning up to the time of the survey. The results portray the structure of the e-learning market in Europe, especially the segment that addresses continuing VET through non-formal and informal learning; identifies the trends and problems, with a focus on rural areas; and assesses the match between supply and demand, introducing some hypotheses about latent demand and discussing the usability of, and benefits resulting from, e-learning. Policy implications are derived concerning the features of the e-learning provision, such as specialisation and innovativeness of products; as well as the prospects of full and more universal use to be made and maximum benefits to be obtained from current and potential e-learners.

Keywords: e-learning providers, e-learners, continuing vocational training (CVT), demand and supply of e-learning, benefits, attitudes, policies

1. INTRODUCTION: the e-ruralnet project

This paper presents some of the results of e-ruralnet, a network project funded by the Lifelong Learning Programme, under the Transversal strand, ICT-KA3. The project aims to network the demand and supply sides of e-learning with policy makers, with a focus on rural areas and their development through greater access to learning. Previous research of the European e-learning market¹ identified constraints that do not allow the inhabitants and enterprises in rural areas to take full advantage of ICT-enabled learning, mostly related to infrastructure and low motivation. Building on this experience, the e-ruralnet team investigated further the demand for and supply of e-learning in rural areas across Europe, conducting online surveys in 11 countries, both old and new member states. Alongside the surveys, case studies were conducted with e-learning providers and an inventory of innovative e-learning products was created in the website of the network², aiming to promote innovative practices and increase the visibility of innovative learning products. Two reports have been also produced and published: one concerning innovation in e-learning; and another examining the use of alternative media for the delivery of e-learning in places where internet cannot be accessed, as well as assessing the potential of such media to bring continuing learning closer to rural inhabitants of remote areas. The results of the research, studies and inventorying carried out by the e-ruralnet team have been discussed and debated in 11 national networking workshops. Furthermore, an “e-learning familiarisation tool” has been developed, for people who have no prior experience of e-learning, to encourage them to quiz themselves about their readiness to try learning through the internet, help them to define their needs and guide them through the requirements of e-learning, in terms of minimum digital skills, self-commitment, discipline and achievement of very specific goals. All this is presented in the form of a Serious Game, readily available in the website of e-ruralnet, which is articulated in a number of smaller, specifically targeted games that the user is invited to play online.

¹ www.euracademy-observatory.org

² www.e-ruralnet.eu

One salient argument that emerged from the research results and the networking events of e-ruralnet concern the concept of “inclusive learning” and the extent to which information technologies can contribute to it. Disadvantage in relation to learning has been looked up in a new light: access to learning cannot anymore be defined solely on the basis of physical or mental disability, cultural and language handicap or deprivation reflecting unemployment and low quality of life. Large parts of rural areas suffering from the digital divide, digital illiteracy and limited education and training facilities due to remoteness and sparse populations, experience significant obstacles in accessing equitable learning and consequently to personal and occupational development.

The e-ruralnet project partnership tried to achieve two main goals:

- to network the two sides of demand and supply of learning, i.e. the learning providers and the learning consumers, the latter being represented by organisations such as chambers of commerce and industry, chambers of engineers etc; farmers associations, trade unions, business consortia and clusters, and NGOs representing learners’ interests or welfare interests of rural inhabitants; and
- to examine whether the e-learning market is operating in rural areas with the same success as in urban areas and indeed identify the “match” between demand and supply of e-learning in rural areas and the policy implications such a match (or mismatch) entails. The assistance of e-learning providers and social partners operating in rural areas was requested for the conduct of the surveys of demand and supply of e-learning

The implementation of the above has been further inspired by the Bruge Communiqué³ which draws attention to the need for “shared responsibility” and active collaboration between stakeholders, including representatives of professional sectors, social partners, civil society organisations, and education and training providers. Furthermore, it is stated that a necessary response to the crisis in Europe is to promote a “responsive” continuing education and training in the context of lifelong learning, meeting people’s needs and helping them to adapt to the changing requirements of the labour market. To serve an increased need for LLL means that we should use more flexible modes of delivery, tailored training offers and the potential of ICT to boost adult education and training through distance learning. These objectives have informed the orientation of the e-ruralnet research.

2. THE POLICY CONTEXT

The European Commission has stated in many instances that Lifelong Learning (LLL) and the continuing updating of skills and competences represent crucial conditions for business competitiveness, economic development and social cohesion. Indeed, education and training have been given a prominent position as a means to achieve the objectives of the Lisbon Strategy. ICT for learning has formed an integral part of the Strategy and the Education and Training 2010 Programme of the EU; and of the “Education and Training 2020” strategic framework. Current debates on new skills for new jobs, creativity and innovation skills, and key competencies, place ICT for learning in a central position.

The Elearning Initiative launched in 2000, in the context of the Lisbon Strategy, raised hopes that ICT-supported learning would accelerate development and would benefit, in particular, those people who are often excluded from continuing education, such as those living in rural areas. E-learning was seen as a political challenge, a core component of the knowledge society and a necessary instrument for adapting the whole process and content of LLL to it.

The Elearning initiative defined e-learning as “a learner-focused approach, based on the use of new multimedia technologies and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration”. The expansion of e-learning had thus a double goal: to use ICT for learning and to learn to use ICT. This double focus was supported by CEDEFOP, which noted that in the context of an increasingly globalised economic environment, the promotion of digital competences becomes imperative especially in relation to learning (CEDEFOP, 2004). Moreover, the Action Programme in the Field of Lifelong Learning⁴ that was launched in 2006 included a strong ICT component that was directly linked to innovation in learning.

³ The Bruge Communiqué on Enhanced European Cooperation in Vocational Education and Training for the period 2011-2020, Bruge 7 December 2010

⁴ Official Journal of the European Union, Decision No 1720/2006/EC of the European Parliament and of the Council, “Establishing an action programme in the field of lifelong learning”, 15 November 2006, Brussels.

Eight years after the Lisbon Strategy, the European Commission formed a Working Group to conduct an evaluation of the main trends on the use of ICT as a tool to support learning “lifelong and lifewide” and assess the achievements of the EU policies as defined in the Education and Training 2010 Programme. The 2008 Report (Commission of the European Communities) revealed some encouraging and discouraging facts.

Firstly, it confirmed previous statements by the EU Council (EU Council, 2004) that ICT-supported learning is a powerful tool for fostering the value of individuals and accelerating learning and innovation within organisations. ICT can operate as the vehicle that would assist companies and individuals alike to cope with the new challenges. E-learning is instrumental in assisting not only the future development of enterprises, but also in promoting active citizenship and personal development. Given that LLL is an active, learner-driven process, ICT can significantly contribute in redressing, through e-learning, the skills gap between different EU Member States as well as between rural and urban areas that reflects to a certain extent the digital divide.

Then, some doubts were expressed as to the actual progress made “on the ground” across the different fields of formal and informal learning. The conclusions state both positive results and shortcomings:

1. ICT has helped schools and higher education improve the quality of teaching and become more equitable, although there is still scope for further improvement, especially regarding student mobility and professional development.
2. E-learning was shown to achieve very good results in adult education, but at a very limited scale; it has not achieved its potential to develop a learning continuum that would support lifelong learning, especially informal and workplace learning.
3. E-learning did not have the expected impact on business development, especially considering the small and medium sized enterprises which have not benefited from it, although it could help them organise training with reduced costs and less time off work.

The second and third of the above conclusions were substantiated by the e-ruralnet research which is reported here.

3. THE FUTURE OF ICT-SUPPORTED LLL IN RURAL AREAS

The next question is what needs to be done to encourage further use of ICT in lifelong learning, and especially in rural areas. A Report produced recently by the Joint Research Centre and the Institute (JRC) for Prospective Technological Studies (IPTS) of the European Commission (Stoyanof et al, 2010), has started the debate. Further work by IPTS (Ala-Mutka, 2010) provides more insights on how technology and digital networking can be used to enhance the learners’ access to and benefits from e-learning.

The following issues have emerged from research and evaluation of past experience:

Firstly, the digital divide is a growing concern, placing rural areas at a double disadvantage. Given that education is a key exclusion factor, the digital divide that restricts rural areas to take advantage of e-learning leads to further exclusion of such areas. The majority of the rural labour force is thus placed at a disadvantage, while rural businesses and jobs face increased risk and restricted job mobility.

It should be also noted that the uptake of LLL is very limited across the European Union. Recent statistics by Eurostat show that only 10% of the 25-64 year olds in Europe take part in LLL after their initial education and training. This figure is much lower in rural areas. Limited broadband access and low levels of computer use in rural areas restrict the opportunities for lifelong learning supported by ICT. Regarding access to fast internet, it has been a policy across Europe to continue investment in infrastructure as a priority. Regarding limited computer use, we should take into account that we have now a new generation of learners in Europe, who are very familiar with the use of computers and the internet and therefore much more open to the use of ICT for learning. The main concern is with the “old generation of learners” who need to develop key competencies in ICT as an additional precondition to e-learning.

Secondly, the use of ICT in formal or non-formal learning systems requires many changes in the technological environment and the teaching and learning methods for schools and informal learning. This calls for new approaches both to the use of technology and pedagogy. In relation to the second issue, we can name three challenges for the future (European Commission, 2009):

- Pedagogical innovation: focus on teaching and learning approaches based on learner-centred guidance, group work, inquiry projects, interactive learning etc.
- Technological innovation: the emerging technologies with enhanced networking and personalisation capabilities create opportunities for new mobile learning environments with phones, game consoles and MP3 players. New creative approaches such as simulations, gaming, virtual reality and immersive environments offer learning tools from early school years to specialised professional training.
- Organisational innovation: changing learning needs call for innovative organisational approaches, involving learners, teachers and other staff; while e-assessment becomes very important for assuring recognition of qualifications and certification.

Thirdly, a new learning culture is necessary to be established. Rosenberg (2006) stated that the demand for learning is growing and this in turn can increase the diversity in what people should or want to learn. It is crucial, therefore, to create a new learning culture, which places the individual learner at the centre of learning and stimulates his need for knowledge, innovative thinking and networking. This might lead to a new attitude to LLL which offers more hope to rural residents, integrating learning to everyday life. The new culture would call for: “dropping the e in e-learning” – it is about learning in a digital and networking society; giving individual learners greater responsibility for their learning; adopting a more open and flexible learning environment from the providers’ side; building interaction among learners and e-communities; and turning learning to a social process, to become **lifelong and lifewide**.

4. THE E-LEARNING MARKET SURVEYS

4.1 Methodology

The e-ruralnet research concentrated on the e-learning market that addresses the learning needs of people after the end of their initial education and training. Such learning falls within the field of continuing vocational training (CVT) and includes also learning for personal development, delivered through non-formal or informal learning channels.

The e-ruralnet surveys addressed three different groups of respondents who define the supply and demand sides of the e-learning market: the e-learning providers (supply); and the e-learners or potential e-learners (demand). E-learners are individuals who have participated in e-learning recently, while the “control group” consists of individuals who have had no experience of e-learning up to the time of the survey, although they may have had experience of conventional face-to-face learning.

The survey was conducted by online questionnaires (providers’, e-learners’ control group) uploaded in the website of the e-ruralnet network⁵ in 11 languages, so that they could be used in the national language of the countries participating in the research (GR, UK, PL, HU, DE, ES, IT, FI, EE, SE, PT). The completed, valid questionnaires received come from 556 providers, 1737 e-learners and 1679 control group respondents. The providers were accessed through national lists of VET and adult education organisations, and through the internet; the e-learners were contacted by the providers who took part in the survey and agreed to forward the links of the questionnaires to their students; while the control group members were accessed via professional associations, chambers of commerce and industry, business associations, professional chambers, VET schools etc

The e-ruralnet survey did not intend to recruit a representative sample of the three targeted populations; rather, the intention was to achieve a sample large and varied enough to reflect the characteristics of the e-learning market and provide insights on the expressed and latent demand for e-learning. The validity of the results has been checked as necessary and appropriate statistical methods have been used to “correct” likely biases that would be inbuilt in the data⁶.

4.2 E-learning providers

The mean number of e-learning providers who validly responded to the survey is 51 per country, and the median is 40, ranging from 19 (SE) to 194 (DE). In the smaller countries (GR, PL, EE) the survey covered the majority of the existing e-learning providers, while in bigger countries (UK, ES, DE) a more modest proportion of providers responded. The surveyed providers are public bodies, commercial companies or NGOs. Overall, the private sector predominates (71,3%), but this differs

⁵ <http://www.prismanet.gr/eruralnet/en/questionnaires.php>

⁶ See for more details the “Synthesis Report of the Surveys of E-learning Supply and Demand in 11 Countries”, www.e-ruralnet.eu

from country to country : for example, in Finland, UK and Sweden the public sector appears to be stronger, claiming over 1/3 of the national sample.

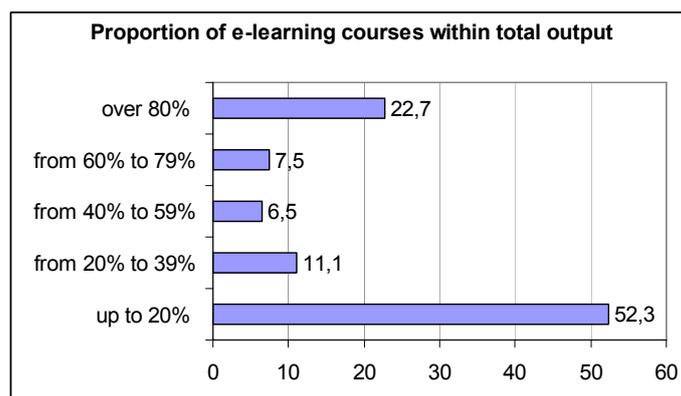
Most of the e-learning providers (62,5%) are new organisations, with a presence of less than five years in the market, while almost one out of 4 providers has started their activity recently, not even counting a year of operation.

In terms of size of providers, as indicated by the number of teachers employed, the sample includes micro, small, medium and large organisations, half of which employ less than 20 teachers and only one in five employ over 100 teachers (range up to 1800). Almost three quarters of all providers employ 10 or less e-learning teachers, and 81% employ 20 or less (range up to 750).

The number of e-learning students provides also an indication of the size of e-learning activity of providers: e-students range from 0 to 25000, with a mean value of 1228 and median of 120. 50 % of all providers have 120 or less students.

A number of “typical profiles” emerge: public sector providers tend to be larger and older organisations, employing more teachers and including a higher share of e-learning teachers within their staff; private providers tend to be smaller, younger organisations which achieve much higher numbers of e-learning students compared to non-private providers.

The proportion of e-learning teachers within the overall teaching staff provides an indication of the strength of the e-learning activities in the organisation. This, coupled with the proportion of the e-learning packages offered within the overall education output of the organisation underpins the specialisation of the provider in e-learning. The findings suggest that a relatively small proportion of the surveyed organisations are specialised e-learning providers, delivering over 80% of their output wholly or partly through e-learning.



Another “typical profile” emerges in relation to e-learning specialisation: specialised providers tend to be private businesses or NGOs, small (regarding the number of teachers employed) and rather young organisations, teaching large numbers of students with a very high student per teacher ratio.

Funding e-learning courses is achieved by public subsidies (wholly or partly), paid by employers or by the individual learners themselves. One third of all providers included public subsidies in the funding sources, while more than half included private funding by students and equal numbers reported funding by employers. All surveyed providers reported a combination of funding sources used by their students. From the reported combinations three patterns emerge: in Germany, Portugal, Estonia, Poland, Finland and Spain private funding sources are dominant, while in the United Kingdom and Greece fully or partly subsidised training seems to dominate. In the remaining countries IT, HU, PL funding sources are more evenly used. The funding patterns also reflect the motivation of providers to enter the e-learning market: one in four started their activity because of the availability of public subsidies, one in two because of demand from SMEs or large companies, and one in two because of demand from individuals.

Regarding content of e-learning, use of ICT and business management are the two most popular subjects, offered by 55% of providers across countries, while the less popular subjects are those of the primary sector (offered by less than 10% of providers, and as expected, these providers are amongst those with an admitted orientation towards rural areas). Technical subjects are also popular enough amongst providers, offered by 26-39% of the total sample. Overall, all types of subjects are covered in all countries, offering a good measure of choice to prospective students.

The most popular delivery method is the e-learning platform (85% of providers) followed by websites (where learning materials can be downloaded from) and DVDs, CDs and Video (mostly used for offline study). Mobile phones were used only by a very small minority of providers (8%). The learning tools used also show a preference for more conventional instruments, with very high proportions of providers using text reading and powerpoint presentations, followed by animated content, videos and email attachments. Game based learning and role based learning are used only by around one in 5 providers or less.

A “typical profile” have also emerged here: the e-learning providers who use more modern (or advanced) e-learning methods and tools tend to be private (commercial) providers who have registered a longer presence in the market (over 5 years), offer more e-learning products and engage a larger number of students than other providers.

Another important feature of providers in the context of this research is their targeting of rural areas. Providers of e-learning may target rural areas specifically, offering special packages of e-learning to rural inhabitants or they may design their products for everybody, irrespectively of their place of residence, rural or urban. The proportion of surveyed providers that target rural areas, providing specially prepared e-learning packages for them, is just over 30% of the total sample and varies substantially from country to country. Those providers that offer special packages for rural areas do not differ substantially in their structural characteristics from other e-learning providers except that they tend to recruit their clients amongst micro and small enterprises to a much larger extent than other providers.

There are problems, however, associated with delivering e-learning in rural areas, which most providers would agree about. The lack of suitable infrastructure for fast internet was the most frequently mentioned one, gathering in total 57% which however varied widely between countries: in Greece, Spain and Italy this statement was endorsed by over 75% of providers, while in Sweden and UK this proportion was 40% or less. IT illiteracy was also mentioned as a problem by half the providers overall, taking its maximum value in Spain and Portugal (over 70%) while limited financial capacity of rural residents and lack of support staff in rural areas was mentioned by one in four providers.

Providers were asked whether they offer e-learning products that they consider as innovative. Just over half (56%) responded positively. Responses did not differ greatly between countries, ranging from 50 to 70%, with an exceptionally low score of 40% recorded only in UK. Innovativeness was connected more with pedagogical methodology, such as personalised attention by tutors to students, communication amongst students, combination of individual work with teamwork and discussions, online evaluation, non-discriminatory and non-exclusive recruitment of students (from 27% to 40%); and less with technological innovations, such as GBL or mobile phones (7% or less).

Critical factors for successful provision of e-learning were endorsed by the surveyed providers from a range including fast internet, development of learning content, marketing, keeping ahead with new technologies and training of staff. The most “critical” factor is the development of suitable learning content that suits the needs of learners. Also, high importance is placed on the training of staff who design and deliver e-learning; and on planning ahead with new technologies, so that the means of e-learning delivery do not become obsolete. Factors for success on the learner’s side were pointed out by the providers to be mostly their willingness to learn and self-discipline.



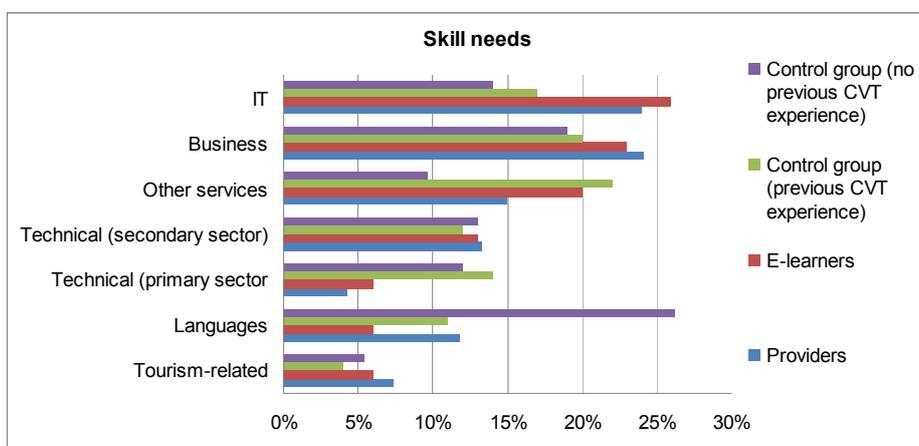
4.3 E-learners and control group

E-learners were recruited by the providers who took part in the survey. Given that it is not allowed in any European country to make public the names of students, the research team had no other way of accessing e-learners but through their learning providers. The national samples range from 41 to 474 (mean 158) in the e-learners survey and from 35 to 368 (mean 153) in the control group survey.

Both groups provided information on their socio-economic characteristics which made it possible to compare them as well as portray the structure of each sample. The results show that the two groups are comparable, presenting a similar structure in terms of gender, age and education (no significant differences). Some differences appear in terms of place of residence, with the segment of the control group originating from small villages being much larger to the similar segment of the e-learners' group, and generally, the control group being much more "rural" compared to the e-learners' group. This has been expected though, because the control group's sample was drawn from databases that included rural areas, while the e-learners' group could not be monitored in the same way, and thus ended up with a more "balanced" structure of residence places, from urban to rural, across the scale. This emphasis on the "rural" dimension of the control group is also reflected in the allocation of respondents to economic sectors and occupational groups, with a larger section of the control group being employed in the primary sector, compared to the e-learners' group.

However, it is worth looking more carefully at the age and education profile of e-learners: almost one in two is university educated, while they tend to belong to younger age groups, mostly up to 35 years of age (51%) and from 35 to 50 (37%). The socio-economic structure of the control group is not significantly different, although more balanced, but in this case the sample was self-selected to be better educated and younger, because of the survey medium used (internet – computer).

The skill needs of the respondents are presented in the graph below. The e-learners reported the needs their most recent e-learning course covered; while the control group reported similar needs met by the last conventional training course (CVT) they attended. The sub-group of the control sample who had not attended any further training after completing their initial education, reported their current needs for further learning.



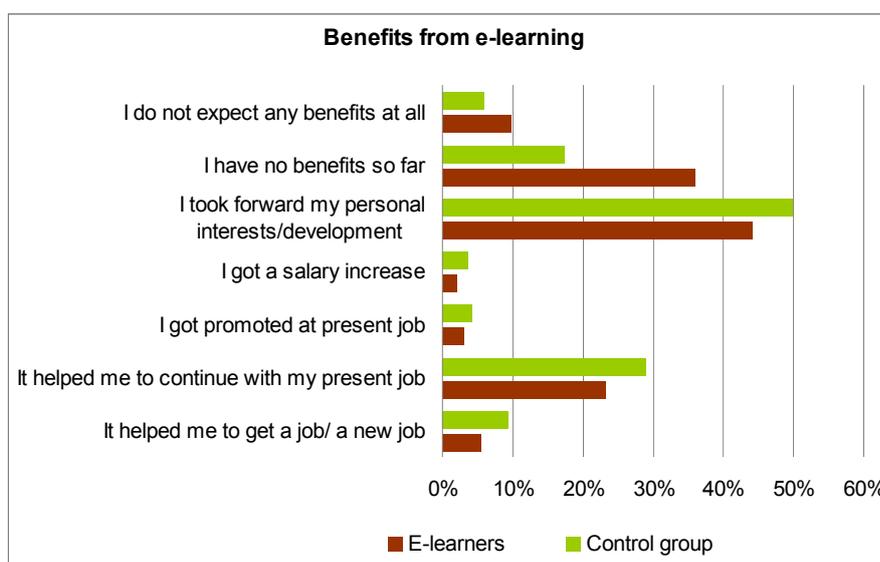
While the learners' needs reflect closely the provision of e-learning (partly to be expected, given that the learners' sample originated from the providers' lists), substantial differences are observed between e-learners and control group. The sub-group without previous CVT experience appears to be strongly interested in language learning, while all control group respondents show a more pointed orientation to primary sector subjects, compared to e-learners. The subgroup with prior CVT experience appears to be closer to the e-learners regarding the skill needs reported; while the non-CVT group diverges significantly from the other two groups that have previous learning experience.

In the e-learners sample, the delivery methods, tools and pedagogical methods used in the course they attended reflects closely the patterns of the provision of e-learning, as described in 4.2 above. The opinion of e-learners regarding the innovativeness of the learning methodologies and tools also reflect a similar finding from the providers' survey: about half the e-learners think that such methods and tools are innovative, while the other half do not.

Considering the benefits experienced by learners, one in 5 e-learners admitted that they learned all they needed, while one in two reported that they learned enough. This however reflects partly the

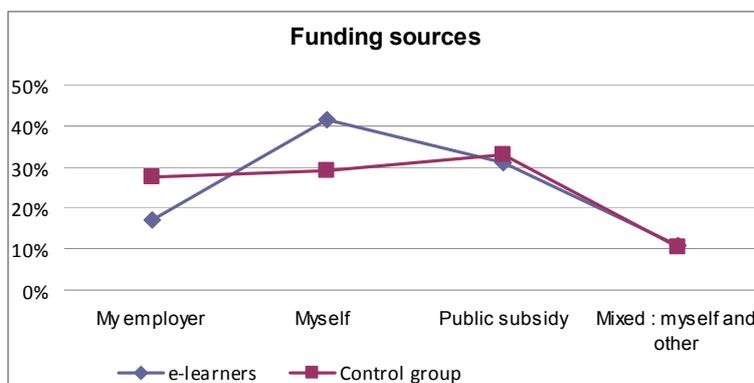
extent to which they use what they learned: less than 30% use it a lot, and less than 40% use it a little. In the control group's sub-group with previous CVT experience, the results are more promising: 46% use a lot what they learnt and 36% use it a little. However, one in 3 e-learners expects to use in the future what they learnt, while one in 6 conventional CVT learners have a similar expectation.

The benefits reported by the two groups reflect the same trend: the e-learners are rather pessimistic regarding the benefits from the course they attended: 46% do not expect any benefits. In comparison, less than 20% of the control group members reported absence of real benefits. For both groups, taking forward a personal interest accounts for the main benefit, reported by half the control group and nearly half (44%) the e-learners. A relatively important benefit is also to continue (secure) present job, which is reported by one in 4 e-learners and by one in 3,5 control group members. Overall, it seems that conventional training has more immediate benefits to trainees in all the examined categories, while e-learning is considered by a large number of e-learners as an investment for the future. Also, the large proportion of respondents of both groups who report the development of a personal interest as a real benefit is very encouraging for the future of LLL in Europe; but at the same time it seems that employers are not often willing or capable to use the improved knowledge and skills of their employees, and to reward them for this.



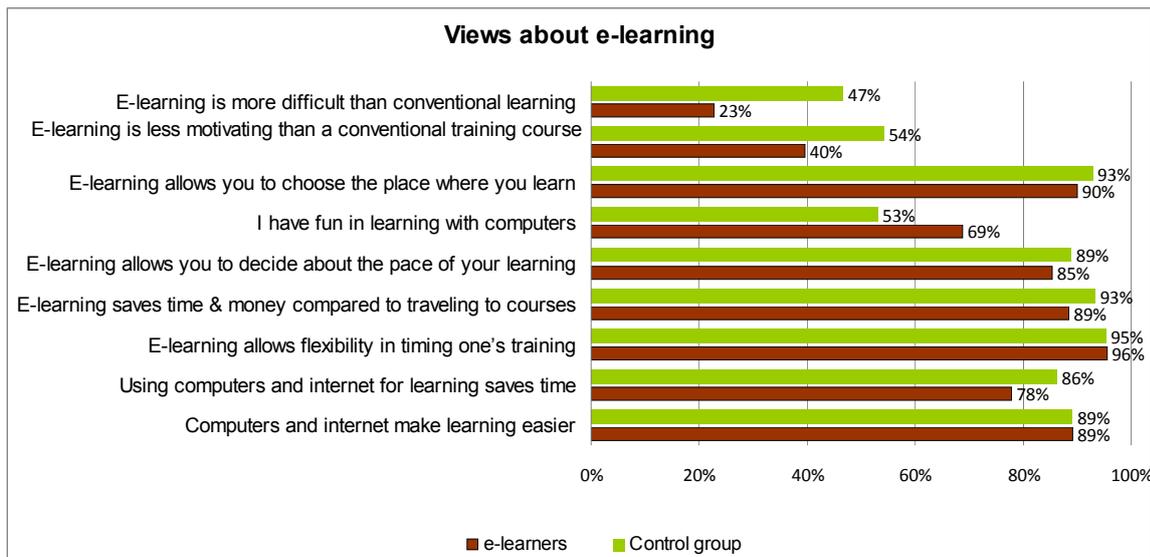
However, despite the gap between the achievement of benefits related to personal development and the actual job-related benefits, an amazing 95,6% of e-learners declared that they would be willing to participate again in e-learning in the future, implying that the experience of being e-learners was a very positive one. The variation between the different countries is minimal on this issue.

The funding of courses presents an interesting pattern. Own funding is for e-learners the most common way of meeting the costs of the course, while employers are not as willing to cover e-learning costs as they are to pay for conventional learning; while public subsidies are equally available for e-learners and conventional learners.



Finally the perceived constraints for taking up e-learning, as reported by the control group, are relatively limited: one in 3 reported IT illiteracy, one in 5 the lack of fast internet infrastructure, cost of computers and internet access; and one in 6 the negative attitudes of people towards IT. These findings do not quite agree with the providers' opinion, i.e. that IT illiteracy and fast internet infrastructure remain the major constraints for a wider uptake of e-learning by rural residents. We should keep however in mind that the control group was recruited from individuals who use computers and the internet (they completed the online questionnaire), and therefore these issues are probably resolved for them.

Moreover, the reported willingness of 3 out of 4 control group members to participate in e-learning signifies that there is a substantial latent demand which has not yet been activated. This is corroborated by the attitudes expressed by both the e-learners' and control groups: respondents were invited to state whether they agreed or disagreed with a number of statements implying attitudes towards various aspects of e-learning. The results are shown in the graph below.



It is evident that the attitudes towards e-learning are on the whole positive in both groups, although experience in e-learning results in more positive attitudes, compared to those lacking such experience. There are some points of differentiation however between the e-learners and the control group: these concern difficulty, motivation and fun. More members of the control group, having no experience of e-learning, perceive it as a difficult operation, needing large amounts of motivation to an extent significantly higher than the e-learners perceive. The members of the control group also overestimate the extent to which e-learning saves time; while they underestimate the fun that is involved in learning with computers. These findings were further subjected to statistical analysis (regression) to control for the effects of socio-economic characteristics and country differences. The results showed that only the differences between countries are significant, confirming the strong cultural character of attitudes.

5. CONCLUSIONS

The results of the surveys imply that the e-learning market is diversified and fast-developing, including public and private, small and large providers, without having achieved however a satisfactory "match" between supply and demand. The number of "young" commercial organisations and new entrants signify a dynamic market, the competitiveness of which appears to be strung on innovativeness and specialisation. Although these providers offer a wide range of learning content, there is a strong concentration on IT and business skills, thus limiting the range of learners that could be attracted. The demand appears to be supply-driven to a large extent, although the latent demand (as revealed by the control group) calls for a wider range of training offers, which in rural areas include various subjects of the primary sector and languages.

It is very encouraging that most e-learning providers place great importance on content development and training of staff. It seems that they would benefit from a policy that would support providers in these respects, especially regarding the e-learning inclusion of rural workers and communities, which at present do not seem to benefit as much as their urban counterparts. A wider range of learning

subjects and the additional resources to tailor the content to the needs of the target learners appears to be an important consideration, shared by learning providers and appreciated by learners.

It is also encouraging that 5 out of 10 e-learning providers pay attention to innovation and perceive their products as innovative. Moreover, such innovation appears to stem more from student-centred, interactive and creativity-based pedagogical methods rather than technological innovations, such as game-based learning or use of mobile phones. This attention to learning methods is in line with current European policy, but technological innovation should be also strengthened by policy, to enable providers not only to deliver learning in a better and more effective way, but also to take learning to those who have no access to it because of infrastructure constraints or unfamiliarity with ICT. Alternative media, and especially social media may have also a positive effect, as shown by the e-ruralnet study⁷ and recent work of IPTS (Redecker, et al, 2010).

Indeed, major constraints for developing the e-learning market in rural areas, according to the providers, is IT illiteracy and limited infrastructure for fast internet. Thus, policy measures are necessary to tackle this problem which still remains critical for equitable access to learning opportunities, although the assumption was that it would have been resolved much earlier (Ala-Mutka, 2011).

Public subsidies have been an important motivation for e-learning providers to enter the market, and this definitely varies between countries. However, for the majority of e-learners private means are resourcing their studies, while the contribution of employers and public subsidies are significant but considerably smaller. Employers appear to be rather sceptical of e-learning, as they tend to support conventional learning at a higher rate compared to e-learning; while public subsidies are equally available for both types of learners. The apparent reluctance of employers to support e-learners among their staff is reflected in the lack of actual results or in the limited results of e-learning in job promotion and career development of the e-learners. Public subsidies (which are available and used in all countries) could contribute to a better linkage between e-learning and career development, by creating a “bridge” between employers and learners linked to the learner’s job prospects.

The profile of students though leaves a lot to be done to widen the scope of e-learning: the recruitment of e-learners from the better educated and younger segments of society implies that ICT-supported learning has not reached equitably all citizens of Europe. The reasons for this, as already hinted above and several European policy documents have analysed, are complex. A combination of policy measures are necessary to tackle this problem, including infrastructure and keys skills related to ICT, but attitudes play a major role as well. It remains to be seen if *a new learning culture* created within a digital and networking environment will allow to widen the student body and the benefits of e-learning.

However, the control group survey has indicated that even amongst those better educated and younger groups, there is latent demand that awaits to be tapped: the attitudes towards e-learning are positive, there are expressed skills needs by these individuals and their wish to take up learning from a distance is declared. By looking more carefully at the stated skill needs of the control group, it seems that the content of the available e-learning offer must be further developed, as already mentioned above, and the range of subjects enlarged, to include more technical and focused skills, linked to specific economic sectors and occupations.

The proof of the success of e-learning is that the majority of learners are willing to try e-learning again; and that most e-learners fund their studies from own sources, either wholly or partly; moreover, a huge majority admit that they get the benefit of personal development through such learning, whether it is accompanied by job-related gains or not. These positive experiences, coupled with the positive attitudes stated by both e-learners and control group members, confirm the significant prospects of e-learning to be an important channel of inclusive learning, once the constraints from the supply side are removed and access to ICT services is assured.

⁷ www.e-ruralnet.eu, http://www.prismanet.gr/eruralnet/themedia/File/WP5%20report-eRuralnet_Final_REV.pdf

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THE OECD REVIEW OF 'THE NATURE OF LEARNING' – A DEMANDING EDUCATIONAL AGENDA

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Why such Interest in Learning?

Over recent years, learning has moved increasingly centre stage for a range of powerful reasons that resonate politically as well as educationally across many countries.

OECD societies and economies have experienced a *profound transformation from reliance on an industrial to a knowledge base*. Global drivers increasingly bring to the fore what some call “21st century competences”. The quantity and quality of learning thus become central, with the accompanying concern that traditional educational approaches are insufficient.

Similar factors help to explain *the strong focus on measuring learning outcomes* (including PISA) over the past couple of decades, which in turn generates still greater attention on learning. To move beyond the diagnosis of achievement levels and shortcomings to desirable change then needs a deeper understanding of how people learn most effectively.

The sense of reaching the limits of educational reform invites a fresh focus on learning itself: education has been reformed and reformed again in most OECD countries, leading many to wonder whether we need new ways to influence the very interface of learning and teaching.

The rapid development and ubiquity of ICT are re-setting the boundaries of educational possibilities. Yet, significant investments in digital resources have not revolutionised learning environments; to understand how they might requires attention to the nature of learning.

The research base on learning has grown enormously but many researchers observe how inadequately schools tend to exemplify the conclusions of the learning sciences. At the same time, far too much research on learning is disconnected from the realities of educational practice and policy making. Can the bridges be made to inform practice by this growing evidence base?

Learning 21st Century Competences, Lifelong Learning

The major trends in societies and economies have focused attention increasingly on the demanding kinds of learning that may be summarised as “21st century skills or competences”. These give content to the focus on “outcomes” that too often has not been sufficiently concerned with the question of which outcomes to prioritise. Higher-order thinking skills are increasingly integral to the workplace of today and tomorrow. We need to learn to generate, process, and sort complex information; to think systematically and critically; to take decisions weighing different forms of evidence; to ask meaningful questions about different subjects; to be adaptable and flexible to new information; to be creative; and to be able to identify and solve real-world problems. Young people should ideally acquire a deep understanding of complex concepts and gain media literacy and the ability to use advanced information technologies. Teamwork, social and communication skills are integral to work and social life in the knowledge society.

To thus draw attention to the skills used in contemporary and future workplaces is not to privilege only the economic demands over the competences called for to be effective in communities, social and personal life: the 21st century competences are relevant to all these domains.

Given their central role in the learning society, how are today's schools facing up to these 21st century demands? Practice varies widely, of course, within and across different OECD systems but we can say that the pedagogic model underlying too many schools is still aimed at preparing students for the industrial economy. What goes on in many classrooms and schools is very different from the activities that are at the heart of knowledge-based enterprises in the knowledge economy. This raises profound questions about whether the learning models and environments in the core of schooling are equipping students with the skills that are key to knowledge-based 21st century societies and, if they are not, how best might this be done. Hence our interest in ‘innovative learning environments’.

The extent and quality of learning during the formative years are crucial for learning later in life. The knowledge, skills, values, and attitudes acquired during this early life-stage provide the foundation for

the lifelong learning habit. Therefore, schools are pivotal organisations of the learning society yet their contribution in laying the foundation for lifelong learning has tended to be neglected. An important reason for this is because so much educational discourse is already dominated by a schools focus that lifelong learning proponents have been eager to concentrate instead on what takes place at later ages and stages. But, the paradoxical result is to strip the concept of its cradle-to-grave ambition by equating it implicitly with extended tertiary education and training. 'Lifelong learning' has also been relatively neglected latterly in OECD analyses.

“The Nature of Learning” (OECD Publications, 2010)

'The Nature of Learning' aims to help build the bridges between research and practice, “using research to inspire practice”. Leading researchers from Europe and North America were invited to take different perspectives on learning, summarising large bodies of research and identifying their significance for the design of learning environments, in such a way as to be relevant to educational leaders and policy-makers.

The transversal conclusions, recasting the evidence reviewed in the different chapters more holistically, are synthesised in the final chapter together with discussion of the challenge posed by their implementation. The conclusions are presented below with a small selection of the key arguments made by the different authors.

The learning environment recognises the learners as its core participants, encourages their active engagement, and develops in them an understanding of their own activity as learners

The learning environment recognises that the learners in them are the core participants. A learning environment oriented around the centrality of learning encourages students to become “self-regulated learners”. This means developing the “meta-cognitive skills” for learners to monitor, evaluate, and optimise their acquisition and use of knowledge. It also means to be able to regulate one's emotions and motivations during the learning process. Many have called for a shift in the role of the teacher from the “sage on the stage” to the “guide on the side” but this may be highly misleading if it is interpreted as relieving the teacher, individually and collectively, of responsibility for the learning that takes place.

The learning environment is founded on the social nature of learning and actively encourages well-organised co-operative learning

“Effective learning is not purely a ‘solo’ activity but essentially a ‘distributed’ one: individual knowledge construction occurs throughout processes of interaction, negotiation, and co-operation” (The Nature of Learning, Chapter 2). Neuroscience shows that the human brain is primed for interaction. However valuable that self-study and personal discovery may be, learning depends on interacting with others.

There are robust measured effects of co-operative forms of classroom learning when it is done properly. Despite this, such approaches still remain on the margins of much school activity. The ability to co-operate and learn together should be fostered as a “21st century competence”, quite apart from its demonstrated impact on measured learning outcomes.

The learning professionals within the learning environment are highly attuned to the learners' motivations and the key role of emotions in achievement

The emotional and cognitive dimensions of learning are inextricably entwined. It is therefore important to understand not just learners' cognitive development but their motivations and emotional characteristics as well. Yet, attention to learner beliefs and motivations is much further away from standard educational thinking than goals framed in terms of cognitive development. Powerful reasons for the success of many approaches using technology, co-operative learning, inquiry-based learning, and service learning lie in their capacity to motivate and engage learners.

Being highly attuned to learners' motivations and the key role of emotions is not an exhortation to be "nice" - misplaced encouragement will anyway do more harm than good – but is first and foremost about making learning more effective, not more enjoyable.

The learning environment is acutely sensitive to the individual differences among the learners in it, including their prior knowledge

Students differ in many ways fundamental to learning: prior knowledge, ability, conceptions of learning, learning styles and strategies, interest, motivation, self-efficacy beliefs, and emotion, as well in socio-environmental terms such as linguistic, cultural and social background. A fundamental challenge is to manage such differences, while at the same time ensuring that young people learn together within a shared education and culture.

Prior knowledge is one of the most important resources on which to build current learning as well as one of the most marked individual difference among learners: Understanding these differences is an integral element of understanding the strengths and limitations of individuals and groups of learners, as well as the motivations that so shape the learning process. Prior knowledge is critically dependent on the family and background sources of learning and not only what the school or learning environment has sought to impart.

The learning environment devises programmes that demand hard work and challenge from all without excessive overload

That learning environments are more effective when they are sensitive to individual differences stems also from the findings stressed by several authors that each learner needs to be sufficiently challenged to reach just above their existing level and capacity. The corollary is that no-one should be allowed to coast for any significant amounts of time on work that does not stretch them. Learning environments should demand hard work and effort from all involved. But the findings reported in *The Nature of Learning* also show that overload and de-motivating regimes based on excessive pressure do not work because they do not make for effective learning.

The learning environment operates with clarity of expectations and deploys assessment strategies consistent with these expectations; there is strong emphasis on formative feedback to support learning

Assessment is critical for learning. The nature of assessments defines the cognitive demands of the work students are asked to undertake, and it provides the bridge between teaching and learning. When assessment is authentic and in line with educational goals it is a powerful tool in support of learning; otherwise it can be a serious distraction. Formative assessment is a central feature of the learning environment of the 21st century. Learners need substantial, regular and meaningful feedback; teachers need it in order to understand who is learning and how to orchestrate the learning process. The research shows strong links between formative assessment practices and successful student learning. Such approaches need to be integrated into classroom practice to have such benefits.

The learning environment strongly promotes "horizontal connectedness" across areas of knowledge and subjects as well as to the community and the wider world

Complex knowledge structures are built up by organising more basic pieces of knowledge in a hierarchical way; discrete objects of learning need to be integrated into larger frameworks, understandings and concepts. The connectedness that comes through developing the larger frameworks so that knowledge can be transferred and used across different contexts and to address unfamiliar problems is one of the defining features of the 21st century competences. Learners are often poor at transferring understanding of the same idea or relationship in one domain to another.

Meaningful real-life problems have a key role to play in bolstering the relevance of the learning being undertaken, supporting both engagement and motivation. Inquiry- and community-based approaches to learning offer extensive examples of how this can be done. An effective learning environment will at the least not be at odds with the influences and expectations from home; better still, it will work in tandem with them.

A demanding educational agenda

The force and relevance of these transversal conclusions or “principles” do not reside in each one taken in isolation from the others. Instead, they provide a demanding framework and all should be present in a learning environment for it to be judged truly effective. The educational agenda they define may be characterised as:

Learner-centred: the environment needs to be highly focused on learning as the principal activity, not as an alternative to the critical role of teachers and learning professionals but dependent on them.

Structured and well-designed: to be “learner-centred” requires careful design and highly levels of professionalism. This still leaves ample room for inquiry and autonomous learning.

Profoundly personalised: the learning environment is acutely sensitive to individual and group differences in background, prior knowledge, motivation and abilities, and offers tailored and detailed feedback.

Inclusive: sensitivity to individual and group differences, including of the weakest learners, defines an educational agenda that is fundamentally inclusive.

Social: The principles assume that learning is effective when it takes place in group settings, when learners collaborate as an explicit part of the learning environment, and when there is a connection to community.

Concluding Remarks

The presentation will relate these main conclusions from this OECD analysis of learning to parallel analyses on equity and on ‘New Millennium Learners’, and to the holistic understanding of ‘learning environments’ that is underpinning the OECD work on Innovative Learning Environments.

Chapter 2

Building an inclusive learning society (Plenary 2)

ICT for inclusive learning: the way forward 10-11 November 2011, Palazzo Medici Riccardi, Florence, Italy 'Missing the target: why an Inclusive Learning Society remains a dream'

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Abstract

In recent years, a raft of EU and national policies have been implemented that aim to realise the objectives of a fair and just society for all – including access to and utilisation of ICTs. In turn, ICTs themselves have been increasingly seen as a means to support the realisation of these objectives. A feature of recent thinking in this area has been a more explicit linkage between social inclusion and lifelong learning. Another feature has been the growing adoption of 'Learning 2.0' technologies in interventions aimed at promoting inclusive learning. Drawing on previously unpublished results from research studies carried out for the Institute for Prospective Technological Studies (IPTS) and from the 'LINKS-UP' project – an action research study supported by the EC Lifelong Learning Programme – this paper critically reviews what has been achieved in the field of 'ICT inclusive learning' and what still needs to be done.

Policy context

This paper can be set within the broader context of a number of current EU and national policy agendas and initiatives. One key policy driver is e-Inclusion, which is a hugely important issue for the EU and a significant component of social and employment policy. The 'Riga Declaration' (2006); the Lisbon Declaration on e-inclusion (2007); the 'e-inclusion: be part of it' initiative and i2010 - a European Information Society for Growth and Employment initiative - set ambitious targets for 2008 and 2010 to ensure that 'nobody is left behind', against the backdrop of the renewed Lisbon agenda and the 2006 'Communication on Lifelong Learning'. These policy actions denote a recognition, for example in the Commission's '2008 Biennial Joint Report on Lifelong Learning', and in the draft 2008 'Joint Progress Report on the Implementation of the Education and Training 2010 Work Programme'⁸, that particular action has to be taken to make ICT accessible to groups at risk of exclusion from the knowledge-based society. In its Communication on Media Literacy in the Digital Environment (2007b) the Commission takes note of the fact that due to the increased availability of digital media products and user generated content, there is a need to empower citizens to "actively use media, through, inter alia, interactive television, use of Internet search engines or participation in virtual communities, and better exploiting the potential of media for entertainment, access to culture, intercultural dialogue, learning and daily-life applications (for instance, through libraries, podcasts)".

This links to a second key policy driver - the emphasis European Union policy places on lifelong learning. Recently, in this context, there has been growing attention paid to 'learning for inclusion', for example through exchanges, twinning and collaborative projects within the lifelong learning programme and in FP7. In addition to these strands, the Digital Agenda for Europe (DAE) of the Europe 2020 strategy⁹ calls for "increased learning, recognition about digital competences in formal education and training systems, as well as awareness raising and effective ICT training and certification outside formal education systems, including the use of online tools and digital media for re-skilling and continuing professional development".

⁸ Draft 2008 joint progress report of the Council and the Commission on the implementation of the 'Education & Training 2010 work programme', SEC(2007) 1484, COM(2007) 703 Final, Brussels.

⁹ Available: http://ec.europa.eu/information_society/digital-agenda/index_en.htm

The DAE can be seen within the broader context of the EU 2020 strategy for smart, sustainable and inclusive growth in the light of the continuing threat of recession and financial crisis. The DAE addresses in particular two of the three EU2020 priorities, i.e.: smart growth – developing an economy based on knowledge and innovation, and inclusive growth – fostering a high-employment economy delivering economic, social and territorial cohesion. The acquisition, recognition and application of digital skills is seen as essential in delivering these priorities not least because improved ICT access, usage and ‘quality of use’ will support labour market flexibility and adaptability in the face of rapid economic change and globalisation. Thus the DAE links to and supports other EU 2020 ‘flagships’, for example the ‘Agenda for New Skills and Jobs’, with its focus on ‘flexicurity’, intra-EU labour mobility and a better match between labour supply and demand, and the ‘European Platform against poverty and social exclusion’, with its emphasis on providing innovative education, training, and employment opportunities for deprived communities.

So according to the current understanding of e-Inclusion in the European Union,¹⁰ e-Inclusion policy entails two overall goals. Firstly, there is a focus on increasing the use of ICTs among digitally excluded people (non-ICT users and ‘weak’ users) who tend to be over-represented among people at risk of social exclusion,¹¹ including young people.¹² Secondly, there is a focus on enhancing the use of ICTs by local administrations, third sector organisations and others in order to fight social exclusion and to improve the delivery of services to socially excluded and at risk people. However, what is less easy to spot in current policy is support for the use of ICTs to foster the direct empowerment of people who are socially excluded or ‘at risk’ of social exclusion, i.e. to foster ‘self-help’ and reverse the ‘dependency culture’ associated with ‘welfare provision’.

The conceptual context

Current EU e-inclusion policy therefore reflects a distinctive theoretical perspective, primarily based on concepts drawn from ‘New Liberal’ or ‘New Right’ thinking, and on American theories of welfare dependency and the rise of an underclass of welfare dependents (Smith, 1997; Anderson and Sims, 2000). The idea of the socially excluded as an ‘underclass’ owed much to an emphasis on macro-level structural factors, particularly economic processes that shape things like poverty and unemployment. In a major pan-European study carried out in 2000, the ‘YUSDER’ project concluded that unemployment is a central risk factor for young people, which in the long-term threatens the overall integration of young people into society. This emphasis on employment and labour market position has been an enduring theme in perspectives on social exclusion. For example, the 2011 portrait of social exclusion in Europe, conducted by Eurostat, observed that:

‘Social inequality is closely linked to social exclusion in that it restricts people from participating fully and equally in society. Exclusion from the labour market is a key form of exclusion, most visible in the form of unemployment, which has a direct impact on income inequalities.’

However, the Eurostat statistical analysis also acknowledges that social exclusion is ‘a complex, multi-dimensional, multi-layered and dynamic concept’, and uses the EC’s definition of social exclusion as: ‘a process whereby certain individuals are pushed to the edge of society and prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as a result of discrimination. This distances them from job, income and education opportunities as well as social and community networks and activities. They have little access to power and decision-making bodies and thus often feeling powerless and unable to take control over the decisions that affect their day to day lives’.¹³¹⁴¹⁵¹⁶ As the UK’s Social Exclusion Unit put it:

¹⁰ See for instance the Riga Ministerial Declaration (Presidency of the EU Council of Ministers, 2006).

¹¹ In 2006, the 20% of the UK population which was classified as being socially excluded, was three times more likely to be digitally excluded than to be included. (Digital Inclusion Team, 2007).

¹² Catch 22, a local charity in the U.K. which works in over 150 towns and cities with tens of thousands of disadvantaged young people found that about 20% of them had no Internet access, while the UK average on non-Internet users among 16-24 years old people is only 4%. (Catch 22, 2010). In broader terms (UK Government, 2008) states that “It is common amongst adults today to make the assumption that all young people, without exception, can ‘do’ technology ... While this is in the main true for young people who have a stable attendance at school throughout their school career, for those who are not in school, for whatever reason, some will miss out and therefore end up on the wrong side of the digital divide.” (p.28)

¹³ COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, An EU Strategy for Youth – Investing and Empowering A renewed open method of coordination to address youth challenges and opportunities" 2009.

¹⁴ Coleman, John & Hendry, Leo (1999). The nature of adolescence (3rd ed.). London: Routledge.

¹⁵ Schoon, Ingrid & Bynner, John (2003). Risk and resilience in the life course: Implications for interventions and social policies. *Journal of Youth Studies*, 6(1), 21-31.

¹⁶ Burchardt, T., J. Le Grand and D. Piachaud. (2002). “Degrees of exclusion: Developing a dynamic, multidimensional measure”. Pp. 30-43 in Hills, Le Grand and Piachaud (Eds.).

“Social exclusion is about more than income poverty. It is a short-hand term for what can happen when people or areas face a combination of linked problems, such as unemployment, discrimination, poor skills, low incomes, poor housing, high crime and family breakdown. These problems are linked and mutually reinforcing” (SEU, 2004). Moreover, they are highly contextualized, and mediated through complex factors like the level of social cohesion and social support on offer.

There is an implicit argument in this that sustained and repetitive exposure to social and economic ills – poverty; ill-health; upheaval; unemployment – itself saps the collective spirit and therefore ultimately increases the vulnerability of those exposed to social and economic pathologies (Elstad, 1998; Kreiger, 2004; Berkman et al, 2000).¹⁷ Conversely, some studies argue that environments characterised by highly developed levels of ‘social capital’ and ‘social cohesion’ do not suffer the effects of deprivation to the same extent as cultures in which “civil society” is less well-developed (Kawachi et al, 2000; Wilkinson, 1996; Lynch et al, 2000; Kunitz, 2001). In this regard, some writers sometimes refer to social exclusion as if it were a form of ‘inheritance’. In the case of poverty, though experiences vary widely, fewer people break out of poverty cycles than is commonly believed. The research suggests that “Chronic poverty can be inherited from a child’s parents and from the wider community or society.” (Harper et al, 2003). Furthermore, there is some evidence to suggest that social exclusion leads to unintentionally self-defeating behavior (Twenge, et al, 2002).¹⁸

Subsequent theoretical approaches to understanding social exclusion have thus shifted in focus from an ‘underclass’ perspective to a ‘social capital’ perspective, largely through the work of Coleman, Putnam and Bourdieu. Coleman argues that social capital derives through the formation of social relationships built up over time which enable individuals to achieve more than they would be able to achieve if they acted solely on their own.¹⁹ Putnam built on this to explore the forms of social capital: moral obligations and norms; social values (particularly *trust*) and social networks (especially voluntary associations).²⁰ Bourdieu argued people use strategies to operate in their ‘fields’ to distinguish themselves from other groups and place themselves in positions that maximize their utilisation and exploitation of capital, particularly learning capital²¹. This suggests that the extent of individual development and change is heavily dependent on the material and symbolic resources available to these fields and the networks in them.²²

In recent years, social capital theory has been challenged by post-modern theories, mainly based on work carried out by Beck, Giddens and Lash. Beck’s theory of reflexive modernisation is based on the assumption that changes in post-industrial society have led to the emergence of ‘risk’ society. As the old institutions of industrial society - family, community, social class - are undermined by globalization, each individual must learn to navigate society for themselves. The most vulnerable groups in this are the old and the young. For the young the threat is intensified, having to navigate risk society while navigating their own ‘ambivalent biographies’ with the support of increasingly fragile social structures including their own family, and in nation states that have restricted welfare provision for young people based either on their age or on their lack of employment history.²³ Giddens suggested that, no longer regulated by external structures and norms, the self has become a fluid and “reflexive” “biographical project.”²⁴ On the one hand, this allows unprecedented freedom and opportunities for young people. On the other, self and identity become fragile, individualisation becomes a lonely business “full of risks which need to be confronted and fought alone”. People are now more than ever free to become architects of their own lives, and to have responsibility for their own lives – but the culture of individualism, and the pressures it generates in terms of having to achieve, conspire to promote sense of failure, marginalisation and, for some, mental ill-health. Lash suggests that people’s risk behaviours are determined by aesthetic understandings and judgements, mediated through lifestyles and membership of social groups. Behaviour will bear far more relation to what is “normal”, “cool” or

¹⁷ Elstad J (1998). The psycho-social perspective on social inequalities in health. In: Bartley M, Blane D, Davey Smith G, eds. *The sociology of health inequalities*. Oxford: Blackwell, 39–58.

¹⁸ Twenge, J. M., Catanese, K. R., & Baumeister, R. F. (2002). Social exclusion causes self-defeating behavior. *Journal of Personality and Social Psychology*, 83, 606-615.

¹⁹ Coleman, J.S. (1988) Social Capital in the Creation of Human Capital *American Journal of Sociology*: Vol. 94, Issue Supplement, pp. 95-120.

²⁰ Putnam, R.D. (1995) Bowling Alone: America’s Declining Social Capital *Journal of Democracy*: Vol. 6, No. 1, pp. 65-78.

²¹ Bourdieu, P. (1992b) *Language and Symbolic Power* Edited and introduced by J.B. Thompson, translated by G. Raymond and M. Adamson, Cambridge: Polity Press.

²² Raffo, C, M Reeves, Youth Transitions and social exclusion developments in social capital theory, *Jnl. of Youth Studies*, 1469-9680, Volume 3, Issue 2, 2000.

²³ Beck U, Giddens A, Lash S (1994) *Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order*. Blackwell. Oxford.

²⁴ Giddens, Anthony (1999). *Runaway world*. London: Profile Books.

assumed within their reference group than it will to any external calculation of risk, or the effects of structural factors such as social class.²⁵

The role of ICTs in social exclusion

Perspectives on the role of ICTs in both shaping and mitigating this complex process of social exclusion can broadly be divided into two camps: the Utopians and the Dystopians. The Utopian position sees ICTs as a benign force that offers huge opportunities for 'inclusive learning'. An example of this thinking at the macro-economic level has been the wide acceptance of the 'Molnar model'²⁶. This suggests a process of technological diffusion that is both linear and progressive. At all levels, individual, community and state, 'early adopters' will access, utilise and adapt ICTs, creating a critical mass that will ultimately result in the elimination of unequal access to ICTs and the erosion of the digital divide – particularly if policies are implemented to address existing disparities in access and usage.

Similarly, the 'ladder of participation' model suggests that individuals go through a four-step learning process in their engagement with ICTs that progressively improves their digital literacy and again implies that those initially 'left behind' in the knowledge society will eventually catch up, as technologies become virtually ubiquitous in homes, schools, workplaces and communities, and as excluded people acquire the skills to use them.²⁷

There are a range of studies that appear to reinforce this optimistic view of ICTs and social inclusion. They portray ICTs – and in particular the growth in the use of social networking applications - as a strong force for good. Reflecting Giddens' ideas around 'dialogic reflexivity' (Giddens, 1994)²⁸, it is argued that social networking and ubiquitous connectivity are promoting a new democratization movement driven by opportunities for grass roots involvement in knowledge creation, knowledge sharing, participation and decision-making. A prevailing argument is that developments like Web 2.0 make culture less monolithic and more diverse, allowing the 'citizen voice' to be heard, and making it possible for politicians and public servants' actions to be better scrutinised and more transparent. Moreover, network-focused ICTs allow an unprecedented role for the 'consumer voice'. In social networking sites, people feel emotionally involved and spread the word about innovations.²⁹

Other evidence points to the capacity for ICTs – particularly social networking applications –to re-engage young people classified as NEET (not in employment, education or training) within education and employment. In a literature review of current state of the art on 'Learning 2.0' Redeker (2008) cites numerous examples to support the view that projects using Learning 2.0 strategies have a high potential to re-engage excluded groups in learning. These include initiatives to support learning for young people in hospitals ('Mundo des Estrellas'); the use of Second life to support learning for people with autism and Asperger's Syndrome ('Brigadoon'); initiatives that offer an alternative to traditional education for young people disengaged from classroom learning because of illness, pregnancy, bullying, phobia, travelling, reluctance to learn, disaffection, exclusion ('Notschool') and projects that aim to exploit the advantages of social computing tools to guarantee a representation of minorities through a direct self expression ('Rete G2 seconde generazioni').³⁰ This evidence has been further supported by intensive case study analysis of some of these initiatives (Cullen et al, 2009).³¹

Underpinning these optimistic perspectives is a new vision of learning that is increasingly beginning to dominate policy and academic discourses. Wim Veen for example, argues that the younger generations are growing up in an environment in which ubiquitous technologies are more and more becoming the norm. He calls this generation 'Homo Zappiens'. Those new users who were growing up digital (the so called 'digital natives', the 'n-generation') are able to swap between reality (as citizens) and virtual realities (as 'netizens') organising themselves in 'Distributed Electronic Virtual Knowledge Centres' (or 'Learning Malls') and in 'Self-managed Virtual Communities' around themes of shared interest and value.³² In the future, it is argued, everyone will be a Homo Zappien and digital divides will cease to exist.

²⁵ Lash, Scott (2000). Risk culture. In Barbara Adam, Ulrich Beck & Jost van Loon (Eds.), *The risk society and beyond* (pp.47-62). London: Sage.

²⁶ Molnar, S (2003) *The explanation frame of the digital divide*, BME-UNESCO Information Society Research Institute.

²⁷ Livingstone S and E Helsper,(2007) in 'Comparing Childrens Online Opportunities and Risks across Europe', Uwe Hasebrink, Sonia Livingstone,Leslie Haddon and Kjartan Ólafsson (eds), LSE, London.

²⁸ Giddens, A (1994) *The Consequences of Modernity*, Cambridge, Polity Press.

²⁹ *The Power of Us*. Business Week, June 2005.

³⁰ Redeker, C (2008) 'Learning 2.0: the impact of Web 2.0 Innovations on Education and Training in Europe, IPTS, Seville.

³¹ Cullen, J, C Cullen, D Hayward, V Maes (2009) 'Good Practices for Learning 2.0: Final Report, IPTS, Seville.

³² Veen, W, & Vrakking, B (2006). *Homo Zappiens Growing up in a digital age*, London.

This view owes much to a notion that has come to the fore in recent thinking on learning- the idea that education is now focusing on 'new millennium learners' (NML), and that the future of learning is inextricably bound up with these learners. NML – those born after 1982 - are the first generation to grow up surrounded by digital media, and most of their activities dealing with peer-to-peer communication and knowledge management are mediated by these technologies (Pedró, 2006). A number of characteristics are attributed to NMLs. Based on the results of a range of studies, it is claimed they are “hardwired” to simultaneously utilize multiple types of web-based participatory media (Baird & Fisher, 2006); they are ‘technologically savvy’, have grown up with the Web and are “always-on”; they are adept with computers and creative with technology (Olbinge & Olbinge, 2005) and they are highly skilled at multi-tasking (Pedro, 2006). Some commentators are now taking the view that the new learning skills acquired by NMLs have changed cognitive patterns. According to OECD (2008), research shows that the exposure to the proliferation of imagery in media has contributed to the selective increases in nonverbal intelligence scores during the past century in industrialised countries. Indeed, the OECD study claims that multitasking as a phenomenon will not disappear, but will become the educational mainstream.

On the other hand, there is equally persuasive evidence to support the opposite, pessimistic position. A study on e-inclusion that critically reviewed the ‘Molnar model’, comparing access, usage and quality of use across twelve member states (Cullen et al, 2007), found that access, usage and quality of use divides frequently overlap; that some EU states, for example Estonia, have ‘leap-frogged’ access and usage barriers (for example by increasing broadband infrastructure provision at the same time as channelling investment into e-skills programmes, as well as developing sophisticated e-service delivery systems) and that patterns of access, usage and quality of use vary considerably within countries with regard to location, culture and other factors.³³ Similarly, Livingstone and Helsper’s work on young people’s use of ICTs suggests that the ladder of participation’ model in reality shows how the ‘digital divide’ can open out into an ‘e-exclusion spectrum’ as greater usage leads to greater opportunities for some and less for others.³⁴ Livingstone and Helsper argue that, in reality, increased participation leads to greater opportunities for those who participate, which in turn widens the spectrum of e-exclusion. Socio-economic status affects the frequency of ICT use amongst young people, with lower status groups using ICTs less, and also the use to which ICTs are put, with lower status groups spending more time on downloading music, videos and games, and less on education and civic activities, than their higher status counterparts. In turn, critics like Facer and Furlong (2001) refer to the pre-eminence of the ‘cyberkid myth’ – the uncritical view that young people are somehow immune to problems around access to ICTs and digital literacy.³⁵ In fact, there is strong evidence to suggest that significant numbers of young people remain at the margins of the ‘knowledge society’ – not least because the complexity and diversity of their lives, and their roles in a ‘technologically rich’ society, remain poorly understood. Key obstacles militating against the e- inclusion of young people, and contributing to ‘risk’ of exclusion include cost; peer pressure; social context; attitudes towards computer use; difficulties accessing computers; a lack of relevance of computer technology to children’s daily lives; and the potential of formal educational environments to exacerbate inequalities in access and anxieties around ICTs (Facer and Furlong, 2001; Facer and Selwyn, 2007).³⁶ Similarly, the Redeker review (op cit) also identified instances where Web 2.0 is creating additional problems for particular excluded and at risk people, for example people with disabilities; immigrants and people from ethnic minorities. Woodfine et al. (2008) argue that online learning activities raises problems for higher education students with dyslexia and other cognitive disabilities, and Fisseler & Bühler (2007) argue that blogs, wikis and other social computing applications pose additional threats to accessibility for disabled people.³⁷

These studies appear to support the idea of ‘dual exclusion’ – the ways in which structural inequalities like social class combine with ICT-based inequalities to reinforce cycles of deprivation. A recent (2008) report by Oxford Internet Institute observed that:

“technological forms of exclusion are a reality for significant segments of the population, and that, for some people, they reinforce and deepen existing disadvantages. Technology is so tightly woven into

³³ Cullen, J, K Hadjivassiliou and K Junge (2007) Status of e-inclusion measurement, analysis and approaches for improvement: Final Report, CEC, Brussels

³⁴ Livingstone S and E Helsper, (2007) in ‘Comparing Childrens Online Opportunities and Risks across Europe’, Uwe Hasebrink, Sonia Livingstone, Leslie Haddon and Kjartan Ólafsson (eds), LSE, London

³⁵ Facer, K and R Furlong (2001) Beyond the myth of the Cyberkid: young people at the margins of the information revolution’. *Jnl. Youth Studies*, 4, 4

³⁶ Facer N and K Selwyn (2007) ‘Beyond the Digital Divide: Rethinking Digital Inclusion for the 21st Century’, Futurelab

³⁷ Woodfine, B. P., M. Baptista Nunes and D.J. Wright (2008). “Text-based synchronous e-learning and dyslexia: Not necessarily the perfect match!”, *Computers & Education*, 50 (3) (2008), 703-717

the fabric of society today that ICT deprivation can rightly be considered alongside, and strongly linked to, more traditional twentieth century social deprivations, such as low income, unemployment, poor education, ill health and social isolation. To consider ICT deprivation as somehow less important underestimates the pace, depth and scale of technological change, and overlooks the way that different disadvantages can combine to deepen exclusion”³⁸

Another study, based on a survey of 1024 young people in Germany (aged between 14 and 23 years), shows that even among young users, who are supposedly the 'Internet-savvy' generation, significant and enduring inequalities of outcome persist - especially in terms of different indicators of educational background.³⁹

The EU Kids Online project provides strong evidence to suggest that on-line risk for children is linked to socio-economic factors, and that children from socially excluded and socially 'at risk' backgrounds are likely to encounter more 'risk' when on-line: "It can be concluded that those who belong to higher SES groups are generally exposed to fewest risks. Further, middle SES groups experience more risk and lower SES groups experience the most." Danah Boyd (2007) argues that, in the USA, utilization of social networking technologies reflects complex class and status stratifications in American youth. Whereas MySpace is the spiritual home for the culturally and socially marginalized, Facebook attracts "upwardly mobile hegemonic teens". As she puts it; "MySpace is still home for Latino/Hispanic teens, immigrant teens, "burnouts," "alternative kids," "art fags," punks, emos, goths, gangstas, queer kids, and other kids who didn't play into the dominant high school popularity paradigm...MySpace has most of the kids who are socially ostracized at school because they are geeks, freaks, or queers."⁴⁰

This reinforces a critical position on social networking, which argues that in social networking spaces, social interaction takes place in a highly individuated way, reflecting a particularly twenty-first century need for self-exposure, centred on narcissism and exhibitionism, and linked to the 'cult of celebrity' and the dominance of reality TV. As Oysermann, Koon and Kimmelmeier argue, the key personality constructs of individualism – introspection, competition, personal achievement, success – lend themselves to the kind of social interaction environments currently represented by social networking sites like Facebook.⁴¹ Individualism, it is argued, will tend to reinforce social fragmentation in the group environment, since individuals will gravitate to on-line groups that reinforce their sense of self, and in turn their beliefs, prejudices and ideologies. Others point to the tendency for social networking sites to promote not a democratization of the internet but a meritocracy where only the 'in vogue' tools and bloggers become the most popular (Cullen, 2007).⁴²

Evidence from new research

Against this background, this paper presents the results of four new studies focusing on ICTs and social inclusion in an attempt to apply emerging evidence to this polarisation between the Utopian and Dystopian positions. The following studies are covered below:

- 'Good Practices for Learning 2.0' (2009)– an analysis of 220 examples of European initiatives using 'Learning 2.0' to foster new ways of learning, including 8 intensive case studies using learning 2.0 to support social inclusion objectives. This study was carried out for the Institute for Prospective Technological Studies (IPTS) – one of the Joint Research Centres of the European Commission
- 'Mapping and Assessing the impact of ICT-based initiatives for the socio-economic inclusion of young people at risk of exclusion' (2011) – a study carried out for IPTS on what kinds of policies and initiatives are being implemented in Europe that focus on the use of ICTs to support the social inclusion of 'at risk' young people
- 'LINKS-UP' - Learning 2.0 for an Inclusive Knowledge Society - Understanding the Picture' (2009-2011)- a research project funded under the EC 'Lifelong Learning Programme' that looked in detail at how 'Web 2.0' technologies are changing the face of education and training for 'hard-to-reach' people and those 'at risk' of social exclusion.

³⁸ Helsper, E (2008) Digital Inclusion: An Analysis of Social Disadvantage and the Information Society, OIS, Oxford.

³⁹ S Iske , A Klein, N Kutscher and H Otto (2008) Young people's Internet use and its significance for informal education and social participation, *Technology, Pedagogy and Education*, Volume <http://www.informaworld.com/smpp/title~db=all~content=t716100724~tab=issueslist~branches=17 - v1717>, Issue 2 July 2008, pages 131 – 141.

⁴⁰ Boyd, D 2007. "Viewing American class divisions through Facebook and MySpace."

⁴¹ Oysermann, D, H M Koon and M Kimmelmeier Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta analysis, *Psych. Bulletin*, 128, 3-72 (2002).

⁴² Cullen, J 'Status of einclusion measurement, analysis and approaches for improvement: Final Report', CEC, Brussels.

- ‘Methodology and survey on the relation between the socio-economic conditions of European Youngsters and their access, use and aspirations regarding ICT’ (2011) - a study carried out for IPTS that developed and tested a methodology to assess how young people access and utilise ICTs.

Good Practices for Learning 2.0

The database of ‘Learning 2.0’ initiatives, and the intensive case studies analysed, reflected a spectrum of target users, technical platforms and Web 2.0 configurations, learning and inclusion settings and scenarios and objectives. A wide range of Web 2.0 tools were being used to support inclusion, including social networking tools, through wikis, blogs and podcasts through to virtual environments (Second Life), media sharing (mainly YouTube) and syndication tools (RSS feeds). The three groups of tools most frequently used were social networking, blogs and on-line office tools, mainly interactive Discussion Forums (Figure 1).

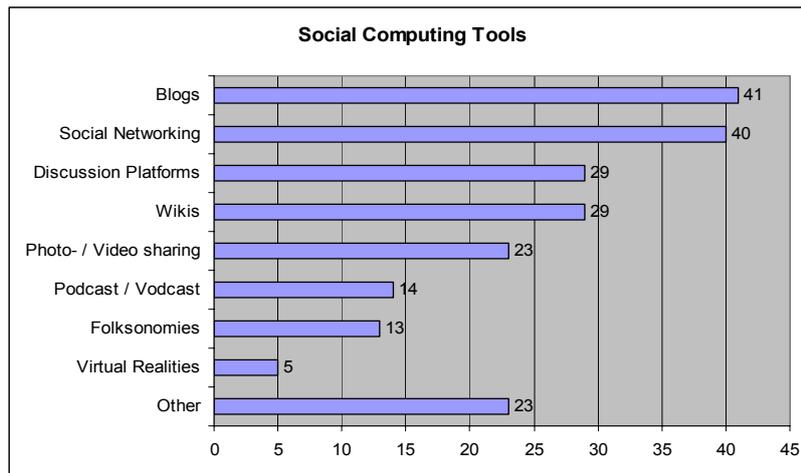


Figure 1: ICT tools used for ‘inclusive learning’

But two features of the profiles of the ‘Learning 2.0 landscape’ as represented by the two hundred plus initiatives analysed are striking: firstly, the low level of effort and activity taking place outside the formal education and training system and, secondly, related to this, the relatively low priority attached to social inclusion in the context of learning objectives. As Figure 2 shows, the institutional setting of Learning 2.0 is dominated by the University and school sector – indeed some 82% of the 220 examples analysed involved formal rather than informal and non-formal learning.

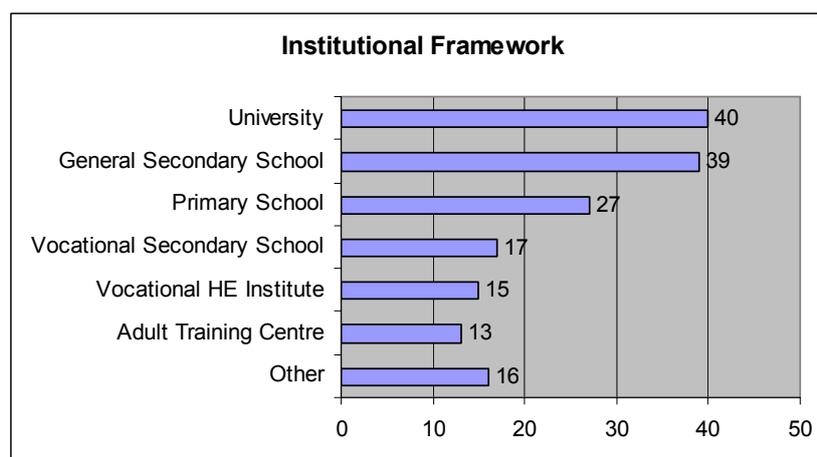


Figure 2: Institutional setting for Learning 2.0

Given this domination by the formal learning sectors, it is not surprising that the main objectives aimed at by initiatives using Learning 2.0 focus on developing new ways of learning and increasing collaboration and participation, rather than direct ‘inclusion’ objectives, as Figure 3 shows.

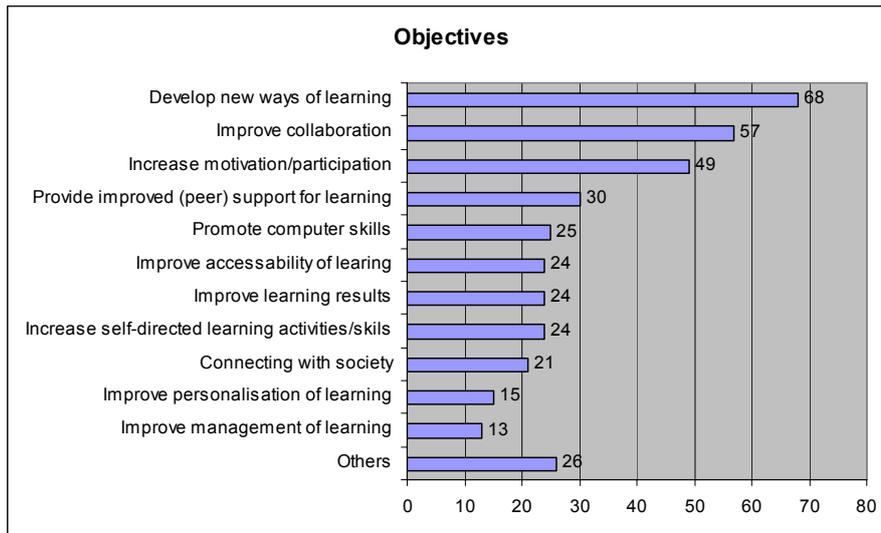


Figure 3: Learning 2.0 objectives

Less than 10% of the 220 examples analysed were targeted at socially excluded or 'at risk' groups, and these covered people with disabilities; immigrant and ethnic minorities; NEETs (not in employment, education or training).

Further analysis of this sub-group of 'Web 2.0 for inclusive learning' initiatives – including intensive case studies of eight examples – showed a number of distinctive features. One important finding was that there are not many examples of 'radical' technological advances being used to support inclusion, for example signs of a movement to 'Web 3.0' and semantic nets. Indeed, a significant feature of the examples studied was the use of relatively 'low tech' solutions. One example of this is 'Notschool' – a UK initiative providing learning for young people who have dropped out of school because of learning difficulties, school 'phobia' or disruptive behaviour. Notschool uses basic ICTs – a lap-top and a printer supported by limited social networking functionalities. Another is a French initiative that uses low-cost MP3 players to help dyslexic students in doing their homework and sitting exams. Their classroom peers record aural versions of texts that enable their dyslexic colleagues to improve their recognition and use of visual text. What is innovative, therefore about these two examples is not the use of ICT per se, but the new forms of pedagogy being supported by the technologies. This 'new pedagogy' allows a much greater role for students as co-producers of knowledge. However, we did find examples of 'higher end' and media-rich applications being used to promote 'inclusive learning', involving virtual worlds and interactive games. One example is 'Schome', which created a virtual learning world for school drop-outs, using 'Second Life' and avatars to promote new forms of learning. Many examples of these kinds of pedagogic innovation could be identified – particularly new 'shared' roles in the educational enterprise based on the co-production of knowledge, using an 'open pedagogy' model. In this context, the evidence suggests that Web 2.0 can expand learning horizons and engage learners in rich content environments.

The analysis found that the 'success' of these kinds of 'Learning 2.0' initiatives for social inclusion is associated with the innovative integration and packaging of Web 2.0 tools to create learning environments that are interesting, fun, supportive and which open up spaces to develop creativity and collaboration for excluded groups who find it difficult to flourish in conventional learning environments. 'High end' technologies support inclusion through promoting empowerment; self-esteem; confidence-building. But equal success can be achieved using low tech strategies. The key to success lies in implementing a close fit between user needs; pedagogic models chosen and technical strategies adopted. Commitment and motivation at the 'human interface' level is necessary for success. In almost every case, positive learning and inclusion outcomes were linked to the active engagement of a dedicated staff of monitors and coordinators responsible for facilitating and encouraging engagement in project activities.

We found strong evidence of positive outcomes, for both learning and inclusion, associated with the use of Learning 2.0. These are mainly related to developing 'soft skills' – both personal, like self-confidence – and social - like team-working and time management. We found no conclusive evidence of negative impacts – for example increased social isolation – associated with participation in Learning

2.0 environments. However there were some indications that existing 'skills gaps' amongst students in Web 2.0-rich environments could contribute to increasing skills gaps between students who are computer-literate and students who are not and, in turn, contributing to further feelings of exclusion from learning. There is some evidence that acquisition of e-skills contributes to supporting inclusion.

However, learning 2.0 environments do not always reduce social exclusion. Key mediating factors in realizing successful learning and inclusion outcomes are: existing levels of basic digital literacy; the cultural and social 'mix' of participating learners; the presence and quality of support available for other sources – for example family and peers. Existing power dynamics – for example those between computer-literate and non-literate – can not only reduce the positive impacts of Learning 2.0 for users but can increase social exclusion for the vulnerable. All of the examples studied experienced challenges of different kinds and with varying degrees of severity. The main barriers to positive inclusion encompass five main elements: technical issues; motivation and engagement issues; organisational issues; digital skills issues and finance and funding issues. Technical challenges are posed by costs and rapid obsolescence factors where high-tech solutions and content are involved, and some technical problems were identified with 'higher end' and media-rich tools (for example interoperability issues). Lack of technical support is also a problem. Motivational issues are associated with the fact that socially excluded groups typically have negative experiences of learning, and tend to be resistant to getting involved. Organisational problems mainly concern the changes to organizational culture that are associated with the introduction of Web 2.0 – particularly since it radically changes the teacher-student relationship from a 'transmissive' to a 'co-production' mode. Existing organisational structures are still resistant to change and equality. For example, the study identified cases where users who were already computer-literate tended to 'colonise' new initiatives, creating tensions between less literate users, and newcomers. A divide still exists between formal and informal learning settings. 'Alternative' scenarios using 'open pedagogy' approaches create challenges in terms of recognition of learning achievements and their accreditation. Existing power structures are still resistant to change and equality. For example, the study identified cases where users who were already computer-literate tended to 'colonise' new initiatives, creating tensions between less literate users, and newcomers. Funding and sustainability issues are a problem across many of the case studied.

The Mapping Study

The subsequent study 'Mapping and Assessing the impact of ICT-based initiatives for the socio-economic inclusion of young people at risk of exclusion' provides further insights into this 'landscape of inclusive learning', although it focused specifically on excluded young people and 'youth at risk'. The study looked at policies aimed at bridging 'lifelong learning' with social inclusion objectives. It identified over 200 initiatives using ICTs to support the social inclusion of young people in Europe and focused in particular on assessing the results and outcomes of these initiatives – 'what works, for whom, under what circumstances'.

Three key over-arching conclusions can be highlighted from this work. First, that the policy environment surrounding 'inclusive learning' is complex, lacking in cohesion and deficient in some important aspects. Second, that 'practices' involving the implementation of programmes and initiatives intended to support inclusive learning – and the theoretical perspectives that shape them – are also complex, fragmented and sometimes conflicting. Third, that the evidence base on 'what works' is poorly-developed and conflicting.

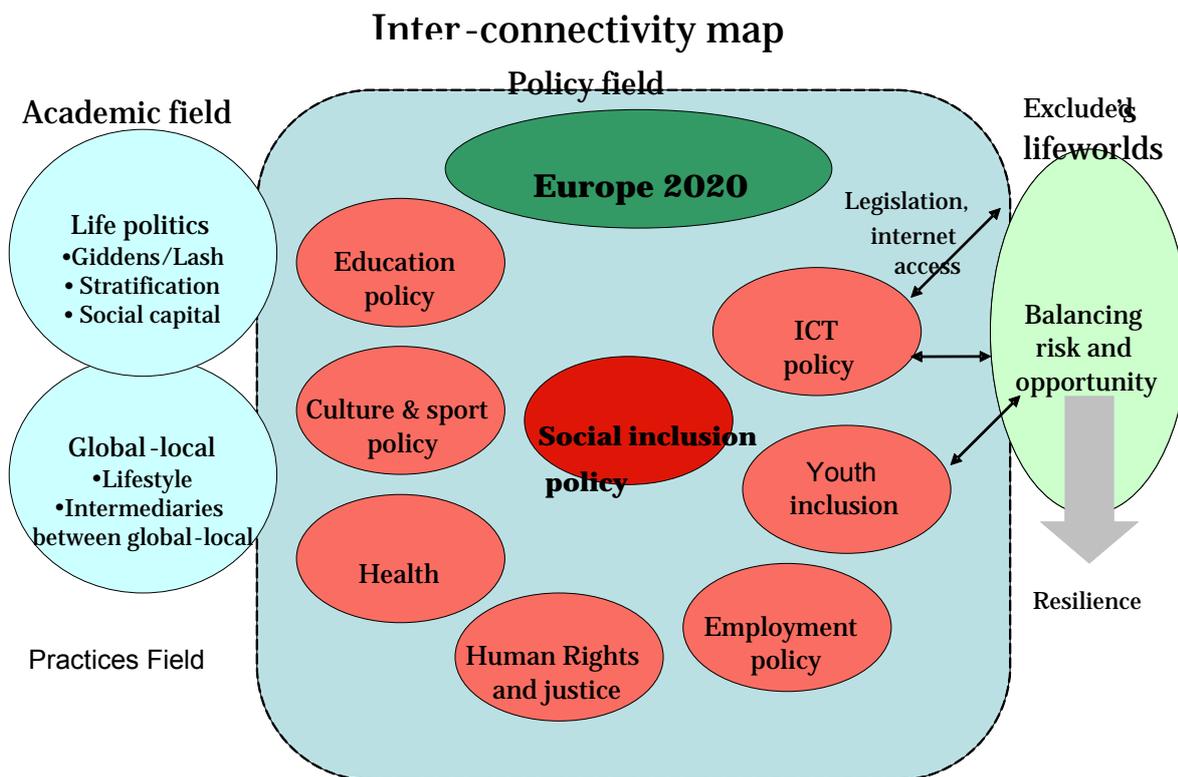


Figure 4: Inter-connectivity Map for inclusive learning

Figure 4 shows the inter-connectivity between the main policy fields that are driving 'inclusive learning' and their conceptual under-pinning. As the Figure shows, the policy framework surrounding 'inclusive learning' in Europe is complex. The main policy driver at the EU level is the renewed Lisbon agenda, with its focus on making the EU the most competitive economy in the world. This to some extent reflects a continuing emphasis on a 'human capital' model, though Figure 4 does show the extent to which policy has evolved to a more holistic approach involving 'joined up' policy implementation, in line with current theoretical perspective on exclusion as a multi-dimensional phenomenon. This is reflected in a range of policy agendas covering: education and training and the use of ICTs to support 'bootstrapping' through cultivation of digital literacy; supporting social inclusion actions through the use of the Open Method of Co-ordination; linking employment policy to digital literacy, and the promotion of creativity, entrepreneurship and innovation; linking inclusion agendas to policy and justice and human rights; promoting cross-cutting and joined up policy with youth policy, for example through the Youth in Action Programme; linking inclusion to participation, and the use of ICTs and Web 2.0 in new forms of e-government. However, although there has been this visible movement towards a more joined-up policy framework, there is still a sense that some areas of policy pursue 'parallel lines'. Whereas education and training policy links key agendas and goals in learning with inclusion policy, e-inclusion policy and ICT policy, the same cannot be said for employment, health and regional policies. Our analysis of the policy environment also found that the major sources of EU funding in fields related to 'inclusive learning', for example – the Lifelong Learning Programme; the 'Youth in Action' Programme; the 'Ageing Well' programme and the IST programme in FP7 – attach low priority to 'Learning for inclusion'.

Figure 4 also shows that the conceptual landscape around 'inclusive learning' is also complex. The landscape has been mainly shaped by four theoretical paradigms, drawn from social inclusion theory generally; from e-inclusion theory; from learning theory and from an emerging body of knowledge based on 'Web 2.0' conceptualizations. The theoretical positions that characterize these four paradigms are contested; the knowledge base is fragmented, and there is a lack of a sound evidence base on 'what works'. In social inclusion theory, opinion is divided into three camps: the 'structuralists', who emphasise the operation of structural inequalities, and the persistence of an 'underclass'; the 'social capital' perspective, which emphasizes community resources and the development of community resilience to combat exclusion; and the 'life politics' approach, which emphasizes 'risk' behaviours and the cultivation of individual resilience. In learning theory, the field has been dominated by constructivism, and a focus on developing collaborative systems that actively engage the excluded

as co-producers of knowledge. However, there is a counter-prevailing school which emphasizes context and 'pragmatism'.

Figure 5 shows a mapping of the 'practices' element of the 'inclusive learning' landscape, based on an analysis of the characteristics of EU initiatives using ICTs – particularly 'Web 2.0' – to support social inclusion.

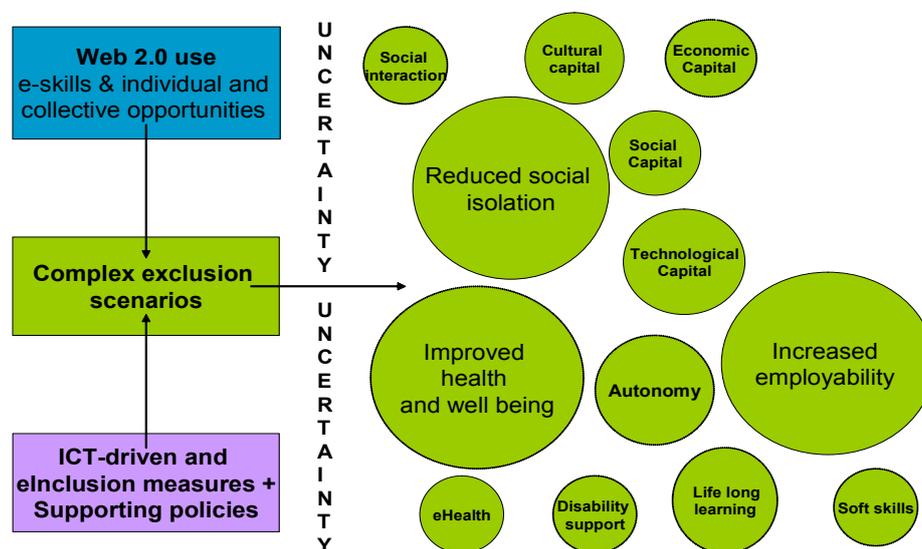


Figure 5: The 'inclusive learning' practices landscape

As Figure 5 shows, this landscape, mirroring the policy and conceptual environment, is complex and fragmented. It is embryonic, evolving and lacks an evidence base, thus contributing to a situation where the field displays many gaps and uncertainties in terms of objectives and goals. Three broad areas of practice can be identified, associated with reducing social isolation, improving health and well-being and increasing employability. Within this environment, detailed analysis of the specific objectives, target groups and activities addressed by the initiatives identified showed that five broad clusters of 'inclusive learning' practices can be distinguished. To some extent these represent relatively autonomous Learning 2.0 'spaces', with little overlap between them. They can be defined as follows:

- Personalised Learning Environments - the evidence does suggest the embryonic development of 'PLE's'. There were a number of initiatives identified in the review that exhibit a highly individualized approach to inclusion through learning, employing social networking technologies to support self-directed learning.
- Adult Learning – a primarily institutional learning space that targets adults with low educational levels and status, and which generally supports informal and non-formal learning albeit through formal settings such as training centres.
- Special Needs – a significant number of initiatives target distinctive target groups with particular profiles – mainly covering immigrant and ethnic minorities; people with disabilities; ex-offenders. The main inclusion approach aims at social re-engagement, using a variety of Web 2.0 tools and approaches.
- Youth at Risk – young people have become the main focus of attention for Web 2.0 for inclusion. The review identified a significant number of initiatives targeting a range of exclusion and at risk scenarios. A common feature of these is the emphasis on cultivating digital literacies.
- NEET – a distinctive sub-category of initiatives aimed at young people are those aimed at young people not in education or training (NEET). What is distinctive about this cluster is the more intensive use of novel forms of Web 2.0, like virtual reality environments, and the exploration of innovative forms of pedagogy, for example 'Notschool', that create new roles for both student and teacher.

It is difficult to take a measured view on the outcomes and impacts of these initiatives – ‘what works, for whom, under what conditions’ – because this study showed there is actually little robust evaluation carried out across the spread of initiatives analysed. This is because of a number of factors: the lack of an evaluation culture embedded in the domain (which leads to insufficient expectation to do impacts assessment; insufficient knowledge how to do it); the multi-dimensional and long term nature of social inclusion and the difficulty of measuring long term and complex impacts, and handling many intervening variables; the variable requirements of sponsoring and funding agencies in carrying out evaluations; pressure to report success.

Bearing in mind these limitations, analysis of the results of these initiatives suggested similar conclusions to those drawn from the preceding IPTS study. The analysis showed that the key factors affecting ‘success’ in terms of positive inclusion outcomes for at risk young people include: getting target groups motivated and then retaining their interest; accessing intermediaries with the skills necessary to deliver objectives; securing funding and ensuring sustainability of initiatives; ensuring that technical infrastructure and tools are regularly reviewed and updated; installing governance arrangements that give a ‘user voice’, whilst managing some of the issues that occur when young people from disadvantaged backgrounds engage with other young people from different cultures. Another key factor affecting success is strong and effective partnerships plus organisational buy-in to consistently support positive outcomes. The most ‘successful’ initiatives are those that adopt a ‘Learning for inclusion’ approach. This focuses on learning as a catalyst to break the cycle of social exclusion, by supporting personal development and active citizenship, with a strong involvement of trainers as intermediaries, and an emphasis on the use of multi-media, interactive games, video and audio applications and immersive environments as supporting tools to implement inclusion strategies.

LINKS-UP

The study ‘Learning 2.0 for an Inclusive Knowledge Society - Understanding the Picture’ aimed to further deepen understandings of ‘inclusive learning’ by carrying out in-depth case studies of twenty-four examples of initiatives using ‘Learning 2.0’ to support social inclusion. The results of this work was then applied to ‘action research experiments’ in six of these cases, in order to assess whether and in what ways the good practices identified from the case studies could be applied to support more effective ‘inclusive learning’.

The cases analysed reflected a representative spectrum of the profiles of inclusive learning initiatives identified in previous studies, covering: educational re-insertion; supporting disability; reducing social isolation; improving digital literacy. The case examples used Web 2.0 technologies in three main areas: communication and collaboration (blogs, social-networking); e-learning (e.g. Moodle); immersive environments (e.g. Second Life). The action research experiments, summarised in Table 1, in turn were chosen to reflect this spectrum.

Table 1: The LINKS-UP action research experiments

Name	Description	Target Groups	Learning tools 2.0	Main Inclusion objectives
Oasis Academy	Initiative based in North London, UK that provides workshops to encourage creative thinking and learning	‘Hard to reach’ young learners	Ning, Soundcloud, Tumblr, Vimeo	Improve high level digital literacy; increase self-esteem; increase social interaction
Web in the Hood	Stimulates citizens to connect, integrate, acquire skills and learn individually as well as a community, using ‘digirooms’ in Emmen, Netherlands	Residents of deprived neighbourhoods	Hyves, Facebook, online media sharing: Youtube, Flickr, micropublishing	Improve digital literacy; create community social capital
Brincast	Community centre for older people, Salzburg, Austria	Older people	Podcasting	Reduce social isolation
Nettilukio	‘Second chance’ on-line school for educational drop-outs, Finland	Teachers supporting ‘second chance’ learners	Wordpress, Buddypress	Improve teacher collaboration and more effective teaching for second

Name	Description	Target Groups	Learning tools	2.0	Main objectives	Inclusion
					chance learners	
G8Way	Developing 'proto-typical' transitional scenarios and 'personas' in transition (through story telling and analysis of 'real' life cases), Germany	Young people in transition from school to work	Social software		Increase success of at risk young people in labour market	
TRIO	e-learning platform of the Tuscany Region	Migrants and unemployed people	Google docs		Multimedia c.v. to increase employment opportunities for unemployed	

The results of the LINKS-UP study to a large extent confirmed and reinforced those of the preceding studies. We found strong evidence to suggest that Web 2.0 technologies, supported by innovative pedagogic methods based on 'co-production of knowledge', could have positive learning and inclusion benefits for excluded and 'at risk' target groups. The main positive outcomes identified were as follows:

- improved digital literacy generally, and improved 'higher level' ICT competence associated with using Web 2.0 technologies
- increased motivation to participate in learning, associated with supporting learning environments, through the use of ICTs, that were seen as more stimulating
- improved 'tactical' competences, for example in information-seeking and management
- some evidence of improving labour market prospects, for example through ICT skills accreditation, and through better c.v. presentation
- improved self-confidence, self-esteem and sense of 'empowerment'
- reduced isolation, associated with greater level and quality of social interaction

In turn, we found further evidence of the main obstacles to greater social inclusion through using ICTs to support 'inclusive learning'. The main constraints identified were:

- resistant organisational cultures: Learning 2.0 is not 'e-learning' and needs to be supported with new pedagogic approaches. These typically challenge traditional pedagogy, educational settings and teacher-student roles, and create pressures on resources that lead to institutional resistance.
- measuring learning gains and securing formal certification. Motivation and continuing learning engagement for the 'hard to reach' is significantly reinforced if their engagement is recognised and accredited. However, the novel nature of 'Learning 2.0' creates accreditation problems in a sector that is still dominated by traditional rules
- active participation of target groups, champions and supporting actors. Active collaboration of users is key to success, but requires them to take on correspondingly more 'responsible' roles as co-producers of learning. In turn, the role of committed intermediaries – like mentors and families – is critical to success.
- sustainability . Particularly in work with 'hard to reach communities', there is no point raising skills, and hence expectations, without the promise of a future environment in which to apply them. This is in turn linked to issues around funding for 'inclusive learning' initiatives.
- issues of technology access and flexibility. The appropriateness of the technology and tools is a key factor for the acceptance of the project activities and the success of the project as a whole. Initiatives fail because the technology is unreliable and hard-to-use, and because the technological support is not adequate.

Though instructive, these findings can be seen as rather reductionist. They define one particular narrative of the 'landscape of inclusive learning' as reflected by an analysis and categorisation of the

features of the activities that are happening on the ground in current state of the art. What they don't reveal is perhaps more illuminating. A striking feature of the landscape described above, is its lack of cohesion. What we see is a set of largely dis-connected actions carried out in a relatively autonomous way by disparate groups of actors working in, usually short, time and space-bound constraints. Although commonalities between these entities can be identified, in terms of visions of learning and social inclusion; use of tools; objectives – the overall picture is one of fragmentation. This, on the one hand, can be seen as a measure of the institutional and funding dynamics of the environment, in which initiatives typically work in short-term programmes using money provided by European or national agencies and donors.

However, this fragmentation can also be seen as a reflection of the domination of a vision of 'inclusive learning' that is itself reductionist. What most of the initiatives analysed in the studies reported above are doing is applying a 'theory of change' model that seeks to precipitate changes in the attitudes and behaviour of individuals, in the expectation that these individuals will somehow apply what they have learned in the future to improve their social, economic and psychological status. What is missing in the landscape of inclusive learning described above is a broader vision of 'societal learning'.

What we found in these studies are fragments of potential – embryos that provide a glimpse of the true capability of Learning 2.0, and the technologies that are now being developed that will succeed it, to act as a catalyst for the radical transformation of lifelong learning, and, ultimately of society. We find glimpses of this capability in the initiatives reported on above. But the learning that can be drawn from these initiatives is constrained by the specificity of the social, economic and cultural context in which they are embedded. Very few of the initiatives analysed in the studies reported above show more than a hint of the broader societally transformative capability of Learning 2.0. For example, a common feature of the more recent initiatives that are using Learning 2.0 to support social inclusion is the use of media-rich environments and social networking tools, blended with face-to-face 'creative' learning. 'FreqOUT!', implemented in London, uses ICTs to engage socially excluded young people aged from 13 to 25, inspiring them to tell their stories and giving them the opportunity to work with influential artists and industry professionals. Participants in this process gained specialist knowledge in web 2.0 technologies and advanced ICT skills (e.g. editing skills in specialist programs such as Final Cut Pro), or other technologies such as GPS. 'SpeakOut! ReachOut!' is a pan-European 'Youth in Action' project involving over 30 youth workers from NGOs and 142 young people from Stuttgart, Palermo, Toledo and Bucharest in the development of a four-language magazine where they present their articles and podcasts. The project trained participants in web design, audio and video recording and journalism. The 'e-Motion' project aims to reduce school drop-outs through cultural enrichment, by supporting the creation of music and art through the use of technologies. Though clear learning and inclusion benefits for participants can be attributed to these projects, evidence of more long-term, structural impacts they bring is hard to come by. Indeed, we found plenty of examples of 'negative multiplier' effects associated with such interventions, for example participants reporting that they could find no niche for their new creative media skills in a depressed labour market where the only jobs on offer were stacking shelves at the local supermarket.

One exception to this is 'Web in the Hood', one of the six action research experiments carried out in the LINKS-UP study. In one sense, the 'vision' of Web in the Hood presents a similar 'cultural logic' to the aforementioned projects. The main strategy of this initiative involves setting up 'Digirooms' in depressed communities. Digirooms are neighbourhood resource bases to support learning and social networking. They use Web 2.0 tools to help residents apply ICT in daily life via a website toolbox that enables them to tell their own stories about their lives. The main learning and inclusion objectives are to improve digital literacy, reduce isolation and increase empowerment. Participants become a kind of 'citizen journalist', supported by a neighbourhood media team, which stimulates citizens to connect, integrate, acquire skills and learn individually as well as a community, and by a professional reporter. In addition, 'animators', or 'social professionals' are recruited to create and support neighbourhood networks.

On the surface, with 'Web in the Hood' we see the typical kind of approach to ICT-mediated inclusive learning identified in other projects, one that is based on the blended packaging of media-rich learning environments and human support, in order to leverage personal empowerment. Yet there are key differences in 'Web in the Hood'. One is the 'scaffolded' dimension of the community-embedded approach. This encourages participants to develop at their own pace, using a steady drip-feed of support that evolves over time – in this case over the ten years the initiative has been in operation. Another is the strategic approach to developing social capital. Unlike many other initiatives that focus on 'individual' learning and personalised support, a key objective of 'Web in the Hood' is to make a

bridge between individual learning and the transformation of the community through creating a critical mass of collective learning. This links to another distinctive feature of the approach – the emphasis on ‘reflexive learning’. In this initiative, the development of ‘citizen journalism’ skills, and the dissemination of ‘personal stories’ are not ends in themselves. They are a means to an end. Through personal narratives, the aim is to get the participants to compare their own stories with those of their peers, so encouraging them to find similarities in experience, and to support community identity and ‘sensemaking’. In turn, this creates the seeds for common actions that in the future could lead to the transformation of the neighbourhood itself. More fundamentally, the act of critical reflection is intended to encourage people to change their mind-set, perhaps leading them from a narrowly-focused vision of their own lives and their own problems to a broader vision of the problems of their community and how these might be addressed and, ultimately to the complex challenges and their potential solutions in society at large. In some ways, the vision of ‘Web in the Hood’ could be described as a journey from personal introspection, to reflection, to practice and finally to ‘praxis’.

But perhaps the most important dimension of ‘Web in the Hood’, and what it can tell us about how to build ICT-based innovations to support inclusive learning for the future, is the ‘territorial’ dimension. Unlike many initiatives, which tend to work with the individual as the ‘unit of analysis’, Web in the Hood works with the neighbourhood as the unit of analysis. Each ‘Digiroom’ involves a core media team of six people and a core group of six ‘social professionals’. These work with around three hundred ‘direct readers’ – citizens who are actively engaged in developing content – who themselves play the role of ‘multipliers’, so that Web in the Hood ultimately aims to reach up to five thousand households in a particular neighbourhood, or around ten thousand people. This territorial embeddedness allows the Web in the Hood learning model and social inclusion model to become contextualised and adapted to respond to the structures and rhythms of the ‘lifeworld’ in those neighbourhoods in which it operates.

We know very little about whether and how this works in practice. But the last of the studies covered in this paper gives some clues.

The territorial dimension of ICTs for inclusive learning

The final study – ‘Methodology and survey on the relation between the socio-economic conditions of European Youngsters and their access, use and aspirations regarding ICT’ - developed and tested a methodology to assess how young people access and utilise ICTs. The first stage involved designing a survey instrument, using the results of a review of the research in the field, then validating the instrument using ‘cognitive interviews’. Following finalisation of the survey instrument, a small scale survey was carried out in three locations: London, UK; Barcelona, Spain and Cluj-Napoca, Romania. Sub-areas within these locations were selected to reflect a high incidence of social and economic deprivation – in Hackney, London; La Mina, Barcelona and in three districts of Cluj-Napoca. Just over 320 interviews in total were completed using the questionnaire.

Contrary to the prevailing view of many experts in the field, as reflected in the first part of this paper, this pilot survey did not identify high levels of ‘digital exclusion’ in these locations. Indeed, in all three locations, ICT access, usage and literacy is significantly higher for young people who are excluded or ‘at risk’ of exclusion than for the national age cohort or the EU age group, as Figure 6 shows, though this may be due to sampling error. One key finding of this pilot survey was that the young people in our sample used mobile phones just as much as computers to connect to the internet and communicate on-line. They use mobile phones and computers in three key ways: keeping in touch; everyday life and learning. The survey also showed extensive use of social networking sites by young people at risk in our sample.

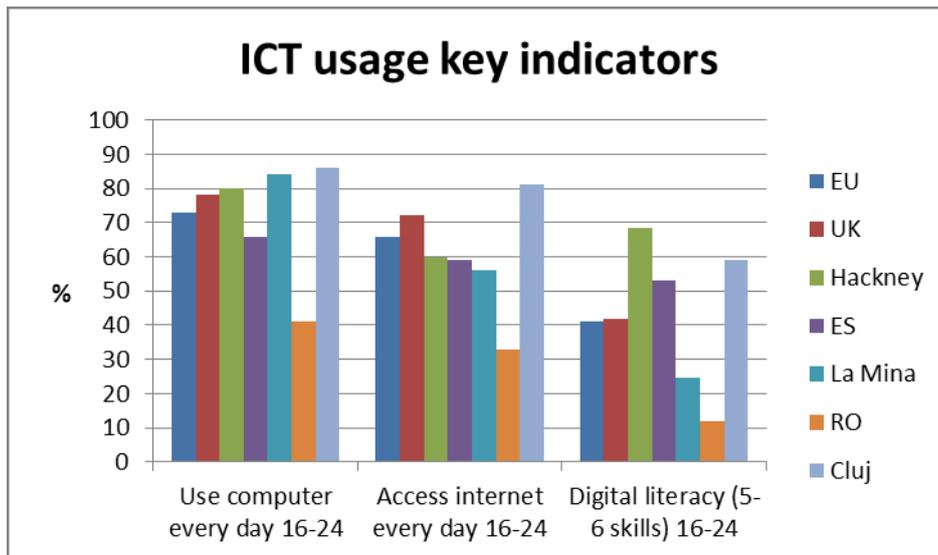


Figure 6: ICT usage in three urban areas of high deprivation

According to the survey results, ICTs play a significant role for excluded and ‘at risk’ young people in making sense of their ‘lifeworld’, in their social relationships, in their learning strategies and in how they construct their aspirations. Despite the overall high level of ICT access and usage identified amongst the sample population, the survey showed that social exclusion and exclusion risk factors are strongly related to ICT access and use; the lifeworlds and lifestyles of young people, and to their aspirations. On the one hand, the survey showed that a low level of computer access is significantly correlated with a high level of structural exclusion and a low level of digital competence. But we also found that the lower the level of ICT access and usage, the higher were the levels of community attachment and satisfaction, and aspiration identified.

Overall, therefore, we found no clear evidence to support a theory of ‘dual exclusion’ where social exclusion is reinforced by digital exclusion. The analysis revealed two broad categories of ‘young people at risk’ that can be linked to how ICTs are embedded in everyday life: the ‘techno-pragmatists’ and the ‘techno-immersives’ (Figure 7). The first category show high levels of structural exclusion, low levels of ICT access and usage and lower levels of aspiration. However, this group shows higher levels of community identity and social support; higher life satisfaction and lower levels of social problems. The first group were concentrated mainly in La Mina, Barcelona – an area of extreme deprivation, but one characterised by strong territorial cohesion. The second category show lower levels of structural exclusion, higher levels of ICT access and usage and higher levels of aspiration. However, this group shows lower levels of community identity and social support; lower life satisfaction and higher levels of social problems encountered. These findings could support the hypothesis that strong community cohesion and social capital supports the cultivation of ‘resilience’ for young people at risk and those who are socially excluded. Conversely, a high level of ICT immersion may be associated with lower social engagement and support; more individualism and more social isolation.

These are tentative hypotheses that require further investigation, and they highlight how poor our knowledge is on the territorial dimension of e-inclusion and inclusive learning. One of the few influential works in this field has been Manuel Castells’ trilogy ‘The Information Age: Economy, Society and Culture’ (1996, 1997 and 1998). Castells’ main argument is that a new form of global capitalism has emerged that is much more flexible than any of its predecessors. He suggests that societies are increasingly structured around the opposition of ‘the Net and the Self’.

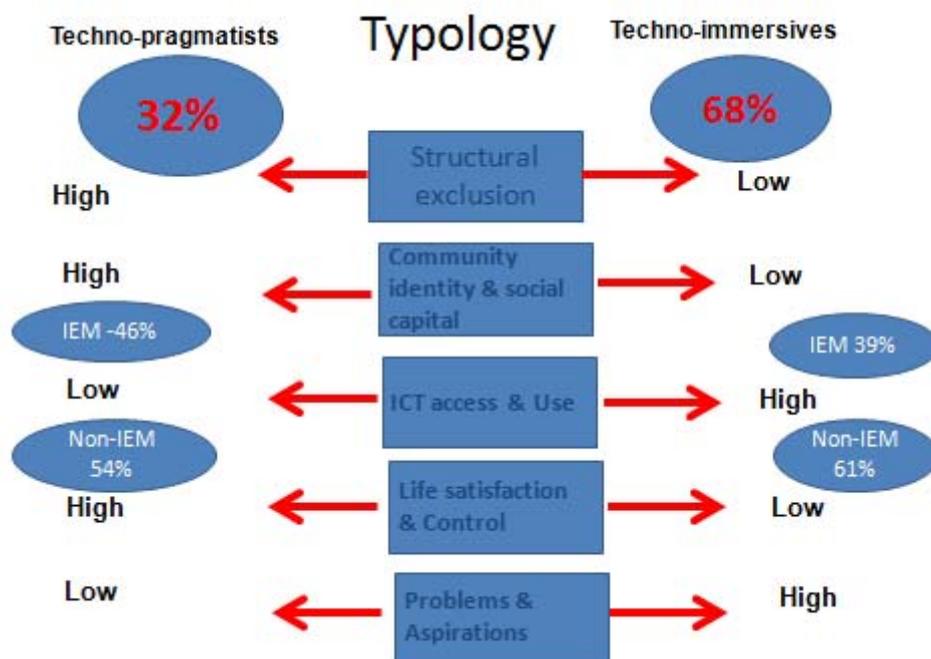


Figure 7: Typology of territorial e-inclusion

The Net stands for new organizational formations based on networked communication media. The Self stands for the activities through which people try to reaffirm their identities under the conditions of structural change and instability that go along with the organization of core social and economic activities into dynamic networks. Similarly, Stephen Graham⁴³ argues that, rather than superceding urbanity and urbanization with an “anything-anywhere-anytime” virtual economy and society, the Knowledge Society in fact complements urbanization, through what he calls ‘remediations’ of ICTs and the city. Graham distinguishes between what he calls enclaves of the ‘superconnected’ and the digital underclass, with little or rudimentary access to ICTs.⁴⁴ His more recent work looks at how the ‘sorted society’ operates. ICTs, linked to computer databases, increasingly sort users automatically, continually and in ‘real time’. The inherent flexibility of ICT-based sorting can allow enhanced functionality to be offered to those deemed attractive. At the same time, less attractive users and communities, or those deemed to be risky in any way, can be electronically ‘pushed away’.⁴⁵ Graham shows that measures of the “digital divide” based on ICT ownership are inadequate to depict the complex patterns of use and access to a variety of technologies. Respondents in poorer areas may not have access to Internet, but they often rely on neighbours, family or friends to provide access. ICT use is often more collective and collaborative, beyond the household level. In richer areas ICTs form pervasive infrastructures underpinning everyday life. In poorer areas, ICT use tends to be for specific purposes, which are recalled as discrete events marked out by their use of advanced technology.

With the results of the ‘LINKS-UP’ project and the survey of young people in deprived urban neighbourhoods, described above, we find illustrations of how these ICT-driven territorial ‘remediations’ work, but our data seem to suggest that the relationship between ‘Net’ and ‘Self’ picture is more complex than either Castells or Graham depict.

Conclusions and implications

The results of the four studies presented in this paper show that the ‘landscape’ of ICTs for inclusive learning is complex, embryonic, rapidly evolving and highly contested. In the absence of a robust evidence base, we know relatively little about ‘what works, for whom, under what circumstances’.

The policy agendas that are driving activities in this field show signs of moving towards a more ‘holistic’ position on social inclusion - one that fits the picture of its ‘multi-dimensionality’ – but policy

⁴³ Graham, S. *The Cybercities Reader*. Routledge; 2004.

⁴⁴ Graham, S. Bridging Urban Digital Divides? Urban Polarisation and Information and Communications Technologies (ICTs). *Urban Studies*. 2002;39:33-56.

⁴⁵ Crang, M., Crosbie, T. & Graham, S.D.N. 2007. Technology, timespace and the remediation of neighbourhood life. *Environment and Planning A* 39(10): 2405-2422.

still remains largely un-integrated, and the dominant driver focuses on a primarily 'human capital' view of lifelong learning.

Similarly, the conceptual landscape that shapes policy and practice is complex, evolving and contested with a number of theoretical perspectives – structuralism, constructivism, social capital and life politics – jockeying for supremacy.

The programmes and initiatives that are exploring how ICTs can support better learning for a more equal society reflect this political and conceptual turbulence. The 'practice' landscape is immature. It reflects small experiments that are necessarily time-bound and constrained by the programming framework in which they operate. The dominant 'vision' of practice mirrors to some extent the 'human capital' perspective in policy and theory, with its focus on labour market priorities. Interventions place emphasis on transforming the attitudes, behaviours and positions of individuals rather than on building community social capital or on addressing broader scale societal issues.

That is not to say that there is no innovation happening in the field. The studies reveal many examples of novel and creative applications of innovative 'Learning 2.0' approaches, typically involving media-rich environments and blended learning using new pedagogic approaches that emphasise the 'co-production of knowledge'.

It is also clear that these interventions are producing positive benefits for socially excluded and 'at risk' people through the application of innovative Learning 2.0 approaches and methods. The main benefits focus on: improved digital literacy and 'high level' media literacy; reduced social isolation; improved social and soft skills; improved strategic and technical skills to assist in improving labour market opportunities.

However, what strongly emerges from the results of these studies is a sense of untapped potential. Interventions in this field use technology and pedagogy in novel, creative and sometimes exciting ways, enabling individuals all over Europe to carry out their own experiments in 'self-re-invention'; to create and work with their own personal 'zones of proximal development'. But there is a strong sense that many of these interventions are self-circular. Getting people to use Ning and Vimeo to tell their own stories in accessible and refreshing ways is both worthwhile and empowering. But how far it takes them down the path towards further learning and employment is less clear. Even less clear is the extent to which and in what ways these personal liberations contribute to building resilience, cohesion and capital in the wider community, and how they can contribute at the national level – and beyond – to the profound problems that the globalised world now faces.

In essence, the true transformational potential of 'learning 2.0' and its future successors remains unrevealed. What is now needed is:

- a broader 'societal learning' agenda and conceptual framework for inclusive learning.
- a better understanding of the 'territorial dimension' of ICTs for inclusive learning, one that can de-construct the complex ways in which ICTs are used to engage with, make sense of and re-configure the 'lifeworlds' of bounded spatial areas.
- improved research methods and tools to allow more effective analysis of the outcomes and impacts associated with the deployment of new technologies and approaches for inclusive learning.
- a greater emphasis on using these new approaches and tools to surface and valorise creativity, entrepreneurship and 'hidden and latent' knowledge (including 'chthonic knowledge') within excluded and at risk communities.
- a radical review of the policy and funding framework that currently dominates actions in this field, with a focus on supporting long-term, sustainable programmes and interventions that are linked to clear 'intervention logics' and 'theories of change' that themselves reflect both grass roots and pan-European priorities and needs.

P2PU: Potentials for European Lifelong Learning

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Abstract

This paper introduces the Peer 2 Peer University (P2PU) project and discusses its viability for inclusive lifelong learning opportunities. The opportunity to increase European participation within P2PU is discussed. Specific challenges around language and communication of good practices are identified, with suggestions are made for ways to support and encourage European learners and communities wanting to learn with P2PU.

Keywords: peer-based learning, non-formal learning, inclusive learning, lifelong learning, localisation

Introduction

Founded in late 2009 and established as a Californian non-profit in 2011, the Peer 2 Peer University⁴⁶ (P2PU) formed as a “social wrapper for OER” (Open Educational Resources) [1] supporting distributed groups of peer learners working through open courseware together. In addition to refining approaches and technical tools for effective peer-based non-formal learning, P2PU has a strong interest in supporting peer-based assessment and new forms of accreditation and recognition such as Badges.

Based on free culture principles⁴⁷ and run with the help of volunteers, P2PU invites individuals to create and share their non-formal learning experiences with others in the forms of courses, study groups or free-form projects. Over 10,000 active users interact with the platform on a regular basis, with 30,000 users registered via the site [2]. Courses and study groups within the P2PU platform are offered free of charge and are publicly available and openly licensed, allowing anyone to view the progress and content of a course.

Sub-communities or P2PU Schools curate courses around specific topics such as web development or continuing education for teachers with learning opportunities tied strongly to work skills. Outside of the school structure, learners are free to create shared learning experiences about whatever they wish as long as they respect P2PU's principles and other learners.

The open access of P2PU offers learners across Europe an exciting opportunity to take control of their own learning, engage in learning experiences with people from around the world and increasingly, to receive recognition of their learning. However, challenges exist around language support and effectively identifying and communicating good practices for online peer learning to participants. This paper discusses schools and badged learning recognition within P2PU and expands on why localisation and communicating good practice may be problematic when trying to support inclusive learning across European contexts.

Methodology

This paper draws on the author's experience within the P2PU community as a volunteer and employee within the School of Webcraft, a sub-community of P2PU developed in partnership with the Mozilla Foundation. Where relevant this paper cites academic sources and these have been cited when appropriate, but much of the content of this paper is based on personal reflections and organisational communications about P2PU and is thus un-citable.

Discussion

P2PU supports lifelong learning opportunities within learning societies. By its nature it fits within the core models of these societies as identified by Frank Coffield, namely *skills growth*, *personal self-fulfilment* and *social learning* [3]. Curated learning opportunities such as the School of Webcraft (see) are geared towards offering courses and learning challenges based around skills growth and job-

⁴⁶ Peer 2 Peer University: <http://p2pu.org>

⁴⁷ “Free culture” in this context is used to describe social and cultural projects (both commercial and voluntary) which rely on both local and online participation, collaboration and processes of sharing and “remix” culture. Many free culture projects draw their inspiration from the processes and technology of Free, Libre and Open Source Software (FLOSS) and related projects such as Linux based operating systems, the Wikimedia / Wikipedia project and Mozilla's Firefox web browser.

readiness. Pure personal self-fulfilment as a motivation can also be satisfied, as participants are free to create learning experiences driven purely by interest. The peer-based nature of P2PU means that through the act of social learning participants increase their social capital as part of distributed and global communities of practice.

While it can be argued that P2PU is an active site for lifelong learning, it is important to explain some specific features of the project, namely Badges and Schools, and to consider what is required to make it an inclusive space for learners from Europe.

Badges: Assessment and recognition of learning

Early P2PU rounds encouraged a simple certificate approach to provide recognition for non-formal learning. Where learners had successfully completed required work within the course, the other course participants would confirm that they deserved a certificate [4]. P2PU branded T-shirts were also given to participants who completed courses. As the community grew this approach was seen to be impractical and costly at scale and an ineffective way of properly recognising and representing learner achievements.

Identifying new ways of providing meaningful feedback and recognition to non-formal learners have been an important discussion within the P2PU community from these early stages of the project [5]. In September 2010, a workshop was held to discuss good practice in peer-based assessment [6]. In November 2010 a related workshop around *badges* as a form of learning recognition was facilitated at the Mozilla Drumbeat Festival⁴⁸.

Badges emerged as the primary focus for P2PU's assessment and recognition program and are part of a bigger collaboration around open badging systems involving the Mozilla Foundation and MacArthur Foundation. Designed to support the needs of people learning across formal and non-formal contexts, badges can be created and issued by a range of authorities and for demonstration of differing knowledge and skills. In addition to declaring the achievement a learner has earned (eg. HTML Expert), badges include information about the issuing organisation and the assessment criteria and feedback provide greater detail. Badges support a range of assessment types and can be linked to relevant artefacts maintained in an online portfolio. In addition to providing improved ways of signalling achievements, the use of badges is also intended to track learning pathways, help learners build their reputations within professional and interest based communities and motivate learners by communicating the different types of badges to be achieved [7].

Earlier in 2011, P2PU and Mozilla Foundation ran pilot studies related to badging and assessment within the School of Webcraft (see) using a range of web developer skills as the test badges [8]. Other badges were developed by P2PU community members using the pilot study tool, but were not part of the analysis [9]. Further implementations of the P2PU badging system will connect to a larger Open Badges⁴⁹ infrastructure being developed by Mozilla Foundation and launched in beta-phase in September 2011.

P2PU's involvement in the establishment of the badge model is exciting for European learners as it provides them with the opportunity to earn recognition for many types of learning. The use of badges is also an exciting opportunity for organisations within Europe who may wish to become issuers and develop criteria for their own badges, regardless of whether they use the P2PU platform or connect directly to the Open Badges system. Badging systems may also make it simple to offer localised versions of badge criteria (e.g. Spanish and Greek translations of HTML Expert) allowing European learners to access and earn badges that are recognised internationally.

Badges, as with the general P2PU project are still in their foundational stages, but appear to be an exciting model for validating lifelong learning. While it may be some time before badges are implemented on a larger scale across many disciplines and skillsets, P2PU is one of the initial organisations exploring this initiative and it is within P2PU Schools that much of the exploration takes place.

P2PU Schools

In mid-2010 P2PU established its first school, the School of Webcraft⁵⁰, in partnership with the Mozilla Foundation, the organisation behind the Firefox web browser. The School of Webcraft was created with the explicit goal of supporting learners wishing to develop job-readiness, to "offer skills and

⁴⁸ Mozilla Drumbeat Festival Badge Lab: https://wiki.mozilla.org/Drumbeat/events/Festival/program/activities#Badge_lab

⁴⁹ Open Badges: <http://openbadges.org>

⁵⁰ School of Webcraft: <http://p2pu.org/en/schools/school-of-webcraft/>

certification that build careers around the open web” [10]. The badges described above provide the main focus for certification within School of Webcraft.

The responsive, or “on-demand” learning opportunities that P2PU-style flexible learner driven courses can offer are particularly relevant for web developers regardless of their skill level. Many web developers are self-taught to begin with, and they all have to update their skills continuously to keep pace with changing web standards and new technologies. Web development provides strong examples of a career where it is the norm it is to have “learning as a permanent feature of social life” [11]. As such, the Webcraft project presents a potential case study for exploring how the P2PU model could be applied to other learning contexts where learners need to update their skills as part of increasingly transitional lifestyles.

Other schools have formed within P2PU, including a School of Social Innovation⁵¹ organising courses around sustainable business practices, and the School of Ed⁵² which provides K-12 teachers with professional development. P2PU welcomes ideas and support for the development of new schools, which can be organised by volunteer effort or supported by funding. While all Schools offer learning opportunities that are relevant for learners in European contexts, the School of Webcraft can best provide an example of the difficulties encountered when trying to develop communities of non-English learners.

Early roadmaps for the School of Webcraft proposed that localised communities could be achievable within a year offering regular courses and study groups in over 6 languages by the third quarter of 2011 [12]. However, establishing localised communities for the Webcraft project proved challenging as in part this relied on localisation of the greater P2PU project, which in itself is a difficult undertaking (see).

Course specific translation challenges were also apparent as many recommended learning materials about web development weren't available in languages other than English. Despite P2PU's commitment to using openly licensed content that is legal to “remix” into other languages, translation of this type requires a significant effort and a committed volunteer community [13]. While the intended large scale localisation of the Webcraft community wasn't possible, some Portuguese and Spanish web development courses were organised spontaneously, suggesting that over time larger communities could be established⁵³.

Initial attempts to create non-English communities around specific topics and content didn't prove possible in early stages of the School of Webcraft. Yet it is apparent from the Portuguese and Spanish courses, that P2PU can be engaging space for non-English learners. As discussed further in, in order to support greater involvement from non-English speaking audiences, partnerships with organisations in target regions may be an effective way of communicating and supporting localisation initiatives for P2PU.

Challenges for inclusive learning

Communicating the P2PU Learning Model

P2PU initially invited volunteers to organise 6-week courses based on existing openly licensed materials such as Poker and Strategic Thinking⁵⁴ and Environmental Restoration⁵⁵ with all courses running at the same time. In early 2011, the decision was made to move away from a semester-like round structure which limited courses to specific dates and to support more courses as well as free-form study group formats [14]. Removing specific start dates made it more convenient for volunteers to schedule courses around their work and personal schedules, however it also made scheduling orientation activities to assist organisers difficult.

Many people volunteering to lead and organise courses and study groups with P2PU have some experience teaching or facilitating learners in more traditional contexts, but most organisers have no experience as educators. The peer-based learning goals of P2PU make it difficult even for experienced educators to structure and facilitate learners through a course-type experience and maintain an appropriately egalitarian approach. As Vanessa Gennarelli, a P2PU course organiser reflected on her personal blog “I think where I've misstepped as a facilitator is when I've relapsed to a traditional teacher-student instinct” [15]. For P2PU to truly engage learners in effective peer learning, it

⁵¹ School of Social Innovation: <http://p2pu.org/en/schools/school-of-social-innovation/>

⁵² School of Education (pilot)<http://p2pu.org/en/schools/school-of-ed-pilot/>

⁵³ Grupo de Estudio JavaScript (Madrid): <http://p2pu.org/en/groups/grupo-de-estudio-javascript-madrid/>

⁵⁴ Poker and Strategic Thinking: <http://blogs.p2pu.org/poker/>

⁵⁵ Environmental Restoration: <http://blogs.p2pu.org/afforestation/>

is important that facilitating a course or study group through to its conclusion is something approachable and understood by all participants, regardless of their previous experience.

Previous discussions of informal peer-based learning exist, such as Eisen's description of workplace peer-partnerships [16], or informal web-based learning between peers as described by Ito [17]. Discussions of peer-based learning within P2PU must build on these to explore and explain what it means for amateurs to peer-organise non-formal *courses*. Attempts to clarify an approach to peer-based learning for an online course context such as P2PU have been discussed by Corneli and Danoff in papers discussing their concept of *paragogy*, a peer-based form of andragogy [18] and by the author [19].

While Corneli and Danoff's work is only beginning to explore what a paragogy may be, they emphasise that future implementations of paragogical design should pay specific attention to:

1. establishing group consensus of a social contract
2. shared development of learning goals
3. clear processes for assisting and instructing peers
4. explicit pathways for learners to give feedback on the process and learning environment [18].

Potential ways that these recommendations could be realised in practice may rely on "recipes" inspired by facilitation techniques such as open space and the unconference or Barcamp model [19].

As learning in P2PU may take many different forms and experimentation is encouraged, the term "best practice" does not seem applicable, instead, the term "good practice" is consciously used. Facilitation methods that work in one group learning experience may not translate to different situations, so developing case studies of successful approaches and effectively communicating them to P2PU participants is important. Support and advice on good practice and case studies for course organisers are both difficult to identify and communicate, particularly as the organisation is young and its core approach still emerging. P2PU does offer technical support about its custom platform, but this has overtaken earlier efforts to create a simple handbook about organising groups [20].

Based on the author's personal experience, deeper exploration and reflection on good practice within P2PU are not yet being effectively structured and invited from course organisers. In particular there is as yet no approach for identifying and archiving the blog posts and mailing list threads where these discussions do take place, nor has research such as Corneli and Danoff's been responded to in any depth. This situation will be resolved as the project matures, however, in its current fragmented format, finding out about good practice within P2PU remains challenging for English speaking users, and especially difficult for learners wishing to participate in other languages.

Communicating relevant advice to participants may best be responded to by improving orientation and training opportunities around facilitation and ensuring such training carries incentives and external recognition for participants such as badges. Such orientation, reflection and training would be subject to frequent revisions but by being structured into a course format of its own, would simplify localisation into languages other than English.

Translation and Localisation

One of the most exciting things for many P2PU participants is that they may share a learning experience regionally and globally. Practically, this is made easier because the *lingua franca* of the volunteer community is English. In order to effectively expand the P2PU experience to other language communities the community needs to identify ways to support and include non-English community members.

In order for learners across Europe to effectively engage with both the technical and social learning opportunities P2PU offers, it is important that they can do this in languages they feel most comfortable in. Like many open source projects, localisation of the P2PU platform and content relies on volunteer translation efforts. Currently the project only supports English and Spanish, reflecting the strong involvement of participants from North America (see Fig. 1) [21].

For effective intercultural operation of P2PU it is felt that in addition to a localised technical platform, non-English learners should be supported by a sub-community that communicates in the same language. Language specific groups need to have strong bridging representatives to the core community so that experiences and information can be shared across communities [22]. One of the specific disadvantages for isolated European learners wanting to learn within P2PU in their native language is that besides Spanish, no language specific communities currently exist.

A potential way to encourage translation and greater European learner involvement within P2PU would be to identify project partners and search for funding to support project “ambassadors”. These

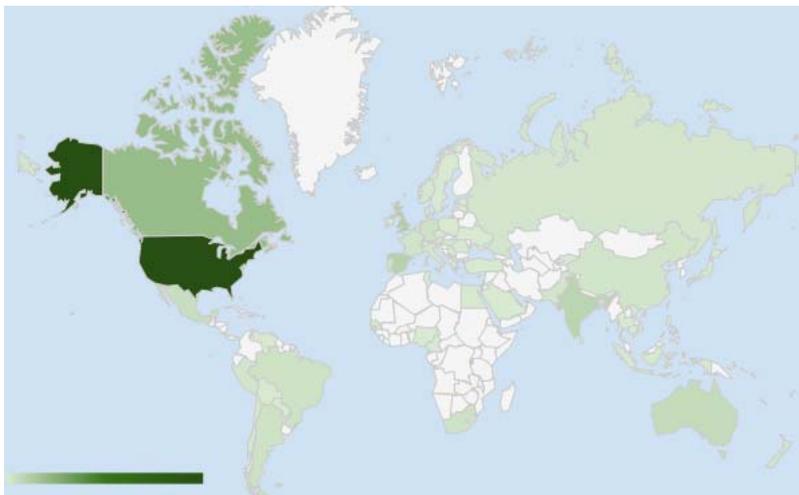


Figure 1: Global distribution of P2PU survey participants

ambassadors would communicate the P2PU message and goals to local learners and report back to the main P2PU community. As part of building language specific communities these community activators would help research, communicate and refine the methodology for organising and participating in peer-run courses and study groups.

Conclusion

P2PU is an active space and community offering social learning opportunities for individuals to develop job skills as well as explore their personal interests. The organisation is formally less than a year old with another year of informal existence before that, but is already exploring innovative ways of recognising learning. P2PU schools provide a space for organisations and communities of practice to support curated learning opportunities around specialised topics.

As online peer-organised course-based learning is still a young space for research and practice, there remains much work that needs to be done clarifying and communicating good practice to participants. Communicating and refining recommended practices is seen as an important element in growing and supporting the community of learners.

The P2PU community is global but primarily operates in English. In order for increased use of P2PU by European learners it is felt that specific effort should be put into promoting and supporting the development local user groups.

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WHAT IS THE “E” IN “E-LEARNING REALLY FOR?

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Abstract

This paper outlines a story of how e-learning has been used to bring employability skills to hard to reach learners. By using e-learning as a catalyst to align regulation to a qualification Learning Light has been able to develop a unique employability programme that engaged effectively with hard to reach learners and also produced significant environmental benefits.

Keywords: e-learning, engaging, effective, environmental, employability

Introduction

Sheffield-based Learning Light was established in 2005, and launched in early 2006 as a centre of excellence in the use of e-learning and learning technologies in the workplace. Our knowledge base contains over 400 papers offering insights and advice on how to use e-learning & learning technologies. Learning Light worked closely with the Universities of Leeds and Sheffield, and has undertaken a Systematic Literature Review of the available papers on the “effective use of e-learning in the workplace” in conjunction with the University of Sheffield. We have made several academic peer reviewed publications working with our University partners.

The company successfully delivered two large contracts worth over £2.5m (one funded via ERDF) on behalf of Yorkshire Forward (the RDA for Yorkshire and the Humber) to support the growth of the regions e-learning companies. Initially our focus had been on working with developers of e-learning (and it is something we still do on a commercial basis) to create improved business performance, and indeed we supported companies and created over 40 jobs in 2010 in Yorkshire.

However, the company increasingly realized that the real stimulus to grow the e-learning market required greater effort in the promoting the innovation that e-learning could offer to potential users of e-learning. It was from one of these “interventions” that our interest grew in working with hard to reach learners, and unlocking the power of e-learning to create employment. This is our story:

It's over three years ago now that Learning Light in association with Active Recycling embarked on the journey of creating an e-learning programme to support the Disassembly of WEEE (Waste Electrical and Electronic Equipment) using sustainable energy efficient materials recovery techniques that originated in Japan.

Peter Murphy, MD of Active Recycling had visited Japan with a DTI Global Watch Mission to see how the Japanese dealt with waste electrical and electronic equipment (WEEE) or what is often called e-waste, and was deeply impressed with the methods used. Japan is small country with a large population, and the possibility of land-filling waste in Japan is not really an option!

Peter was determined that the UK should begin to adopt the methods developed in Japan to offer a close to zero landfill solution for WEEE that has to go for recycling, and furthermore felt that e-learning (learning with strong environmental benefits in itself) was the way forward

Whilst the “e” in e-learning does not usually stand for environmental, (it is usually short for electronic, but engaging, effective, enhanced, empowering and extending have also been claimed), in this case it does, the “e” is firmly for environmental.

The other major challenge that would impact upon this project was that the disassembly work using this Japanese approach was to be carried out in two of Her Majesty's Prisons! This proved to be a significant challenge (and a particularly rewarding experience) for the learning design team at Learning Light.

e-learning has been widely used across education and industry in the UK, though our research tells us that it is still only a small part of the overall training budget spend of many organisations, typically we believe that the UK's corporate e-learning expenditure is no more than 15% of the overall expenditure on training (1).

In the context of the prison service, e-learning was a new phenomenon completely.

Methodology

The learning challenges were considerable and complex, and we really had to work hard to develop our understanding and approach as to how e-learning could meet a number of different requirements in an “interesting” learning environment with hard to reach learners.

Learning challenge 1

Active Recycling who are a commercial organisation, required that the prison workforce to disassemble the waste electrical and electronic equipment (WEEE) to a specific standard to maximise its recycling value.

Learning challenge 2

The WEEE directive is a very prescriptive piece of EU legislation, which along with the regulatory authority – the Environment Agency (EA) puts quite prescriptive requirements upon the “processing” of WEEE.

Learning challenge 3

The prison authorities NOMS (National Offender Management Services) required that the learning programme will deliver a recognised qualification.

Learning challenge 4

NOMS are required to support offenders into work on release from prison to reduce re-offending rates, and seek to prepare offenders with practical work based skills.

Learning challenge 5

The majority of offenders have not achieved high educational results; indeed many have learning difficulties and are resistant to learning.

Learning challenge 6

The learning environment of a prison is constrained and the understanding of e-learning amongst prison staff and tutors is very low.

We used Nunes and McPherson’s “General Education Systems Design”(2) as our overall approach, and Michael Allen’s (3) model of “Successive Approximation” in preference to the more widely known “ADDIE” model. (– Analyse, Design, Develop, Implement, Evaluate) to deliver the e-learning design component.

We have always been concerned that ADDIE leaves evaluation to the very end. Given the complexity of the learning challenges we needed to address it was important that we tested that the learning under development was meeting key stakeholders requirements, and learner requirements as we progressed.

We did not believe that a brief at the beginning of the project would be able to sufficiently capture all stakeholders inputs, and given the low level of knowledge of stakeholders the desire to contribute and “change things” would only grow as a project unfolds, hence we believed that “successive approximation” – or “making useful mistakes early” would be the best approach.

Indeed our work as consultants in the e-learning industry often sees projects failing because the development methodologies used do not reflect the dynamic nature of input from stakeholders as the power of *engaging and effective e-learning* suddenly comes apparent to them!

Our principle and most important step was the building of a demonstrator of one simple element of the course, and we used this to achieve buy in from all stakeholders. This is a technique we borrowed from the video games industry – and is termed a “vertical slice” as it represents all elements of the learning course.

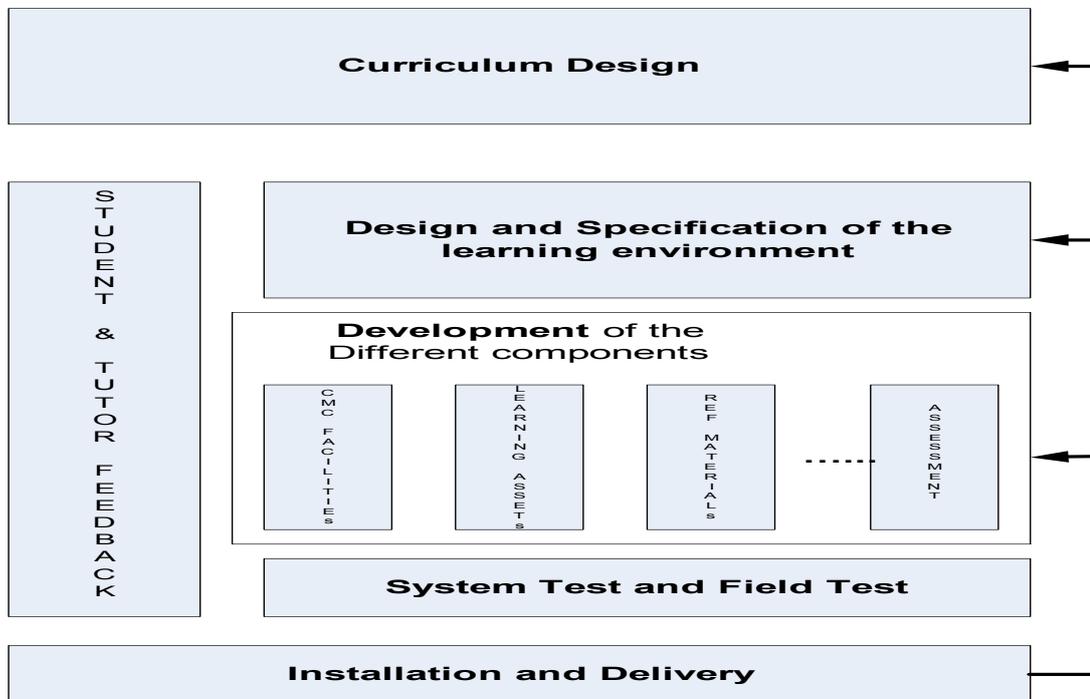
In 2010 Learning Light was able to launch the UK’s only qualification – Recycling Operations (WEEE), at National Vocational Qualification (NVQ) Level 2 (now QCF), delivered by e-learning and work based assessment.

This unique piece of e-learning is designed to deliver both a qualification that is mapped to a regulation and provide the learner with a thorough understanding of the environmental impact and benefits that they can make by following the principles of the learning.

Results and discussion

The model proposed by Nunes and McPherson worked well in that it gave shape to the overall framework within which we operated:

Adapted from Nunes and
McPherson (2003)
General Education
Systems Design



We broadened the feedback elements beyond student and tutor, but did give particular importance to the views of the learner.

Listening to the learner

This is an extract we first published in ALT's newsletter (4): "Working with offenders was a new learning experience as well. This was to be a particular challenge. We very quickly became aware of an ambivalence or unwillingness toward learning amongst the offenders we worked with.

Conversations with "the lads" very soon highlighted that learning had not been a good experience to date. School had not been a happy place, and much subsequent learning had not been of meaning and value. Prisons are tough places and the banter can create difficult learning environments.

We are the first to admit that these findings are based on observation and are purely anecdotal, but proved invaluable in how we positioned and developed the learning.

Tests of the e-learning very quickly illustrated the real reluctance of "the lads" to engage with the e-learning. The e-learning and computers (to some) were a threat. We quickly understood that the learner was afraid that their literacy and numeracy would be challenged, and this would prove embarrassing!

For some the ICT was also an issue, and they were uncomfortable with this as a learning environment. Key boards and mice were not familiar environments.

At this stage we were somewhat fortunate as the iterations we were trialling were "instructional modules" illustrating how to complete a task in a tell me - show me – help me mode. The learning did not challenge the literacy or numeracy of the learner. Word quickly spread among the learners that this was actually interesting learning, not threatening learning! This was indeed considered learning with a purpose, learning that could make a difference.

It is important to recognise, that at this stage we were tasked with developing learning that instructed learners how to disassemble old ICT equipment, as part of the work based learning environment. However, this was just the beginning of the challenge.

It is important to remember that the initial requirement was for a waste processing methodology that met the WEEE directive, and was suitable for deployment in a prison based environment.

However and very quickly the learning became valued by the prison training team and well received by the learners for other reasons. Both very quickly appreciated the nature and value of the disassembly work being undertaken and that they were acquiring a skill that could really improve their chances of employment on release.

The knowledge and expertise that was brought allowed the introduction of an e-learning programme that would let the learners be in control of their own learning and progress at their own pace. This was very important finding, as prisoners have very little control of their lives on a day to day basis. This allowed for a much higher level of receptiveness to the learning and the work based learning component.

Valuing the skills and instructions in the context of making a difference to the environment was considered to be important, as was the role of e-learning directly supporting the working environment

The impact of this project has not only been in the engaging quality of the e-learning experience delivered – feedback has been universally positive, but in the success of the e-learning in producing high quality clean waste that can be recycled in a manner envisaged by the WEEE directive. Furthermore, prisoners are now requesting to work in the disassembly workshops

Learners are now able to identify, grade and separate a wide range of plastics, metals, circuit boards, glass and other components found in printers and PCs as part of the disassembly process undertaken in the workshop. From a 7 kilo printer less than 2 grams of plastic film will go to landfill using the disassembly methods taught by e-learning modules.

More importantly, learners can now clearly outline the WEEE directive, are aware of its importance to the environment, and can confidently “talk the talk”, greatly enhancing future employment opportunities.

And by the way...one pilot at one prison workshop was evidenced to have delivered total CO2 savings of 450.2394 tpa. e-learning really is about environmental benefits in so many ways!”

Successive Approximation in our view as an e-learning development methodology was crucial in allowing engaging and effective e-learning to be developed, the challenge we faced was overcome by being able to manage both the input of learner and of other key stake holders into the development process.

The “General Education systems design” model allowed us to illustrate very clearly to all stakeholders the overall approach being taken, and their specific role in the project, and provide assurance of their involvement.

There is no doubt in our view that e-learning can play a crucial role in contextualising difficult problems – that of bringing a regulation to align to a qualification, while developing a disassembly methodology that met a commercial requirement.

Learning Light is now an approved centre delivering qualifications into the waste, recycling and environmental services industry. We are now contracting with NOMS to prepare offenders for a career in the recycling industry, with e-learning acting as our catalyst for engaging learners by providing effective learning that delivers major environmental benefits as well!

Conclusions

The e in e-learning is more than for effective and engaging; If the correct learning value chain can be developed to align to specific industry and regulatory need, e-learning can prove to be a very effective catalyst for employability development programmes and in our specific case bring environmental benefits as well!

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Chapter 3

Introducing innovation in the learning environment (Plenary 3)

IMMERSIVE TECHNOLOGIES, LEARNING AND RURAL DEVELOPMENT

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Abstract

Rural and remote communities have been amongst the hardest hit by global developments in Information Communications Technologies. Globalisation has impacted these communities and caused a loss of services and jobs as the internet revolutionised commerce and communications. There have been a number of initiatives over the last decade to explore how emerging digital media technologies and applications can support lifelong learning and rural development.

This paper reviews some of these initiatives at UK and European level and explores how the latest generation of immersive technologies which include video games, virtual worlds and social networks can reverse some of the trends of previous years and act as an engine for innovation and growth in these more remote areas.

The projects to be discussed include the Community Commerce and Knowledge Network (ComKnet) and Harborough Community Learning Network projects which were UK regional development initiatives based around community learning networks in rural environments, and the European Rural Development by Education project (ERDE) Grundtvig 2 mobility project which involved partners from the UK, Poland, Lithuania, Hungary, Austria and Germany. All of these projects were focused on Lifelong Learning and the use of ICT to support the social and economic development of rural communities.

Examples of innovative uses of technology within these projects included “The Radio with Pictures Show” which combined community radio with web and tele-conferencing technologies and the Virtual Pub Quiz in which village pubs in remote rural communities competed against each other on line.

Today there is a new generation of immersive technologies which arguably have even greater potential to unleash the talent which exists in rural settings and can support many different kinds of applications for community social and economic development. Building on the experience of earlier projects, this paper explores how immersive technologies can harness local resources in new and innovative ways.

Keywords-component; Immersive technologies, e-learning, rural development, serious games

I. Introduction

Today's globalised information age has created unprecedented challenges and opportunities for society. Individual citizens with access to the internet have the tools to not only obtain goods, services and knowledge in new rich and on-demand ways, but also the ability to communicate their own experiences, knowledge, desires and emotions to a global audience.

This phenomenon has been called the “Prosumer Revolution” because it provides unprecedented access to technologies which not only facilitate **Consumption** of goods, services and knowledge, but also the **Production** and dissemination of knowledge, services and goods to a global audience. Whilst disruptive communications technologies have been commonplace in mankind's history, including Roman roads, the printing press, canals, railways, radio, telephony, cinema and television, all previous communications revolutions have always disrupted consumption patterns without empowering individual citizens to produce and disseminate information on a mass scale with the infrastructure to reach a global audience.

These developments, driven largely by the internet, have had a major impact on communities and the social relationships which sustain all aspects of society. The traditional and long established hierarchical relationships which governed the way we live, work and trade with each other have been broken down in a process of “disintermediation”, creating new ways of doing almost everything in our daily lives. The impact of these changes has probably been most deeply felt in rural communities which have suffered the loss of the kind of facilities and services which form the bedrock of their lives including local shops, transport, banks, post offices and schools.

II. Mass mitec and the mmdp



Mass Mitec Offices in rural Leicestershire

It was against this backdrop that a rural SME in the UK became involved in the initiatives described in this paper. Mass Mitec, founded by the author in 1984, was a high technology SME based in the village of Lubenham in the East Midlands of the UK. Their office location was about 2 miles outside the town of Market Harborough, a very traditional market town with a mixture of small businesses and one or two larger companies. The village of Lubenham had no real indigenous business apart from farming and from the time Mass Mitec located the business there in 1988 in a converted barn to the present date, Lubenham has lost its shops, garage, and post office as victims of globalization.

The nature of Mass Mitec's operation within business presentation graphics and collaboration technologies meant that telecommunications played a vital role in the delivery of services to customers with a consequence that Mass Mitec's customers were literally all over the globe with quite a number of corporate clients in the UK. However, somewhat paradoxically, there were none of the bigger companies in Market Harborough who chose instead to go to larger cities like London and Birmingham to acquire the same services that Mass Mitec could provide on their doorstep. It was this challenge of developing a more local customer base to counteract competitive forces in Mass Mitec's sector that led the author to submit a proposal to the UK's Department of Trade and Industry as part of the Govt's Multimedia Demonstrator Programme (MMDP) designed to stimulate the use of multimedia technologies within SMEs.

Mass Mitec submitted a consortium bid for a project known as ComKnet (Community Commerce and Knowledge Network) based on the development of web-based services designed to encourage knowledge sharing and trading within rural communities typical of Mass Mitec's region in the UK. The proposal was based on the premise that every community has untapped human potential which might be harnessed by modern technology and thus challenge the negative effects of globalization.

The consortium bid was successful and the project started in 1998 by using the web search engines to find local community champions to act as a foundation of the network and focal point for knowledge sharing.



Bigfern Community Web Site for Market Harborough

It was this initial desk research that discovered an existing community portal web site for Market Harborough which contained many of the features planned for the ComKnet project. The Bigfern web site represented a possible competitive challenge to Mass Mitec's business but the webmaster of Bigfern was invited to a meeting to discuss involvement in ComKnet and potential collaboration opportunities.



Bigfern webmaster Frank Bingley – local milkman

It came as a big shock to learn that this web site had been developed by a local man who delivered milk every morning and who had taught himself everything he needed to know to build his computer and create this web site which contained many of the elements planned for a £250k Govt funded project.

III. The comknet project lesson

The ComKnet project had established, through the discovery of milkman Frank Bingley and other local talent such as a senior BBC cameraman based in Lubenham and a "Harry Potter" video special effects expert based in nearby Market Harborough, that modern communication and collaboration technologies could not only help to identify local talent but could also empower citizens with knowledge and skills that they could use not only for their own benefit but also to support the sustainable development of rural communities.

The ComKnet project acted as a gateway for Mass Mitec to engage with the international community to share experiences and expertise in the use of learning and collaboration technologies for sustainable rural development. Over the two years spent developing ComKnet, it became clear from the other projects presented at social enterprise conferences around the world that the ComKnet phenomenon of local talent engaged in community development is far from unique with many examples from across the globe in places as diverse as the Peruvian jungle, Indian rural communities and Alaskan herd dwellers.

IV. The radio with pictures show



The Radio with Pictures Show

In many international projects, community radio had played a large role in rural community capacity building and learning. As a follow-up to the ComKnet project, Mass Mitec devised a further project called the Harborough Community Learning Network, a component of which was a community based radio program which brought together local, national and international community technology practitioners in a series of breakfast radio chat shows which combined community radio with virtual classroom and teleconferencing technologies to share knowledge about how these technologies could support community development and lifelong learning.

Each morning's radio programme was based on a different topic relating to the use of ICT for development activities such as Education, Innovation, Disability and the Ageing Society. This project connected the rural communities of South Leicestershire with other communities across the globe and acted as a valuable demonstrator for the power of this "mash-up of related technologies for building learning and trading relationships across international boundaries.

The power of radio and telecommunications technologies was also amply demonstrated in another annual event called Global Learn Day, organized by a social entrepreneur called John Hibbs, Founder of the Benjamin Franklin Global Education Institute based in San Diego and committed to use technology for education that can be accessed by as many people as possible whatever their level of connectivity. Both Global Learn Day and the Radio with Pictures show reached some very remote locations, including the Arctic Circle via Satellite Radio.

The Radio with Pictures Show was another example of how emerging and established communications technologies can come together in support of learning and collaboration activities which can be accessed even by remote rural locations.

V. The grundtvig erde project

The exposure gained by both ComKnet and the Harborough Community Learning projects led to Mass Mitec and the author of this paper to be involved in a European funded Grundtvig project called ERDE (European Rural Development by Means of Education) with partners in Austria, Germany, Poland, Lithuania, Hungary and the UK. ERDE was a mobility project designed to share best practices across Europe for lifelong learning initiatives based in rural areas.

The common theme for virtually all of the European projects was a community learning centre as a hub of rural learning and development activities where access can be provided to up to date Information Communications Technologies and hosting in some cases of community radio projects.

All these projects in all countries depended on engaging local community champions with both the knowledge and the passion to make a difference in their communities. The main lesson that I drew from my involvement in these projects is that technology and infrastructure, whilst important in the success of the projects, was less important than the commitment of local social entrepreneurs to make use of these technologies to engage people of all ages in lifelong learning activities.

Possibly the most striking of the European projects was the one based in Poland around the town of Malechovo. The Project Manager for the Polish Partners was a somewhat eccentric but very engaging man called Wojak Idziak who had been instrumental in developing what were called "thematic villages". Wojak worked with each rural community to establish a unique identity or theme for each

village, based on local talents and cultural heritage. This was a great and very effective concept and in one of the villages, the paper making heritage of the village had been used to stimulate lifelong learning using ICT in the local school community centre to engage both young and old.

The UK section of ERDE was hosted in the Teeside area by a social entrepreneur friend called Steve Thompson whose activities in setting up a network of rural technology and learning hubs is a model of best practice, whatever the latest technology might be. Steve's ability to engage local communities and inspire them to organize and participate in ICT and learning activities in remote locations was second to none and he continues his work in the North East, now working with virtual world technologies such as Second Life.

VI. Immersive technologies and conclusions

All the previous projects have used the current communications and collaborations technologies as a catalyst to harness local skills, passions and talents to the cause of knowledge sharing, collaboration and lifelong learning. The current immersive technologies of video games, virtual worlds and social networks are being used by the next generation of learners, the so-called Digital Natives or Generation Y, to transform learning from a teacher centric activity into a much more personalized learner-centric activity.

These latest technologies are the most successful in engaging the time, attention and money of a wide spectrum of the population with a proven ability to educate, influence, inform and train people of all ages. The challenges for rural communities in a globalised economy will remain but can be partly addressed by ensuring widespread availability of the fast wired or wireless broadband networks that are key to accessing rich digital content and collaboration applications.

I learnt from my experience over the last 15 years of being involved in the use of advanced technologies for lifelong learning and rural development that there needs to be a balance between 3 essential components:-

- Top down vision and commitment
- Grass roots engagement and support
- Appropriate financial, technological and human resources

These components are like the 3 legs of a stool which need to be properly balanced – over-emphasis on any one of these components can lead to imbalance and failure but at the end of the day, it is the desire and passion of key individual champions within these rural communities that will determine the success and sustainability of any rural lifelong learning projects.

THE POTENTIAL OF ONLINE COMMUNITIES FOR INCLUSIVE LEARNING

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Abstract

The paper explores the role of on-line communities in enhancing informal learning. Based on the results of a Study on 12 on-line communities geographically spread around the world and with different social aims, the paper analyses the impact of on-line communities on the learning of their members, dealing with acquired knowledge and competences and on the potential of such communities to play a role in terms of inclusiveness. Although the benefits gained by on-line community members are generally contributing (directly or indirectly, depending on the nature of the community) to at least some form of social inclusion, the paper demonstrates that there is still a long way to go to ensure inclusive learning.

Keywords: on-line communities, social networking, learning, social exclusion, eInclusion, skills.

Introduction

The potential of ICT to enhance inclusive education is a highly discussed and critical theme. Infrastructural and networking endowment of learning environments are still an issue in many areas of the European Union and capacity building for teachers and trainers in how to effectively and inclusively implement ICT in learning is still a major concern for the European Union and for national and local governments.

In the recent years, however, innovative, bottom-up use of ICT for learning is increasingly counterbalancing (or complementing – depending on the country/context) top down policies addressing ICT for learning.

Watching children and teen agers playing, communicating, using smartphones and tablets is not a novelty anymore, and the number of users of social networking sites and on-line communities is increasing day by day.

Despite a certain institutional resistance to the use of web 2.0 for learning and working, the attention of policy makers on its potential for learning has risen in the last few years. In particular, focus is increasingly set on the extent to which web 2.0, social networking and on-line communities enhance informal learning and what lessons – if any - could be learnt (and transferred) to formal education environments.

In this context, the Institute for Prospective Technological Studies (IPTS) commissioned, in 2008, the study “Pedagogical innovations in new learning communities” [1] aimed to collect evidence on innovation in learning emerging in on-line communities and to identify eventual lessons to be taken up by European education and training systems. Although mainly focused on the identification of new pedagogical models, the study provides interesting results in terms of organizational and social innovation.

Methodology

In the above mentioned study learning was defined and analysed according to the constructionist theories, i.e.:

- Knowing is entwined within implicitly knowledgeable activities: informal, unbounded, and often intuitive ways of making sense. ‘Practical wisdom’
- Knowing is both embedded in social situations, in interaction, and embodied in our experience of our world: it relates to how we live our lives and make meaning with others.
- Knowing is sustained and created in multiple interactions and social practices.
- Knowing as intersubjectively and ongoingly created shared (or shareable) sense, which participants see at that moment as providing acceptable orientations and ways of moving on.

- Learning is a dialogical process, exploring different ways of seeing and interpreting issues and situations; sharing some sense of situations; and creating possibilities for change
- Learning is a dialectical process: exploring the interplay of tensions, contradictions, othernesses as a means of opening possibilities for critical thinking and self-reflexivity.
- Learning based in being reflexively aware of how we construct meanings with others in our everyday conversations.

The approach adopted was based on the assumption that a subjective and an objective dimension of learning should be taken into consideration in order to observe how learning takes place within the online environments.

The study analysed 12 on-line communities, geographically spread all over the world and sharing the following features: they were based on collaboration, ICT-enabled and directly or indirectly supporting learning. An outline of the analyzed communities is provided in Table 1 below. The communities can be re-conducted to three main categories:

- Organization – driven communities (set up by educational institutions or workplaces): CEDDET, eTwinning.
- Production-driven communities (aimed at the production/co-creation of software, material, knowledge): Il Cantiere.
- Topic-driven communities (professional, hobbies, lifestyle, health, etc.) - RezEd, TappedIn, Muxlim, GayTV, Microbiology Forum, Englishforums, Tudiabetes, Bookcrossing).
- Socially-driven communities (such as social networking sites, YouTube, gaming communities): Experience Project.

Table 1 List of communities studied

Name and URL of the community	Short description
TappedIn http://TappedIn.org/TappedIn/	TappedIn's main aims and objectives are to support the professional development of teaching professional and to build new organizational models for professional development. 15000 members
RezEd http://www.RezEd.org/	RezEd is as an “expert community” whose participants are committed to explore further the features and potential of virtual worlds for learning. 1447 members
eTwinning _ Time after Time http://www.etwinning.net/it/pub/index.htm	The main aim of the eTwinning “Time after Time” community is to develop intercultural and interdisciplinary knowledge and awareness on the impact of time on societal change in 5 key theme areas: War, Fairy Tales, School Memories, Love, and Job. 16 EU schools
CEDDET http://www.CEDDET.org/	CEDDET: The Latin American Experts Network on Public Management aims to promote the collaboration between public organizations and the development of common activities in a Latin American context. 770 members.
Il Cantiere http://biasco.ch/wiki/index.php?title=Pagina_principale	The main aim of the “Il Cantiere” community is “to propose and experiment” a collaborative approach which finds a concrete output in the development and production of videos. 50 members.
Microbiology Forum http://www.microbiologyforum.org/	The Microbiology Forum allows microbiologists to primarily keep up to date with current requirements and trends, discuss microbiology issues with peers and gain support for new ideas or advice when in need of practical know-how. 8,372 members
Englishforums http://www.englishforums.com/	The main goal of the Englishforums is to help people learn English. It is based on the principle of questions and answers, where members of the community both ask the questions and answer each other. 78000 members.
TuDiabetes http://tudiabetes.com/	TuDiabetes is a social network for people affected by or touched by or living with those affected by Diabetes. 5801 members
Bookcrossing http://www.bookcrossing.com/	Learning in Bookcrossing is focused on the joint interest based on – books and literature. Members expand their knowledge of different authors, genres, books and literature, but they also develop critical thinking and ability to argue and discuss different topics related to literature. 700.000 members
Experience Project http://www.experienceproject.com/	The Experience Project aims at creating a community where people share their experiences about various issues. More than one million members

Name and URL of the community	Short description
GAY.tv http://www.gay.tv/	The main feature of the community is the gay target audience. The difference between the GAY.tv website community and other gay communities is that it is more like a social network than a dating community. 131.932 members
Muxlim http://muxlim.com/	The main aims and objectives of the Muxlim community are: To Enhance the Muslim Lifestyle to raise awareness of the Muslim Lifestyle. 150,000 members

Results and discussion

The study provides interesting results as concerns the role of ICT in on-line communities and the extent to which such communities promote inclusion.

According to research results, ICT is considered an indispensable and strategic means to:

- overcome both geographical and time barriers (access to people)
- access information not available through mainstream media and to allow commentary and feedback (access to information)
- retain anonymity and consequently to be more free and willing to express oneself. This is a very significant attribute for a minority that still needs to cope with social exclusion.
- facilitate access to peer groups
- freely expressing oneself and allowing members to play the role of reader and writer at the same time
- closely link in people all over the world
- collaborative means of reproducing and presenting knowledge, best practice and experience

The extent of the use of ICT to support community activities varies according to the nature, members, objectives of the community but an almost common feature across all communities is the fact that no support is provided to members for the development of digital competences necessary to play an active role in the communities. In other words, it is given for granted that such skills are either already owned by members or developed elsewhere. This means that not all learning communities are inspired by equity or actually promote equity in access to learning opportunities⁵⁶.

In line with a previous study carried out by IPTS on the use of Learning 2.0 [2] for social inclusion, the study on Learning communities identified a set of positive impacts of ICT use that can have a positive effect on social inclusion, such as: improved numeracy and literacy; inculcation of digital literacy; increasing confidence and self-esteem, supporting active citizenship, supporting motivation to learn more.

The “Pedagogical innovations in new learning communities” [1] study further identified a set of skills that individuals shall develop to benefit from the participation in a learning community:

- Know new languages and new codes through which the information on the net is presented
- Know the main communication and collaborative tools made available by digital technologies
- Know how to search, understand, select, handle, modify and create knowledge and information
- Develop curiosity, critical thinking, investigative skills and their development into actions and projects.
- Develop creative attitudes.
- Manage change and complexity.
- Develop Self-evaluation and self-analysis skills.
- Foster the process of building self-esteem and a personal e-identity.

⁵⁶ The term equity shall not be confused with “equality” that represents one of the constituting principles of many communities. It is important to remember that a sufficient level of equality is necessary for a community to exist and grow. Equality is also related to recognition and to the fact that people need to feel welcome, receive feedback and be sure that their contribution is recognized.

- Know and apply methods and techniques to communicate and cooperate on the net in a appropriate manner.
- Be aware of the importance of solidarity, diversity, understanding others and the sense of belonging.

The challenge becomes then how to ensure that all individuals and citizens are offered the same opportunities to develop such skills. In other words, provided that social networking, web 2.0, on-line communities widen the landscape of learning opportunities, how can inclusive access be guaranteed?

The Study ICT and Youth at risk [3] identifies an Utopian perspective on ICT potential to support the socio-economic inclusion of youth at risk vs. a Distopian one suggesting that significant numbers of young people remain at the margin of the Knowledge Society and highlighting the increasing concern about the role of new technologies in reinforcing social problems rather than providing opportunities for social integration. The study concludes, based on the outcomes of the research conducted, that there is evidence that ICT is a powerful tool for attracting and engaging people (in this case youngsters) at risk of exclusion as some ICT facilities enable their creativity and participation and also allow them to unlock their talents. The study also provides a set of recommendations focusing on:

- The need to better study and understand the behaviour of youngsters (on-line and off-line) and to adapt to their needs (if youngsters are connected 24-7, they need counselling services 24-7 whereas youth workers are active on the 8 hours a day model)
- The need to develop appropriate tools and legal frameworks to manage disclosure of personal data in on-line social network settings (in other words how can the barriers such as disclosure of personal information, security and privacy be overcome when relevant information must be passed to stakeholders able to re-engage people at risk of exclusion)
- The need to train “intermediaries” dealing with people at risk of exclusion on web 2.0 use for networking, finding resources for action and exchanging precious information with people at risk of exclusion and relevant stakeholders.
- The need to develop impact assessment methods able to measure ICT initiatives targeting people at risk of exclusion.

The more recent Research and Policy Brief on ICT for inclusion of youth at risk [4] provides, based on the results of a consensus building process on eInclusion policy and research options, a set of policy/research recommendations summarised in the table below.

Table 2: Research and policy recommendations
(adapted from the Research and Policy Brief on ICT for inclusion of youth at risk)

Research options		Policy options
1	<p>Better understanding of ICT use by Youth At Risk /Marginalised Young People/Intermediaries</p> <p>Need for production of more in-depth datasets (focused datasets) in order to understand the outcomes of those uses in their socioeconomic inclusion.</p>	<p>Promotion of more knowledge and specific policies regarding ICT for YAR/MYP and Intermediaries</p>
2	<p>Specific ICT developments</p> <p>Creation of a more open, accessible environment for technology development and/or adaptation of technology to specific needs.</p>	<p>Promotion of ethics in the field:</p> <p>For instance with the creation of international panel of experts regarding serious/social gaming and ethics regarding data monitoring in SNS used by young people</p>
3	<p>Better understanding of participatory design/user-driven innovation/ involvement of all stakeholders to ICT design</p> <p>Need to consider the involved stakeholders'</p>	<p>More and better access for all everywhere to ICT and internet and more training to digital competences</p>

Research options		Policy options
	needs and concerns when designing ICT for learning solutions	
4	Need for Better understanding of transferability and scalability of existing ICT-solutions	Promotion standards / open standards / European label-certification for instance, promote the development of open and customizable applications rather than closed and non-interoperable applications in the field of ICT development for MYP/YAR
5	Need for Tools and methodologies for evaluation, monitoring and impact assessment	Promotion of good practices, evaluation and impact assessment

To conclude, research results show that online communities and more in general social networking and web 2.0 have a great potential to support the fight against social exclusion, especially of youngsters. However, there are still policy challenges and research gaps to be addressed to make sure that ICT actually fights – instead of supporting- digital divide.

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E-LEARNING IN RURAL AREAS AS INNOVATION PROCESS

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1. Abstract

Promoters of E-learning usually stress the potentials of E-learning for lifelong learning in modern societies. Given some high expectations its slow uptake has often been a matter of surprise. In this presentation E-learning is viewed from a **diffusion of innovation** perspective. The diffusion of innovations is always a complex communicative process. The rate of adaptation - that is the relative speed with which an innovation is adopted by members of a social system - is determined by many groups of variables, such as the perceived attributes of an innovation, the type of innovation decision (optional, collective, authority), the communication channels through which the innovation is communicated (e.g. mass media, interpersonal), the nature of the social system (e.g. norms, degree of interconnectedness) and the extent of change agents' promotion efforts.

Starting from this premise, the presentation will, firstly, highlight some core aspects of diffusion of e-learning process, and on this basis identifies principals of for innovative. Secondly, some specifics of rural areas are addressed, and issues as well practical solutions for e-learning providers and policy makers in relation to the principals are highlighted.

Key words: E-learning, Innovation, Diffusion of Innovation, Innovation Criteria, Rural Areas

2. Introduction

In this paper an analytical definition of e-learning is applied. *E-Learning describes a group of learning arrangements, which are characterized by the use of modern information and communication technologies in particular personal computers (or other/newer electronic end user devices) and the Internet.* There are some e-learning arrangements, which do not necessarily require the Internet. However, Internet connection is crucial, when discussing the benefits and potentials of e-learning in general terms and more particularly in the context of rural development.

The application of modern technological devices in particular personal computers offers two major advantages for education and teaching. Firstly, it allows a scope of different media (text, pictures, graphs, audio files, movies) to present learning content to the students. Secondly, in connection with standard or special software the students may actively use such content, modify it and therefore create new content. The advantages of e-learning are seen in the potential to overcome existing barriers [1] such as *time barriers* (reducing the time it takes to access learning materials; solving time conflicts ect.); *spatial barriers* (The connection of learning communities and learning objects independent from their location), a *nalog-digital barriers* (Combining any text, audio, video and animation); *norm barriers* (participating in training courses independent from social status, Shifting role of learners from pure consumers to active co-producers of learning content) Such potentials have formed the basis for great enthusiasm about the future of e-learning, particularly at the beginning of this decade. Undeniably, there is has been a steady increase in the use of e-learning in various contexts. However, the adaptation of e-learning has been moderate at least in comparison to early expectations, and differs between regions and industries. Thus, early enthusiasm has been replaced by greater, yet still optimistic realism. Realism offers a better understanding of e-learning didactics as well as practicalities that are connected with the e-learning designs.

3. The adaptation of e-learning

The diffusion of innovations, such as e-learning, is always a complex communicative process. The rate of adaptation - that is the relative speed with which an innovation is adopted by members of a social system - is determined by many groups of variables, such as the perceived attributes of an innovation, the type of innovation decision (optional, collective, authority), the communication channels through which the innovation is communicated (e.g. mass media, interpersonal), the nature of the social system (e.g. norms, degree of interconnectedness) and the extent of change agents' promotion

efforts [2]. A comprehensive account of all those aspects is far beyond the scope of this paper. A few selected aspects of this process are discussed in the following passages with regard to e-learning, ones which are particularly relevant as far as rural areas are concerned.

4. Relative Advantage

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes [2]. In economic terms relative advantage can be expressed as the relation of benefits and costs. The initial costs of e-learning for the learner are hardware and software costs; costs and possibility of (broadband) Internet access; Learning costs to use computers/ adaptation to learning platforms, etc.; Costs of learning (Course fees, opportunity costs, etc.).

Given a comparable learning outcome, learning costs of e-learning can be lower, especially when time and mobility constraints exist that make the participation of training courses costly. This is particularly useful in the context of workplace learning, but also for those individuals who are time poor or may have impaired mobility (e.g., handicap people, parents, and people without cars or driving licenses). E-learning providers are also confronted with considerable costs that impede the adaption process such as costs of producing software, multimedia content and managing learning platforms as well as costs of training of trainers.

Markets of e-learning suffer from high transaction costs and biases. Since education and training is in European public interest, price mechanisms are often do not function. Further, providers are also confronted with the problem of *free riders*. It is difficult to prevent the free use of teaching modules or teaching content. Providing teaching contents for diffuse user groups, such as small enterprises, is thus a problem of collective action [3]. High transaction costs make it likely that e-learning arrangements will be established in hierarchical organisations such big companies or universities [4].

5. Complexity

E-learning does not simply mean to replacing or replicating traditional classroom learning. On the one hand, research in the field *cognitivism* stresses the importance of cognitive processes and individual learner characteristic [5, 6]. Also, research on how people process audio-visual information has highlighted many complexities “with half the studies showing that redundant audio and video channels improve retention of information and half showing redundancy impedes retention” [7]. Hede [7] suggests that e-learning providers only have a limited influence on multimedia learning success. Thus, e-Learning providers have to include *learners’ characteristics* into the design of the learning platform and the selection of media content. The production of compelling multi media material requires specific technical, but also pedagogical skills, which is often not achieved [8].

On the other hand, *social constructivists* highlight aspects of social context that largely affect the nature and extent of the learning. Meaningful learning is a social process and occurs when individuals are engaged in social activities. Without the social interaction with more knowledgeable persons, it is impossible to acquire social meaning of important symbol systems and learn how to use them. In practice, e-learning is always in peril of presenting de-contextualised multimedia content and ignoring the learning object relevant participatory and practical context [9]. In this context the concept of “communities of practice” (CoP) [10] has found wide recognition. CoP are seen as a “kind of community created over time by the sustained pursuit of a shared enterprise” [10]. It has found recognition with regard to e-learning in two ways. Firstly, and more dominantly, it has facilitated a debate on virtual communities. Virtual communities are particularly interesting in situations, when communities of practice are difficult to create, for instance, when the number of possible participants in a location is too small. Here, the community (or network) of learners is considered to be a community of practice that shares the practice of learning, even if they do not form a community of practice through collaboration in everyday context [11]. Secondly, e-learning, like any other learning arrangement, has to be situated in the context of social and cultural practices (the communities of practice), in which learners are engaged in [9]. In this sense, e-learning, in particular the application of Web 2.0, is considered a way to enhance and improve already existing learning activities in real world CoPs.

6. Compatibility

Compatibility of an innovation is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters [2]. E-learning is challenging the existing skills of teachers and questioning the traditional way learning is organised. Subsequently, the

attitude of teachers and trainers is often seen as barrier to the implementation of e-learning. Teachers and trainers are seen as lacking the skills to apply e-learning as well as often being hostile to the use of ICT for learning [8]. The skills gap, often referred to as *digital illiteracy*, is also evident at the users side. However, beyond this, technical skills, e-learning and lifelong learning seems to suggest a shift from learning as a collective undertaking in classes and organised settings towards a highly individualised, self-organised process. It has been suggested that that young generations that grow up with ICT as an everyday experience will show fundamentally different *learning behaviour* [12, 13].

A further issue is *technical compatibility*. Much attention has been paid on how to ensure interoperability between different learning systems and platforms and how to ensure migration of applications and learning materials between systems [8].

In the *absence of measurable quality standards* the quality of e-learning courses has differed greatly. This has caused considerable uncertainty on e-learning markets. International Organisation for Standardisation has as a response published a quality framework for ICT supported learning (ISO/IEC 19796-1:2005), which is considered to be still preliminary and “only the first step towards a harmonised quality framework.”

7. Innovative e-learning

From this account some principals of innovative e-learning can be drawn (the order does not imply a hierarchy):

Learner orientation: E-learning has to be open to individual learning styles and capabilities; it should allow individuals to create its own personal learning environments.

Interactivity / Community development: Since learning is a social process innovative e-learning is about building communities, fostering interaction and contextualising learning content.

Micro-learning: Micro-learning refers to short forms of learning and consists of short, fine-grained, inter-connected and loosely-coupled learning activities with micro-content [13]. It may be considered as alternative to (formal) courses and as a form of learning that may be particularly useful in the context of lifelong learning and work-based training.

Interoperability: Rather than to focus on the “newest” technologies it has to focus on technical compatibility and must be based on standards. Learners should be able to access content and to work with learning material independent of the platform and software they commonly use.

Efficiency: Getting costs down is fundamental. Innovative e-learning includes new approaches to recycling content (content sharing) and learning scenarios. Modern computers are generally over-specified for the needs of most e-learning applications

Institutionalisation: Institutionalisation of e-learning is crucial. Integration into existing learning arrangements and the development of new institutional structures may both innovate ways to explore the potentials of e-learning.

Quality Management and Evaluation: Meeting user demands and offering quality is fundamental. Thus, innovative e-learning is about the development of quality standards, quality management and continuous evaluation.

8. Specifics of rural areas

European rural areas differ greatly with regard to population density, settlement structures, distances to urban agglomerations, economic structures in particular with respect to the importance of primary/agriculture sector and food industries, economic performance, rural amenities, history/cultural traditions and ethnic diversity. Despite the diversity there rural areas show commonalities in particular in regard to:

Low population density and small settlements: This means that overcoming distances to participate in any kind of social activity is an everyday experience of rural dwellers. Low population density also sets natural limits to the size of social groups and organisations. Thus, possibilities for division of labour and specialisation and therewith gains from economies of size are reduced. The provision of infrastructure is very often more costly.

Importance of land-use activities and the exploitation and management of natural resources. Although the employment share of “productive” forms natural resource uses, such as agriculture, forestry and fishery has declined over recent decades, it remains significant in many rural areas. Also, new forms

of natural resource based production (e.g. renewable energy) emerge. In addition, new “consumptive” forms of natural resource uses (e.g. tourism, environmental protection) have turned out to be the economic basis for many rural areas.

Significance of small and medium size business (SMEs). The predominance of SMEs in the rural economy is often mentioned as its typical characteristic. However, it is the absence of large businesses rather than the predominance of SMEs that is characteristic of rural areas. In addition, large public sector institutions such as ministries, national banks or universities are mostly located in urban areas.

9. Digital divide

The uptake and impact of modern telecommunication technologies differ between urban and rural regions as well as different social groups in rural areas themselves. This has been largely discussed under the concept of a “*digital divide*” [14-18]. The main issue of a spatial digital divide is the possibility of **access** to Internet services and its uptake [19-22]. It has been found that the urban-rural Internet access gap is influenced by the different social composition of rural population (particularly lower income and education levels) rather than geographical characteristics such as population density or distance to urban centres. [17, 23]. Internet access is also influenced by network externalities [24]. Network externalities describe the fact that each network member’s utility increases as more members enter the network.

While the digital divide literature is mainly concerned with the access to (broadband) Internet and computers as precondition to benefit from services offered through and by modern ICT, additional concern has been addressed by differentiated patterns of *Internet and computer usage*. Various studies have confirmed that ICT usage patterns differs with age (decreasing); with income (increasing); educational levels (increasing); employment, and ICT skills and Gender [e.g. 17, 25, 26].

10. Small businesses

According to an Eurostat survey 93 percent of all European businesses with at least 10 employees have Internet access and 82 percent have fixed broadband access [27]. ICT uptake and usage differs according to business size, sector and country. Use of computers and Internet is still not very common among many small and in particular micro-businesses [28-33]. The patterns that explain that micro-businesses *have* a computer differ from the factors that explain *Internet access*. Having a computer is mainly influenced by sectorial and personal characteristics, while having a computer with online access is linked to business size rather independent of the kind of business and the kind of business owner [30]. Several studies also reveal that micro-businesses “if engaged at all in the digital economy, only taking the most basic steps in terms of exploiting the potential” [31]. Thus, on the one hand, there is fear that many micro-businesses may become increasingly disconnected from potential benefits of the e-economy. Large enterprises can gain a disproportionate advantage from e-business by exploiting economies of scale. Their operations have critical mass to make use of advanced ICT systems. On the other hand, there is also an argument that the benefits of ICT are often exaggerated. For many micro-businesses ICTs are of little significance because they consider them irrelevant for their everyday professional life.

With regard to typical rural sectors tourism is seen in the vanguard of ICT adoption and e-business in the area of e-marketing and online sales [34]. In this area of customer-facing e-business activities “e-tourism has taken off”. Yet, in a ranking of the 10 sectors studied in 2006, the tourism industry only scores in the middle field regarding the overall use of ICT and e-business. Especially regarding the deployment of ICT infrastructure and the adoption of e-integrated business processes, tourism companies are still lagging behind their counterparts in other industries. Overall, customer expectations and market competition are the main drivers of e-business in the tourism sector, while the small size of most companies and the considerable costs associated with acquiring technologies constitute the main barriers for a stronger uptake of e-business. Similar studies about ICT usage of the agricultural sector are not yet available for the agricultural sector. However, cross-sector studies regularly report that the agricultural sector is the industry with the least level of ICT adaptation [e.g., 30]. Gelb and Voet see ICT adopters in agriculture today as Roger’s 50% ‘Late Majority’ [35].

Studies targeting the involvement of small businesses in e-learning reveal a lack of good practice examples and successful implementations of purposefully designed e-learning for small and micro-businesses. In the particular field of e-learning, most countries have only been working to implement it for a few years, and for this reason their experiences of doing so remain quite limited [36, 37]. Further, there is common feeling of a gap in studies that analyse needs, requirements and usage of e-learning in SMEs in the light of the specific nature of small businesses and a call to increase research, policy

focus and coordination to support the implementation of actions aimed at making a meaningful and efficient use of new technologies in the workplace [38, 39]. Overall, e-learning for small and micro-business has not yet found wider acceptance.

Table 1. Innovative e-learning for rural areas. Specifications for Training Providers and Policy Makers

Criteria	e-learning providers	ICT and Rural Policy
Access	Solutions for SMEs without access, non-users Targeting of e-exclusion	Internet Access and i-literacy as policy objectives of Rural Development projects Diverse priorities in different rural areas
Learner Orientation	Needs assessment of target communities, Tailoring e-learning to specific needs of the professional communities, simplicity of tools, Learner support, qualified trainers	In depth needs assessment, personal development strategy for trainers etc. as possible requirement of project funding.
Interactivity/Community	Tools to encourage interactivity and community development of user group	Integration of e-learning component into rural development network projects (e.g. LEADER)
Microlearning	Developing of micro-content suitable for work-place learning	Support of exemplary content development
Interoperability	Feasibility of technical solutions with ICT used in SMEs	Defining standards
Efficiency	Full cost modelling for providers AND users,	Development and promotion of full cost calculation frameworks
Institutionalisation	Linking e-learning to existing communities of practice, integration/combination of e-learning Communities are also the entry points for newcomers/learners as change agents Strategies differ according to institutional context	Establishing of demonstration projects to exploit "networks effects" for the diffusion of knowledge about e-learning, Identification of possible change agents Property rights
Quality Management and Evaluation	Establishment of QM Systems and Evaluation	QMS as standard requirements of project funding

11. Synopsis

In this final section some general conclusions from the literature review can be drawn. There is a set of technologies and general design principles, which can be used to describe "innovative e-learning". One additional criterion (access) has been added as a specific issue related to rural areas. Table 1 compiles a list of recommendations for training providers and Rural Policy makers.

European rural areas form specific, but also very differentiated contexts. Further, target groups within rural regions differ very much ranging from highly qualified, skilled professionals to people with little ICT skills and learning spirit. The learning objectives and technologies have to be "adapted to" local conditions and in particular the needs of the target community. E-learning may be suitable for some types of professions than for others. Communities may differ with regard to access to PCs and Internet, skills, perceived needs and learning interests etc., and also their context (infrastructure, regulatory and educational system; markets, etc.).

Thus, solutions are not easily transferable but have to be tailored to local context and the needs of the target community. However, what can be learned from the existing experiences with successful e-learning approaches that e-learning is more than just using a set of technological tools. Thus, to develop successful e-learning provision systems a comprehensive strategy is required. In order to support such strategies some supportive activities of rural policies are listed in the third column, which are more effective than direct subsidies for training providers or course participants. The experience shows that these subsidies are often extremely ineffective and lead to misallocation of financial resources. The list is only exemplary and not comprehensive.

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MOBILE LEARNING AND SOCIAL INCLUSION – THE HOPES AND THE REALITY

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Abstract

In the last decades international bodies have emphasized the role that ICTs can play in promoting the social inclusion of disadvantaged groups. Several initiatives based on the use of ICTs in education and e-learning to enhance participation have been promoted by governments and institutions, sustained by strong enthusiasm and multiple promises. This has sometimes led to rhetoric discourses and unwarranted optimism. Big hopes for m-learning are now emerging too, but its effective potential for social inclusion is still an open issue.

This paper aims at reflecting on the present status of mobile learning practice and to highlight gaps and issues which still divide hopes and reality, especially in disadvantaged contexts. It will focus on two European projects on mobile learning for social inclusion and show that digital inequalities still impede individuals in taking advantage of the so-called knowledge society's opportunities.

Key words: mobile learning; social inclusion; e-participation; digital divide; formal and informal learning.

Introduction

In recent years, international bodies have emphasized on several occasions the role that ICTs can play in promoting participation and social inclusion of disadvantaged groups. For example, in official documents the European Union has proclaimed social inclusion as a main objective for European policies, while referring to digital technologies as means of social and cultural integration. Indeed, this topic, which in European institutional lexicon is referred to as e-inclusion (electronic inclusion)⁵⁷, was the subject of the 2006 Riga Ministerial Declaration on "ICTs for an inclusive information society"⁵⁷ and of the "i2010" initiative – Participation in the Information Society⁵⁸. Generally speaking, these declarations solicit to support everybody's participation in the information society, even in situations of social or personal disadvantage. Digital inclusion is considered as a necessary condition for guaranteeing equity and social justice, since the impossibility to access digital information resources constitutes a strong discriminatory factor in contemporary societies.

At the same time various initiatives on ICTs (Information and Communication Technologies) in education and e-learning have been promoted, accompanied at times by strong hopes and even a certain optimistic rhetoric on the democratic value of technologies for education and society (Reynolds et al., 2003; Selwyn and Gorard, 2003). From this perspective m-learning (mobile learning) makes no exception. On the one hand, the proliferation of devices, such as mobile phones and MP3 players, has reached very high percentages in a few years exceeding the proliferation of the Internet. For example the ISTAT (National Institute of Statistics)⁵⁹ annual research on the life conditions of Italians shows that in Italy, in 2007, only 47.8% of families had a computer at home. Home Internet connection is even less widespread (38.8%), while the percentage of the population owning mobile phones is very high (85.5%). This data is in line with the tendencies generally found at the European level⁶⁰.

The steadily increasing availability of these devices, their versatility and mobility are heightening interest towards the use of such instruments in disadvantaged contexts (Kim, 2009), where there is no Internet, but there are mobile phones. Today low-cost mobile devices seem to promise opportunities for reducing inequalities at a global level.

⁵⁷ See the Internet at the following URL:

http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf.

⁵⁸ See the Internet at the following URL:

http://ec.europa.eu/information_society/activities/einclusion/docs/i2010_initiative/comm_native_com_2007_0694_f_en_acte.pdf.

⁵⁹ See the Internet at the following URL: http://www.istat.it/dati/catalogo/20081002_00.

⁶⁰ Refer to the International Telecommunication Union (ITU) data, on the Internet: <http://www.itu.int/ITU-D/ict/statistics/ict/index.html>.

On the other hand, the effective potential of mobile learning and technologies is still an open issue. What benefits can m-learning really provide for the training of people at risk of exclusion? Are there any? Or are we faced with another utopia in the world of technology applied to education?

In this paper, we will focus on two European projects on mobile learning for social inclusion. The aim is to reflect on the present status of mobile learning practices and highlight possible gaps between hopes and reality of ICTs in education.

Before starting the presentation of these projects and their main results, we introduce the topic by offering an overview on current approaches to m-learning. This will help us to recognize gaps and identify issues which deserve further investigation.

Theoretical approaches to m-learning

Mobile learning is the new term that is gaining ground in the educational technology vocabulary. Currently, we can distinguish five main approaches to mobile learning (Winters, 2007; Bonaiuti, Ranieri & Ravotto, 2010).

M-learning as a matter of technology

This is still the dominant view that interprets m-learning as learning based on the use of mobile technologies such as PDAs, mobile phones, iPods, mobile PlayStations etc. Here the focus is on technologies and the adjective 'mobile' refers to the portability of the learning device. This has a number of consequences in the way in which learning activities with technology are conceived and implemented. In fact, the device is seen here as a vehicle of contents accessible at anytime and anywhere, and thus learning simply seems to mean accessing these contents. This vision involves a view of learning as transmission of knowledge. What is important is not so much the context within which the learning activity takes place, an aspect which is undoubtedly important in the case of e-learning, but the content that becomes always accessible from anywhere, thanks to a portable tool.

M-learning as an evolution of e-learning

In this approach, m-learning is considered as an extension of e-learning, that is, as a form of e-learning based on the use of mobile technologies and wireless transmission. For example, Stone (2004) defines m-learning as a "special type of e-learning, bound by a number of special properties and the capability of devices, bandwidth and other characteristics of the network technologies being used". Milrad (2003) defines m-learning as "e-learning using mobile devices and wireless transmission". Quinn (2005) defines m-learning as the intersection of mobile computing (the application of small, portable, and wireless computing and communication devices) and e-learning. In other words, here, mobile technologies are used to support approaches and solutions already used in e-learning, or to integrate mobile functions in traditional learning environments or to access e-learning platforms (e.g. MOMO - Mobile Moodle Experience, an add-on Moodle extension installed on mobile phones to access courses). In this sense we speak of a Mobile Learning Management System (mLMS) (Keegan, 2005).

M-learning as complementary to formal learning

In the literature on m-learning, formal education is often identified with traditional learning, i.e. with a type of learning which happens in a specific space and time and in an institution which also provides a final certification. On the contrary, informal learning would be a form of learning which happens anywhere at any time. As m-learning can take place anywhere at any time, it is considered as a kind of informal learning (Cavus and Ibrahim, 2009). Although it might be true that mobile devices can give rise to informal learning experiences more than other tools, this is not enough to differentiate m-learning from other forms of distance education, which, by definition, are based on the possibility of placing a learning relationship in a setting free from space-time constraints. In fact, we also speak of informal e-learning to indicate forms of learning that are supported by technology in informal contexts or of 2.0 e-learning and informal learning in social networks. Therefore, even if there are strong and obvious relationships between m-learning and informal learning, this characteristic is not enough to characterize m-learning.

M-learning for mobile learners

Another line of research has gradually shifted its focus from the mobility of the devices to the student's mobility (Sharples, 2005), leading to more elaborate reflection on the concept of mobile learning and to the following definition: "Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning

opportunities offered by mobile technologies" (O'Malley et al., 2003). The emphasis, here, is not so much on the possibility of consulting resources, but on the fact that this can be done within a life "context" potentially interwoven with the learning subject itself, and by using the potentialities of interpersonal communication. This approach is based on theories such as the Activity Theory by Engeström (2001) and the Conversational Framework by Laurillard (2002).

M-learning for mobile cultures and societies

This perspective is very close to the one described above, but it differs because of the ecological footprint that characterizes it. We are referring to the ecological socio-cultural approach developed by the London Mobile Learning Group⁶¹. The following aspects characterize this ecological approach (Pachler, Bachmair, Cook, 2010).

Agency: young people increasingly display new habits of learning where their everyday life becomes a potential resource for learning with expertise which is individually appropriated in relation to personal definitions of relevance;

Cultural practices: mobile devices are used more and more as social tools to communicate with others; learning is a cultural process of meaning-making and media used in everyday life have achieved cultural significance;

Structure: young people are growing up in a society where individuals are at risk with new social stratifications and the proliferation of highly complex technological infrastructure.

M-learning in practice

Moving from theory to practice, we can notice that several educational projects based on the use of mobile technologies are proliferating all over the world. Notwithstanding that, we are still at the very beginning, and even though we can perceive great potential, until now, there have been few successful experiences and several unsolved problems remain (Kim, 2009). To improve our knowledge in the field we need a deeper analysis of practical experiences and related issues. With this in mind, we focus below on two cases of the application of mobile learning in disadvantaged situations and then discuss the main emerging gaps which seem to be relevant for social inclusion and digital equality (DiMaggio et al., 2004).

Ensemble

ENSEMBLE stands for European citizenShip lifElong MoBile Learning and was funded by the European Union within the Lifelong Learning Program 2008-2010⁶². The project was promoted by the Department of Education of the University of Florence in partnership with the French District of Yvelines (France), the Town Council of Prato (Italy) and of the English section of the Technology Company GiuntiLabs.

The project's aims were to experiment with the use of mobile technologies to develop training programs for citizens at risk of social exclusion, and to determine whether, and under what conditions, mobile learning can effectively offer opportunities to encourage socio-cultural integration.

The participants were lower middle school students and their parents, primarily, but not exclusively, first and second-generation migrants. An inhomogeneous level of linguistic competence characterized the target and while the majority of foreign students were certified at lower intermediate levels this particularly applied to the parents. Moreover, the latter didn't usually participate in their children's school life and teachers had difficulty contacting them. Lastly, the participants' personal technological devices, particularly those owned by the immigrant citizens, were mainly, not the "latest generation" of mobile phones. The experiment took place in two different European cities: in an area of the town of Prato, where there is one of the largest Chinese communities in Italy, and in Versailles, in the Yvelines district, which is characterized by a large presence of African immigrants.

To deliver the educational content, MMS (Multimedia Messaging Service) messages for mobile phones were used with parents and podcasts for MP3 players with students to be downloaded via the Moodle platform.

⁶¹ The London Mobile Learning Group website is at this address: <http://www.londonmobilelearning.net>.

⁶² I would like to thank prof. A. Calvani, the ENSEMBLE project leader, for consenting to the publication of material related to the project. The web site of ENSEMBLE is available at: [http:// http://www.ensembleproject.org](http://http://www.ensembleproject.org). For further information project see Bonaiuti, Ranieri & Ravotto (2010).

The educational program revolved around four themes, which were chosen by giving preference to subjects related to citizenship education in an intercultural and European perspective, and to pre-adolescent life and problems, within and outside school, observed from both the students' and the parents' point of view. The intention was to enhance the participants' awareness of the rights and duties implicit in social life within multicultural societies, and, at the same time, to encourage school-teacher-student communication.

At the end of the process, the project's results were organized in four main categories related to technologies, communication, learning and participation, three different points of view were taken into consideration: students, teachers and parents.

Technological dimension

Let's start with the technological dimension. In Prato, more than half (65%) of the students found it easy to download podcasts from the platform and listen to them on an MP3 player. On the contrary, teachers claimed that their students' computer skills were not adequate to deal with the tools in the projects. As regards the parents, technical constraints related to the use of the mobile devices were one of the crucial points of the experiment because of the need to identify the most compliant format suitable for the participants' various types of models and operators. Notwithstanding this, almost all the parents (81%) considered MMS messages a useful way to receive information both from the school and the local government.

In Yvelines students did not encounter any particular difficulties in using the proposed technologies. Half of the students believed that the activities carried out during the project were helpful in solving personal difficulties related to the use of computers. The teachers could use the technologies easily and they greatly appreciated the initial phase of technological training. Most of the parents were already familiar with the system of SMS and MMS message sending. However, one third of the participants had to reconfigure their mobile phones in order to view the contents.

Communicative dimension

In Prato almost 70% of the students found podcasts' contents simple and clear. One third of the students, however, complained that some were too long and they had difficulties understanding some vocabulary. Most of the teachers appreciated the quality of the communicative format used, highlighting the positive effects on the students' participation and motivation. The others considered some parts of the listening activity too difficult for some students. On the whole, parents liked the pleasant messages - 26 users (70%) and their brevity - 24 users (64%), but not their frequency, which was considered excessive by 27 users (72%).

In Yvelines the students enjoyed listening to the podcasts, which they considered stimulating. Most of the teachers pointed out that the listening activity was particularly useful and appreciated by the students. Teachers also noted an increase in cooperation among students, particularly regarding technical problems. 70% of the parents claimed that sometimes the MMS messages were too long, while 50% claimed that they were too frequent.

Learning dimension

With regard to learning, in Prato almost 70% of the students found the use of technologies helpful for learning and discovered that ICTs can be used not only for entertainment but also for other aims. For example, one student commented: "I learnt things in a different way and I learnt something new about technology". Teachers rated students' performance between unsatisfactory and excellent. Half of the parents were able to answer the final questionnaire on the contents of the project.

In Yvelines students admitted that the podcasts helped them to better understand the topics discussed during the courses. They managed to deal with the writing stumbling block and to immediately look for extra information or missing definitions. The French teachers realized that the students were focused when they were listening to the podcasts with their headphones and noticed that this way of working rendered students more responsible. In this way, they could move from one student to another and provide individual feedback. A few parents answered the short questionnaire, administered at the end of the experiment.

Participative dimension

Finally, as regards participation, in Prato half of the students claimed they collaborated actively in the working group activities and 70% of the students demonstrated a better understanding of diverse cultures. However, during a public meeting some students complained that others provided an

insufficient contribution which was detrimental to the group work. Most teachers claimed that technology-based group work did not reduce cases of exclusion, especially for some students' language problems. On the whole, as the teachers pointed out, involvement of the parents in their children's school activities and in scholastic life was marginal. Among the parents 21 (56%) participated in the meetings organized by the school, 22 (59%) helped their children at home to do the Ensemble project activities, 19 (51%) discussed the proposed topics with their children.

In Yvelines most of the students judged the group work positively and believed that the topics dealt with in the modules improved their understanding of different cultures. Teachers realized that the use of podcasts made learning easier with students who had difficulties in reading. Thus, these students, who very often feel left out, felt part of the class and participated more willingly in class activities. As regards relationships with parents, teachers have not noticed any significant changes. Few parents took part in the meetings organized by the school. Although contacts have improved, overall, parents do not think that relationships between school and families have improved as regards communication and participation.

To sum up, people participating in the project expressed different feelings and impressions. In most cases students appreciated the project, indicating their willingness to repeat the experience. They also liked the opportunity to create, along with classmates, their products because this gave them the opportunity to confront with their peers and understand, as one student wrote, "What they really think". At the same time, most of the students indicated that they had difficulties in listening to the podcast and estimated this activity too challenging.

Teachers found it useful to use the podcasts and PC to improve understanding of content and reduce barriers to learning, stressing the ability of these tools and topics to motivate students. Only a few have indeed expressed their doubts on the effectiveness of testing in relation to, firstly, the difficulties expressed by some students with low levels of proficiency in the Italian participation in the work group, and then to the weak technological capacities of some of the students.

With regard to parents, as in many other experiences, it emerges that participation and interest are not directly related to the use of technology. Generally speaking, the results on parental participation in school activities demonstrate their low involvement in the school life. The topics dealt with provided the opportunity for discussion in only a few cases and the strategies implemented to reach parents were not always appreciated.

MyMobile

Mymobile - Education on the Move⁶³ is a project on mobile learning funded by the EU within the framework of the Grundtvig program for the period 2010-2012. It is coordinated by bildung.com medien +, a nonprofit organization based in Germany, dealing with media education and mobile learning in schools. Other partners are the Educational Technologies Laboratory of the University of Florence, the London Mobile Learning Group of London Institute of Education and Media Animation, all active in the field of theory and practice of media, technologies and learning.

The main purpose of the partnership is to promote the comparison of approaches and methodologies developed at European level in the field of mobile learning and to develop guidelines on the use of mobile devices in support of adult education in the context of lifelong learning.

The target group of the project is made up of teachers, educators, trainers in the field of EDA, particularly by those working with disadvantaged or marginalized groups, in order to foster greater cooperation between schools and other agencies active in the field of media and adult education. These actors are involved at various levels as potential multipliers of the project results.

To achieve the objectives mentioned above and involve the beneficiaries of the project, the partners have planned the following actions:

- *International mobilities*: their aim is to promote exchange of visions and experiences on mobile learning between the partners in order to build a common lexicon on the topic and identify possible instructional strategies and educational uses of mobile devices;
- *National Workshops*: to shift from the sharing of experiences to the involvement of the beneficiaries and start developing general guidelines, four workshops were designed and carried out at the national level with the aim of testing specific instructional methods based on the use of mobile devices;

⁶³ For more information on the project see: <http://www.mymobile-project.eu>.

- *Evaluation of national workshops*: through visits and virtual meetings, partners were involved in a mutual process of peer reviewing in order to evaluate the impact and the results of the national workshops;
- *Definition of guidelines*: at the end of the process (sharing, designing and testing, evaluating) a set of methodological recommendations for practitioners and designers will be developed.

We will focus here on the activities carried out in Italy and managed by the ETL (University of Florence). The main idea of the workshop entitled “Mobile 2.0 to support visibility and job search” was to help adult disadvantaged learners to develop digital skills to promote self-representation and increase personal visibility for job searching and placement. In particular, the focus was on how to design, implement and disseminate a multimedia CV (curriculum vitae) by using mobile phones and web 2.0 tools.

The workshop was led by ETL staff in collaboration with LinksUp⁶⁴ researchers, within the context of TRIO, the official e-learning platform of the Tuscan Region.

The target group was made up of people in search of a first job or people with difficulties in finding new jobs requiring media skills and competences and of immigrants looking for new opportunities in the Italian marketplace.

The workshop involved about 15 people aged 25-60, some coming from Tuscany, others from Romania, Morocco and Peru, and was structured as follows:

- a) the first phase was dedicated to the presentation of the characteristics and advantages of multimedia CVs. Different types of multimedia CVs, depending on the aim, context and the individual's profile, were also presented. At the same time, participants guided by researchers started a brainstorming session on the possible subjects to deal with in the CV, the possible aims and targets, and also on multimedia content to be gathered or created;
- b) the second phase focused on methods and techniques to design and implement a multimedia CV, from storyboarding to the use of specific devices to implement it. At the same time participants started the creation of the storyboard;
- c) the third phase was devoted to the gathering of materials such as images and audio, etc., and to the creation of the multimedia CV.

Mobile devices such as learning tools were considered in a twofold perspective, i.e. as a tool to gather visual information about the individual contexts of life to be used in the multimedia CV and as a tool to interact with students. A blog was implemented to support content delivery and sharing, and interaction among trainers and participants⁶⁵.

At the end of the process, all the participants created a first draft of their multimedia CVs to be shared in the blog. We will look now at the results taking into consideration the participants' point of view and their feelings on the impact of the workshop on the improvement of their skills, their self-esteem and self-promotion.

Before starting the workshop participants were asked to answer a questionnaire to provide socio-demographic information. It emerged that they had different educational and working backgrounds (from agriculture to nursing), whilst sharing a common lack of familiarity with digital technologies. Almost all stated that their use of computer and the Internet as well as other tools such as mobile phones and digital cameras, was very low. Most of them did not know the potential of Web 2.0 and only used their mobile phone to make and receive calls.

Another questionnaire was administered at the end of the workshop. Participants stated that introducing themselves to each other and building relationships among peers were pleasant activities, but they found it difficult to select information and images related to their past experiences, and thus create the multimedia CV. Moreover, they found using the blog helpful in providing support for lab activities, but some participants were dubious about the usefulness of the mobile phone in education. Almost all said they were interested in repeating the experience.

In terms of learning and technological knowledge, some participants declared that the workshop had a positive impact on the improvement of their technology skills, and promoted their interest in Web 2.0

⁶⁴ LinksUp is a European project on digital technologies and social inclusion with a special focus on policies and practices: <http://www.linksup.eu>.

⁶⁵ See the Internet at the URL: <http://multimediacv.wordpress.com>.

tools. Others pointed out that the workshop should have been longer in order to get the full benefit from its content.

As regards the objectives of improving self-narrative skills and enhancing professional development, all agreed that the course strengthened their self-esteem and confidence in their own abilities, and improved their awareness of professional expectations.

Considering the issue of relations and social inclusion all participants declared themselves to be very satisfied, as the workshop allowed them to build new contacts, use new methods for social self-promotion, take advantage of new means to participate in social networks and improve job expectations.

To sum up, the feedback from participants was very positive on several aspects: they found the multimedia CV to be a valuable means for promoting themselves in the job market and an adequate tool to highlight the strong points of their personality. However, due to participants' low levels of digital abilities at the beginning of the activities and the limited time available, the workshop didn't allow people to develop the technical skills and knowledge advocated by the participants.

Two months later researchers contacted participants and managed a focus group with the aim of evaluating the extent to which any workshop-related changes had happened in the professional lives of participants and to whether participants' expectations had been realized.

The conversation with participants started with a general question on their feelings and impressions about the Multimedia CV. All of them declared their satisfaction but underlined that they were not able to use their final products.

With regard to their perceptions about the final products, almost all the participants were satisfied with their own productions. In comparison to many training courses, in this case, the outcome was a concrete and visible product made by the attendees and this was judged to be positive. Moreover, all the participants believed that this tool could be really useful for finding a job and expressed trust in technologies as tools for business or communication: "They represent the future", some participants said.

Even the mobile phones were perceived as fundamental tools for the future with great potential for work and communication, but none of the participants was able to fully exploit their potential yet, mainly due to inadequate levels of knowledge and skills.

Discussion and conclusion

The projects we considered in the previous section do not provide, of course, sufficient data to draw general conclusions on the impact of mobile learning on social inclusion. However, when considering them together with the analysis of theoretical approaches to mobile learning, we can identify some gaps between the "hopes" and "reality" of ICTs in education and their potential for emancipation. These gaps can be grouped into three main categories: research areas, technological access, digital competences and skills.

Research areas. Whilst the history of mobile learning goes back to the 80s (Kukulka-Hulme et al., 2008), there are many issues in this field that have relevant consequences for education and social inclusion, and that need to be further investigated. As we noted above (par. 2), until recently the emphasis on technical aspects prevailed whilst pedagogical and cultural issues were underestimated. Although recent approaches to mobile learning have shifted the focus from the mobility of the devices to the student's mobility and the context of learning (Sharples, 2005) in addition to concepts of agency, structure and cultural practices (Pachler, Bachmair, Cook, 2010), an emphasis on technologies as driver of change still prevails (Selwyn, 2011). Indeed, ICT and mobile devices cannot promote people participation by themselves: even though digital technologies such as blogs, wikis, twitter and so on, are defined as "participatory media", participation remains a value as well as an attitude and as such it has to do with culture rather than technologies. A lack of interest towards the cultural practices of using mobile devices and the media appropriation process risks arriving at the flawed conclusion that ICTs' provision is a sufficient condition for their adoption.

Another relevant issue pertains to the evaluation of the impact of mobile learning, especially in the contexts of disadvantage. Evaluation of the effectiveness and the impact of an innovative learning activity is always complex. Scholars such as Huberman (1988), who dedicated most of his research activities to the evaluation of educational innovation, show how manifold variables, attributed to individual psychology, interpersonal and collective relationships, institutional and organizational aspects, local and national political decisions and so on, come into play. The levels involved are,

therefore, multiple and it is not always easy to deal with this complex web of links and relations. The matter becomes even more complex when dealing with mobile learning. Scholars who have dealt with this issue emphasize that research in this regard is still underway and needs further efforts (Traxler, 2007; Arrigo et al., 2008).

Technological access. Despite mobile devices and the Internet being widely spread, people preserve very different levels of access to technologies. Mobile phones come with many different levels of complexity, some are characterized by very basic functions whilst others support multimedia applications and Internet navigation. Obviously, people who have the latest models of mobile phone can access different services and undertake different activities through their tools. On the basis of our experience, we cannot state that there is a correlation between an individual's socio-economic background and the type of mobile phone they own, but in the Ensemble project the possibility of multimedia communication through mobile phones proved to be lower than our expectations. For the most part, people, especially the parents, didn't have the latest generation of mobile phone and were unfamiliar with the use of MMS messages: their communication being primarily based on the use of voice and through text messaging (SMS).

We realize that, with basic mobile phones, it is very difficult to go beyond the idea of contents' transmission. In order to explore the possibilities of creating real learning environments based on communication through mobile phones, we should use smart phones, and exploit their potential for Internet connectivity. But at the moment not everybody can afford such a solution.

Digital skills and competence. As shown by research on the digital divide (Norris, 2001; Hargittai, 2002; DiMaggio et al., 2001; van Dijk, 2005), digital inequalities between people depend not only on having or not having ICTs, but also on their ability to effectively use them (Ranieri, 2008). In this perspective, the focus should be put on the improving the use of ICTs and related skills rather than on increasing the quantity of technological equipment. The concept of "digital literacy or competence" becomes fundamental: this competence "involves the confident and critical use of electronic media for work, leisure and communication. These competences are related to logical and critical thinking, to high-level information management skills, and to well-developed communication skills. At the most basic level, ICT skills comprise the use of multi-media technology to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in networks via the Internet"⁶⁶. According to this definition, digital competence not only includes simple procedural skills, but also encompasses high level abilities in logical and critical thinking, information management, and communication⁶⁷.

Studies on factors influencing digital skills levels demonstrate that socio-cultural variables have a strong impact on them (DiMaggio et al., 2004). If we considered the contextual, cultural, and knowledge resources available to individuals and groups, the digital divide would therefore be the consequence of pre-existing inequalities and defines the gap between the ICTs users and those who do not use them (Sartori, 2006). Coherently with this framework, one of the main issues that emerged during the workshop of the MyMobile project was the contrast between participants' expectations and their real technological skills. Indeed, even though all believed in the great potential of digital technologies, it seems that current gaps in knowledge and skills make technologies a barrier rather than a driver for democratic access to communication and information.

The recognition of these gaps represents an important step towards the identification of effective strategies to improve social inclusion. Indeed, there is no "magic bullet" to reduce exclusion and merely providing people with technologies will not enable them to take full advantage from ICTs.

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Chapter 4

Best practice in rural areas (Workshop 1)

THE P2C2P, PARK TO CITIZEN - CITIZEN TO PARK, MODEL

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Abstract

The objective of this paper is the definition of a model for the development of the Parks focused on local citizens and communities (employers, mountain communities, operators, schools) through Knowledge and Learning Process designed to offer all the knowledge and skills necessary to participate actively in the development.

The first section examines the foundations and motivations of the model, with specific reference to new information and communication technologies, and to innovation in education that in the second half of the nineties have changed the rules and procedures to operate. E-learning is an important result of educational and technological innovation; it is a tool and a method that expands the boundaries of the learning process, has facilitated the convergence of education and business by enabling lifelong learning. Then the attention is focused in the analysis of the context that characterizes the world of Parks, features, problems and possible actions of view of citizen participation and park sustainability. Finally the P2C2P model is presented, with particular attention to the processes of learning and education and their relationship with technology.

In this perspective becomes crucial role of ICT that makes possible the creation, dissemination and use of the education and training especially for those who live and work in a widespread territory and not easy to get in.

Keywords: e-learning, knowledge & learning processes, inclusive learning, ICT, Park development.

Introduction

The acronym P2C2P (Park to Citizen - Citizen to Park) highlights the strong two-way relationship between the Park and the people who have or want to establish contact with the park, precisely the citizen. The park is here understood as a system, with which you can establish a set of relationships that are adapted to the various stakeholders and at different times of the cycle of life (student, scholar, researcher, senior, etc.).

The idea of the model comes from the studies and analysis of a group of researchers from the Indian Institute of Technology and Indian Institute of Public Administration (IIPA), Delhi, India¹, which have recently presented an interesting "e-Governance model Framework for Rural Development". The proposed model integrates it, but at the same time it differs in some significant aspects; the hearth of the model are the citizen and the methods and tools for managing and developing the complex and composite assets of the parks.

Change, innovation, and ICT

The information society and the knowledge society

The information society (informational society better than information society) is a society where the information is the DNA of the society itself². The information society variables are:

- *speed*: the compression of time and the immediate exchange of information. This requires that the subject has adequate capacity for a correct reading of the message and rapid feedback;
- *virtuality*: the elimination of the space and time and the access and the use of information and
- educational materials when you want and without intermediaries;

- *networking*: as a key enabler of a networked society that can allow you to change or at least to mitigate the most critical aspects of globalization, improving, for example, the digital divide with access for all.

The information, however, is only the first step of the process, it is a representation of events, objects and experiences; the next step, according to M. Eppler model is the knowledge, understood as the sum of the informations. Knowledge can be defined as the combination of information that makes possible the individual and collective decision-making processes³.

The knowledge management is the prerequisite for the creation and the sustainability of context in which we operate; it is necessary that the process of knowledge is supported by enabling technologies and application solutions, such as the knowledge bases, the enterprise information portal and the enterprise knowledge portal⁴.

Evolution and convergence of technologies

Today, the technology is the enabler of the Information Society; the digitalization is the innovation that has enabled the convergence of technologies and the consequent ability to transform organizations, production processes, and educational processes. To remember:

- *the evolution of computing*, from centralized (1960-1975) to the distributed computing (early eighties); then the network computing (early nineties) up to the current ubiquitous computing (mobile technologies and the possibility of universal access, by any device) that allow you to communicate anytime, anywhere⁵.
- *the multimedia innovation*, from traditional applications to multimedia off-line, later to Web and wireless portals, up to multimedia on-line, as the interactive TV, the video-on-Demand, the Web TV, the streaming media, the interactive distance learning and the interactive distance communications⁶.

Education, e-learning e knowledge management

The Education is one of the most critical building blocks for the critical transformation of society in the global network society. The ICT can be used to improve education and training, such as:

- *Education Management*: ICT offers tools and systems that can improve the planning, administration and management of education, at local, regional and national levels. Mobile applications, data bases and electronic networks can be used to gather, store and distribute educational data, thus enabling more efficient and effective management of the education system.
- *e-Learning*: ICT enables the development of new forms of learning. ICT can also be used for more inclusive education, from lifelong learning for adults and training programs for out of school youth to learning resources for people with disabilities⁷.

The e-learning is a teaching method that offers the possibility of delivering educational content and materials electronically through the Internet or Intranet networks; for the user is flexible learning solution, as easily customizable and easily accessible. The term e-learning covers a wide range of applications and educational processes, such as computer-based learning, Web-based learning and virtual classrooms. In fact, developing an e-learning system means developing an integrated training environment using network technologies to design, select, deploy, manage and expand resource for learning.

ICT can make the *blended learning approach*, which combines the learning process and “mixes” traditional learning in presence and increase the access and the flexibility in learning, the key factors in today challenges in continuing education.

E-learning connects and promotes the convergence of Knowledge management, Competency management (skill development), and Performance and Improvement management (development of individual and organizational performance)⁸. It is a key component of the information society; combines the variables of *flexibility* (time, space, content, use), *virtuality* (teaching/learning through the mediation of the Learning Management System and the Social media), *networking* (network environment for knowledge, communication and place for sharing the experiences), *multimedia* (how the message is shared and understood by different stakeholders).

ICT inclusive Learning Matrix

The main stages of the knowledge management process are: *creation* (creation of new knowledge based on current experience in a specific domain), *storage* and *access* (use of storage systems and methods of access to knowledge), *transfer* (tools and methods that allow the transfer of knowledge from one party to another in a way and rules defined), *applications* (management and control system of the life cycle of the learning process).

ICT is the enabler of innovation and the necessary condition of knowledge and e-learning process.

With reference to the M. Alavi “Knowledge and Management Processes and Role of ICT” matrix⁹, we propose the following “*ICT Inclusive Learning Matrix*”: for each stage of the learning process are identified IT tools and related software applications.

Figure 1 - ICT inclusive Learning Matrix

		Knowledge & Learning Processes			
		Knowledge Creation	Knowledge Storage/Retrieval	Knowledge Transfer	Knowledge Application
ICT tools & application system	<ul style="list-style-type: none"> ▪ Data warehouse, data mining ▪ Learning content management system ▪ Learning object ▪ Social media 	<ul style="list-style-type: none"> ▪ Knowledge repositories ▪ Databases ▪ Learning portals ▪ Web portals 	<ul style="list-style-type: none"> ▪ Knowledge directories ▪ Networks and communication ▪ Social networks 	<ul style="list-style-type: none"> ▪ Learning management system ▪ Knowledge management systems 	
Outcomes	<ul style="list-style-type: none"> > e-learning > blended learning > flexible learning > collaborative workspace > simultaneous collaboration > more communications and learning channels 				

National parks and protected areas context

In Europe, Italy stands out for its variety of landscapes and ecosystems, for its wealth of flora and fauna and biological diversity, with the 24 National Parks and with a high number of regional parks, protected areas, marine reserves and wetlands. The park is on the one hand the safeguard the ecological balance and, on the other, it supports the controlled stimulation of initiatives able to support the development of local economies. The park is a source of opportunities for entrepreneurship, for tourist flows and for employment¹⁰.

The tourism is a great opportunity for the parks; it includes a large number of actors and is considered by all one of the most important sectors of our economic system. Today tourism demand has shown increasing attention to the natural environment: what a tourist wants now is that the vacation becomes a life experience, in direct contact with a local community, its history, its culture, its traditions, its typical products, its unique culinary identity.

This requires great attention to the management of *services*, such as accommodation, catering, organization and mediation of travel, leisure services, commerce and information services; to the park *organization* and the *human resources* skill and competence management¹¹.

The analysis made in recent years shows a series of critical sector of tourism in the parks, and generally in environmental and natural areas, including the lack of an organized structure in the tourism sector, the lack of qualifications and training activities such as business management, marketing and specific skills, difficulty of differentiation and distinction from other areas, limited or lack of economic return for the services.

For park development must take into account the following dimensions: the *organizational dimension*, namely the existence of relationships between stakeholders, expertise and resources that are critical factors for the area of excellence; and the *strategic dimension*, in terms of developing local resources and new skills.

It is crucial to have a system for the management of:

- *Information and communication*, aimed at the precise knowledge of the area taking into account the various recipients, both internal and external, the creation of a communications network that allows easy interaction with those who want to learn more about the tourist destination.
- *Training and Education*. Protected natural areas offer an intense experience; they are an educational resource available to all. It should be ensured training of operators of protected natural areas, exchange of experiences and integration of responsibilities between all stakeholders: educators, skilled workers, hospitality workers, businesses, schools, entrepreneurs.

Architecture, functions and objectives of the model P2C2P

Objectives

The main objective is to contribute to the development of parks, with specific reference to the Italian National Parks, acting on a variable that is frequently disregarded by the authorities and operators, public and private, that concerning the training in a complex environment and widespread as is that of the parks through tools and methods that facilitate the process of management, creation and use of knowledge.

Specific objectives of the system are:

- improving of the competencies and skills in order to tackle innovation, globalization and socio-economic changes, and to safeguard and create new opportunities,
- promote the growth of staff and begin a process of continuing education,
- allow a broad interrelationship with the various sectors of society that have relationships with the parks,
- protect, enhance, and promote the features of natural, environmental and territorial integrity,
- know the areas and the systems with the specific naturalist interest,
- establishing a strong and systematic relationship between the school and the park,
- to allow a broad interrelationship with the various sectors of society that have systematic or sporadic relationships with the parks,
- support the ability to build and transfer knowledge to those who work in the development and management of the business,
- improving the adaptability of workers and enterprises, promoting educational processes of common interest,
- promote communication and interconnection networks for institutions, companies, citizens and organizations working in territorial management

Context diagram of the model

The focal point of the model is the representation of the learning processes: Knowledge management (experiences; collaborative learning), Learning management (training; mentoring), and Content management (objects; autonomous learning).

The IDEF¹² context diagram (fig. 2) shows the building blocks of the model:

- **INPUT** – The main beneficiaries (end-users) of learning management processes are the community parks, designed as a set of operators, visitors, tourists, schools, farms and services that carry out their activities in the park. The P2C2P system is highly people-centric: the labor market needs, the civil society demands, the quality improvement and local requirements are key elements in designing sustainable and participatory processes. Moreover, P2C2P is flexible and open in relating with other training systems; the local environment is the set of system (techniques, learning objects, and knowledge components) that may or must be customized to be included in the overall design and how you think appropriate.
- **OUTPUT** – The final result of the process is the development of the park in which people, organizations and businesses play a crucial role in the development of the park and responsible tourism, understood as a respect and safeguard of the environment, of the ecosystem and of biodiversity, attention to environment impact, and appreciation of traditional local culture.
- **CONTROL** – The projects are successful only if they take into account of local communities, their participation is critical and is necessary condition although the customization, however, must be

linked with the standards and rules to safeguard the compatibility and interoperability between the components of the system.

- **MECHANISM** (resources, tools and systems) – The ICT resources (Knowledge & Learning Centers, Learning Managements System, User and Communities Network, IT technologies and applications) are the enabling factor for planning, design, implementation and management of the system. In this perspective, ITC is crucial for inclusive learning as a process of increasing the presence, participation and achievement of all learners in educational settings in their local community.

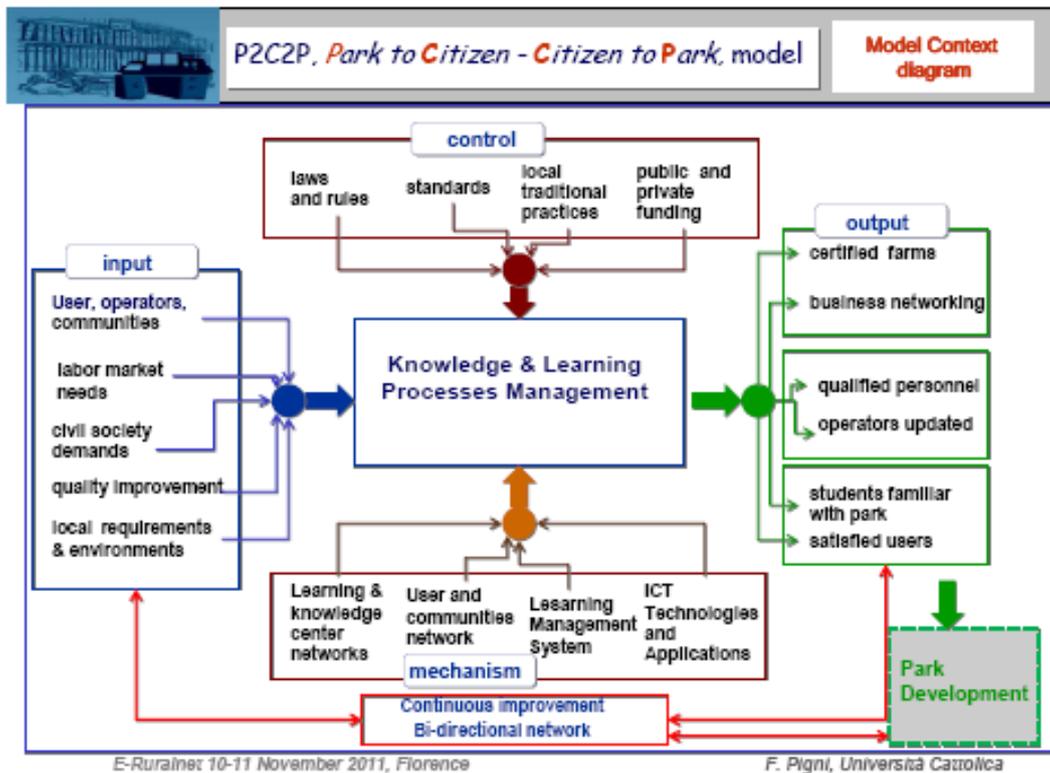


Figure 2. The P2C2P model The P2C2P model

The system is bi-directional: the complete cycle (P2C2P) consist of two basic cycles, “Park to Citizen” (P2C) and “Citizen to Park” (C2P); furthermore, the system is open to innovation and change management according to the Deming Cycle for continuous improvement (Plan, Do, Check, Act).

Knowledge and Learning Center

How to implement the P2C2P model?

On an organizational level, the system architecture has two main components, the Learning Center and the Learning Network. A reference model of the Learning Center is presented in Fig. 3 where are identified the IT components and applications and the main phases of a e-learning project¹³ (stage of planning; multimedia technology design stage; construction, implementation and delivery), the main actors (recipients of training, subject matter experts), the educational and technical support, the administration and project managers¹³.

The functional and technological heart of Learning Center is the Learning Management System (LMS), including the functions of the LCMS, Learning Content Management System (system for creating, publishing and maintenance of learning content using a database repository of knowledge), and those of the LMS (all the administration function that allow preparation of courses and curricula, registration of students, monitoring the study, measurement and evaluation of results).

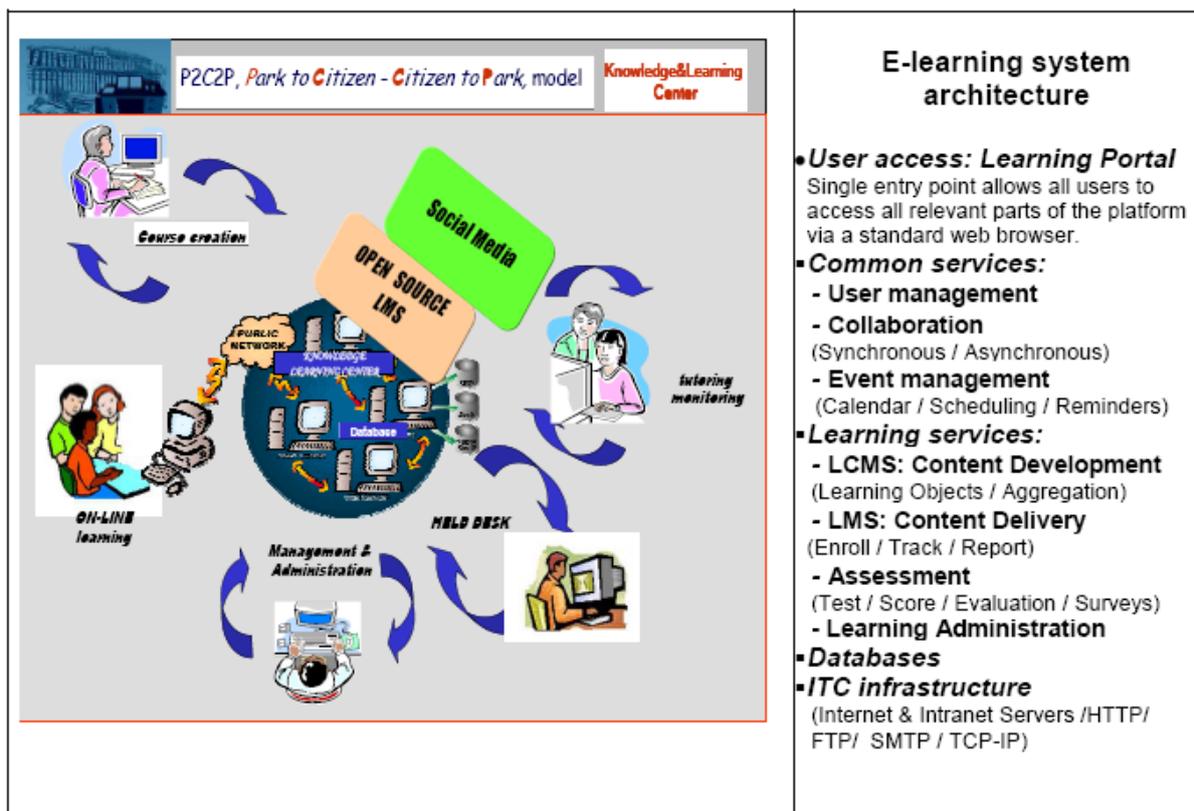


Figure 3. Knowledge & Learning Center

The second key component of “how” to implement the model is the Network, that is the ability to interact when needed and when it is useful. With reference to the current “Parks Network” already in use, one could envisage a series of Network for Education usable also for other activities and services (Fig. 4). For its implementation, it is necessary to remember that the P2C2P model is a flexible model, easily integrable with other educational projects in progress or already experienced. The model makes it possible to build an integrated system of learning management, both at a general level (level 1: training processes that apply to all citizens, consumers and operators), and at regional level (level 2: learning processes specific to a region or homogeneous grouping of territories), to the level of the individual park (level 3: training processes for a specific park or an homogeneous area), according to the needs and times of the gradual development of each situation.

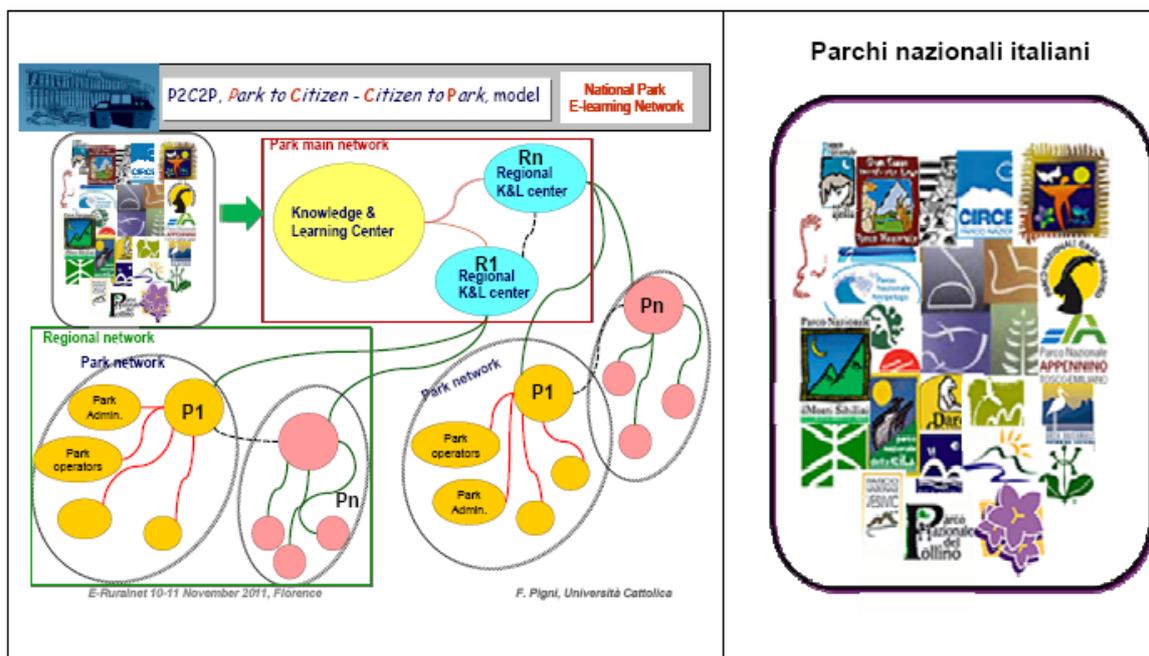


Figure 4. National Park e-learning Network

Final considerations

The paper highlights the relationship between ICT (technological innovation), e-learning (innovation in education and training), and inclusive teaching and learning, understood as a process of increasing the presence, participation and achievement of all learners in educational settings in their local community. In this sense the inclusive learning can be seen as a form of personalising learning, and ICT can play a key role in supporting this process¹⁵. The e-learning offers a set of features and capabilities that allow the inclusive learning in creating and presenting opportunities for learning in such way that they are accessible to all students, making what we teach and the way we teach it much more flexible, taking into consideration different learning styles¹⁶.

The paper also presents an integrated model of learning and knowledge management, flexible and open to all, ensuring the active roles of stakeholders and including the demands and specific local conditions. This flexibility on the one side, is the defining element of the model, since it allows projects to share learning and experiences of each park and each community, on the other element is a potential criticality of the system, if governance fail when you switch from model to its realization. Critical success factor is the sponsorship of high level (Ministry of Environment, Ministry of Tourism, Federparchi, etc..) because it is necessary that the many studies and projects (analysis of regional contexts, environmental studies, land studies, studies on tourism, etc..) are not just experiments, but are translated into a plan for the coming year: to move on from a partial view to a systemic vision of education in the Italian Parks.

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COLLABORATIVE LEARNING IN PROFESSIONAL COMMUNITIES OF AGRICULTURE EXTENSION AGENTS

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Abstract

This paper analyzes the limits and opportunities of the methods of collaborative learning through the experience gained from the Regional Agency of Veneto (Italy), Veneto Agricoltura, in training, updating and aggregation of agriculture extension agents in professional communities.

Keywords: extension agent, e-learning, collaborative learning, social-network, professional community.

Introduction

The agriculture extension agents can play their important role as catalysts of local development processes, if they be the protagonists of a large knowledge system characterized by the professional development based on processes of collaborative.

The training of extension agents through *e-learning blended* and their informal aggregation into networks of skill (*professional communities*) are two strategic methodologies.

This approach has been adopted by “Veneto Agricoltura” (the Agency of the Veneto Region, Italy, for agricultural, forestry and agrifood sector), which has accrued extensive experience in the field of training over the years, with specialists of knowledge system in agriculture (technicians, association representatives, trainers, researchers, civil servants, etc.).

The Veneto Agricoltura experience

Veneto Agricoltura performs the *e-learning blended* in which on-line lessons are alternated with a few important classroom sessions or technical tours. The course cannot be studied randomly, but according to a calendar and within a well-defined group of course members (about 25-30), led by a tutor. This is very important for the type of students following these courses: in fact, they are all professionals and they risk to don't pay due attention to the on-line lessons, giving priority to their work engagements. Only in this way they can follow the course with method, consistency and effectiveness. Consequently, it should not be confused with a surf in a normal website.

Today, *e-learning*, enriched by the potential of Web 2.0 and social-network, puts in link students, tutors and teachers by discussion forums, wiki, shared photos and documents, etc.. This process is known as *collaborative learning*, in which knowledge is not simply transferred from teacher to student, but also among the students themselves, drawing on their own experience and professional skills, which are shared and “*networked*”. All these aspects promote the *professional communities*, which keep alive a network of knowledge and relations that conventional learning processes often promote, but rarely manage to preserve in the long term.

A professional community is as a web social-network where all professionals, interested in a particular subject, are involved to share and to expand their knowledge, professional skills, experiences and solutions. Consequently, it isn't a traditional training course (e-learning or in classroom) or social experience (it isn't a generalist social-network as Facebook), but *professional*, targeted at work and focused on the experience of the participants and their ability and desire to cooperate.

Professional communities

Although professional communities can be born in several ways, the experience gained from Veneto Agricoltura indicates that the more effective communities are those whose members are aggregated through a previous e-learning course. In this way the members can know each other, acquire an equal basic skill and familiarize themselves with the network. It is a community peer-to-peer.

Since 2006, Veneto Agricoltura has been offering e-learning blended courses and then professional communities through Regione Veneto's e-learning web-portal (<http://elearning.regione.veneto.it>), about different topics, involving over 2.000 advisors.

The most important and effective experiences of professional communities managed by Veneto Agricoltura are:

- Community of expert extension agents in cross-compliance - has been started in 2007 and now, after aggregate the participants of 19 e-learning courses about cross-compliance, has over 500 members; the rate of participation (in forums, upload documents and photos, compile testing) is 63%;
- Community of safety at work in agriculture - community launched in October 2009 and now, after five editions of the training course for Head of Security, joins more than 150 participants, with a 60% rate of participation.

Other communities are:

- Community for management of agricultural and competitiveness - this community was founded in March 2010, after a series of courses on business plan and now has 150 participants;
- Community of Rural Development - this community, that address in particular the social issues of agriculture and rural tourism, was formed in January 2010, brings together over 400; stakeholders in these issues
- Community of bioenergy - formed in June 2010 with 180 members.

Critical aspects

We can highlight different critical aspects in management of a professional community of extension agents. The most important problems are behavioural:

- the generational digital device - except the new generations, in the majority of cases the extension agents still haven't a few experience with the digital tools and especially their language. They are often more accustomed to express themselves verbally rather than in writing. Ask a question or make a comment orally in a classroom is very different than writing the same concept in a web-forum, the sentence will remain there for quite some time, everyone will can read and reread. Moreover, the writing, without being able to use gestures, tone of voice, verbal pauses, it can create misunderstanding.
- breaking attitudes of ill-concealed professional jealousy – in a system of knowledge that becomes a market of knowledge is obvious that each agent wants gain more clients and use his skills, his knowledge as a precious resource. But in a global system, also the competence and knowledge is a resource that can improve thanks to the contribute of all and, in a job situations, thanks the experience of all. Only the ability of tutor and community builder can prevail upon this reluctance. When there are cases where collaboration has led to positive results for several members of the community, these cases must be emphasized and rewarded (e.g. certificates, prizes, citations in subsequent seminars and training courses, etc...).
- winning the hesitation of civil servants to expose themselves - often, in e-learning courses or in communities the civil servants are teachers or experts, and the students refer to them for a question or a clarification, but generally the civil servants are afraid to expose themselves in informal situations such as web forums, in which their answers appear such as an official document.

Prospective

It should also be considered that the concept of "blended" nowadays tends to expand because of technological innovations and the consequent changes in social behavior: the spread of e-book, the use of social-network, or the increasingly widespread use of mobile devices with many applications that pervade our social lives.

In fact, in Italy, and even more in the rest of the world, virtual meeting places for all the various agricultural stakeholders increase exponentially. Just think of the experience of Agchat, a very active American network on the web (<http://www.agchat.org/>) and on the various social network platforms (Facebook, Twitter, YouTube) with the aim of facilitating the participation of farmers in the Web 2.0, by encouraging dialogue and exchange both among farmers and between them and the consumer-citizens.

Just do a surfing in Facebook, Twitter, LinkedIn or Slideshare to see how in Web 2.0 are now present numerous resources and aggregation groups on issues of agriculture and rural development. Nowadays, also all public institutions face, often with embarrassment and fear, on social-network.

In Italy, certainly the experience of "Veneto Agricoltura" is not the only interesting experience and there are many other promoted by public institutions (like the recent web-portal for young farmers "YOURuralNet" promoted by the Italian Ministry of Agriculture <http://46.137.91.159/youruralnet/>), or associations (such as e-learning courses of Association Alessandro Bartola, www.agriregionieuropa.it) or by private entities such as Agri-Forum (<http://www.imagelinetwork.com/network.cfm>), that since 2001, now has 106,000 members on Italy, of which 23% farmers. But we also think as blogs and social network become effective opportunities of marketing and dialogue between producers and consumers; also these networks can become a informal channel to spread and increase rural knowledge.

There is no doubt that all these resources offered by Web 2.0 should be used intelligently in an integrated manner with each other and with the media and more traditional forms of dissemination of knowledge (in the presence conferences, radio, television, print, etc.).

But the centrality must be placed on collaborative participation. If what already is known as a " we revolution"; from the time of competitive individualism to the era of collaborative and participatory practices spread.

Today it is no longer sufficient "communicate" (and so also "inform", "form" or "teach") to an audience more or less vague, more or less known. But we should "talk" (with stakeholders), "share" (data, knowledge, documents, experiences), "aggregate / join" (professional communities, interest groups).

Then the question is: a weak boundary between an e-book and a training course or between a social network and a professional community is a risk or an opportunity?

Perhaps, we can answer that it is a risk if we think e-learning, m-learning, social-network, e-book, etc. as a separate and unique tools and methodologies. They are only the tools and methodologies that we can use, but in a learning strategy.

The contamination of languages between learning and social, the sharing of professional life as our own personal social life and the connection between work and personal social life are good things. But if we work in training process, we should be paid attention and awareness in order not to trivialize or simplify this process in a pulverized sequence of activities that are not able to develop a practical professional experience.

The focus must be the fundamental cognitive process of mental and social change over an entire lifetime, in other words: learning. The different technologies can enhance motivation, can facilitate the learning. And for this objective the practical work, the learning by doing, are essential.

THE USE OF THE ICT IN DIDACTICAL INNOVATIONS AND ELEARNING FOR RURAL DEVELOPMENT

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Abstract

The lifelong learning with ICT support seems to be a valid solution to upgrading skills in rural areas and enhancing the competitiveness of, especially, the smaller and more vulnerable enterprises. Thus, the current Education System entails a deep change in a lot of tools, elements and concepts. In this article, we point out a set of tools about coordination and didactical innovations used in the area of marketing and market research of the degree of Management Business Administration. These tools would facilitate the continuing education in territories with geographic remoteness, social disadvantage or poor facilities.

We try to contribute to the progression of a culture based on teamwork and cooperation to facilitate the eLearning and the new technologies help for improving. For these reason, it is important to develop the web 2.0.

We develop the next actions for the good practice about this coordination and didactical innovations:

- The platforms used on line, specially the “Blackboard”. They are coordination and didactical innovations tools very interesting for us.
- The use of the didactical guide as the main tool to produce correct organization, develop and assessment of the signatures. It is a document that explains laws and obligations for teachers and students, the schedules of theorist and practical contents and the criterions of continuous assessment and final assessment.
- Periodically, we arrange several meetings online between teachers and students. They previously have been informed on line about the date and time.
- The recent establishment of a group of didactical innovation in Marketing, it is called INDOMA (Group of didactical innovations about Marketing). The members have done a course about new tools.

These tools allow motivation for the student for working outside the classroom. In addition the teachers can provide coordination mechanisms and evaluation to continue more troops.

Keywords: Information and Communication Technologies (ICT), online platforms, Web 2.0, Didactical Innovation, lifelong learning.

Introduction

The role of Information and Communication Technologies (ICT) is very important in increasing access to lifelong learning, in particular continuing education in territories facing the risk of education exclusion due to geographic remoteness, social disadvantage or poor facilities.

The new educational paradigm associated with the implementation of the European Higher Education Area (EHEA) is the acquisition of skills. Being competent means having a successful performance in the workplace and in everyday life, given that powers are given by skills, behaviors, knowledge, capacity and attitudes that support the proper performance of our duties in all areas (Criado and Moreno, 2009). The ECTS credits system introduced some changes in ways to approach teaching in comparison to the traditional system. The shift of the educational paradigm implies a profound change in many of the tools, elements and concepts that make up the system (Criado, 2010).

Classrooms out-site work is part of student work, who must perform more tasks and assignments under the guidance of their teacher. In turn, this implies that continuous evaluation will be promoted; therefore the grade on the exam will only be a part of the final grade. Therefore, it is convenient to find ways for coordinating and innovating in teaching to: Encourage students to work outside the

classroom; Give students proper directions on how to carry out their assignments and provide teachers with reliable continuous evaluation mechanisms.

Several authors as Le Boterf (2000) and Cano (2008) remind us that the center of competence is the subject-learner who builds competence from the sequence of learning activities that mobilize multiple expertise knowledge; thus, evaluation is an opportunity to promote learning.

Our purpose in this paper is to explain a set of innovative teaching tools based on e-learning, used in the area of Marketing and Market Research in the Business Administration degree, specifically in the subject of Marketing: Fundamentals, which tried to help to build a culture based on teamwork, elearning and co-operation to facilitate the coordination of education and its continuous improvement by using new Information and Communication Technologies.

Results and discussion. The use of ITC tools in didactical innovations and e-learning for rural development

The goal is to provide medium to long-term tools so a student can completely follow the course on-line (Spanish students benefited from the Erasmus program, students who work, students who live in territories geographic remoteness or have incompatible schedules, etc.). The Department of Marketing and Market Research intends to apply gradually these tools to other classes of the Business Administration degree. In addition, the application of multimedia resources enables the university community to optimize the work without being physically at a particular location.

The recent implementation of Degrees at the University of Alcalá (UAH) has motivated the teachers of the Department of Marketing and Market Research to make use of new multimedia resources available on the web as tools of innovation and educational coordination.

Usage of these on-line tools is being implemented gradually in groups of students and in a coordinated fashion among faculty members. Specifically, we have begun to use in Marketing class: Fundamentals of the Business Administration degree, noting the advantages of its use as detailed below and detecting learning difficulties or needs that may arise among teachers and students for better and more efficient use of such tools.

So far, the experience has been positive for both students and faculty. For students because this sort of tools are best suited to this to their technological environment, they tend to dominate their use and this very dynamic learning motivates them. Whereas for teachers, it allows them to share teaching materials, follow common work guidelines, to be fully coordinated, having a constant interaction with other teachers with whom they share the classes, the coordinators, the head of the department, administrative and services staff and, above all, with our students.

The Department of Marketing and Market Research believes that it is essential that all the teaching staff is coordinated in the planning, development and control of the classes that they are responsible for (both theory classes as practicum), in small and large groups.

Moreover, it doesn't only provide for the coordination among the teaching staff but also with the Administration and Services Staff (PAS) and with students.

For the proper exercise of such teaching coordination and innovation we develop following initiatives:

The use of on-line platforms, specifically the "Blackboard", as coordination and innovation tool for teaching is an important aspect as a tool for innovation.

It offers the possibility of providing any document that the faculty deems necessary for the development of the subject on-line, such as the teaching guide, the list of assignments, templates on procedures in the development of the practicum, presentations, etc. Fig. 1 shows an example of the class materials that can be made available to the students through the platform.

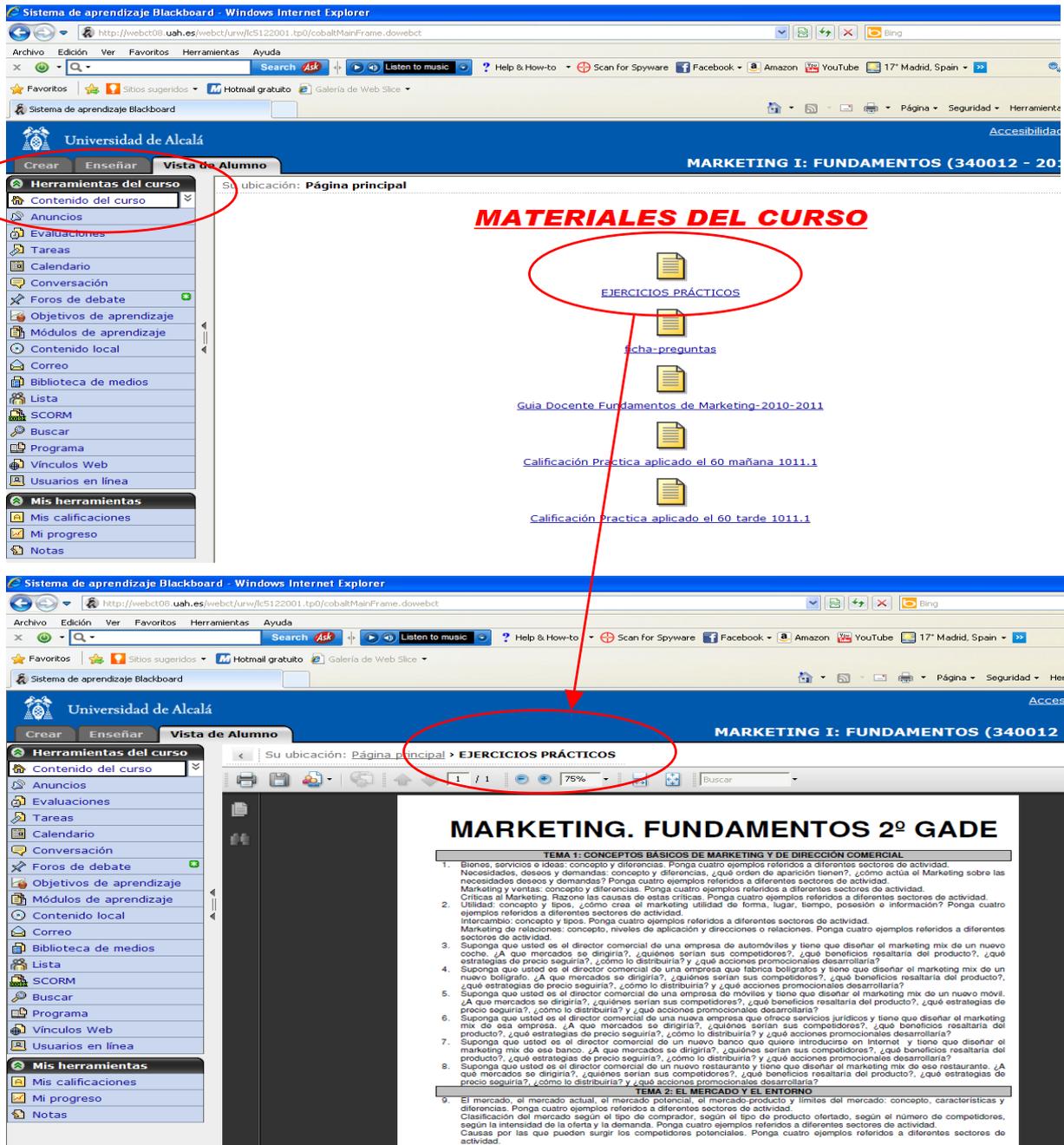


Figure 1. The UAH platform as a tool for teaching innovation and coordination. The case of coordination between teachers and students in the subject: Marketing: Fundamentals of the Business Administration Degree. Source: The authors.

Another example of coordination is the communication between the teaching staff regarding what documents are uploaded to the platform and provided to students. To this end, we requested the PAS free access to the platform for all the teachers of this class even if they teach large or small groups; theory classes or practicum; for morning or afternoon shifts. As we can observe in Fig. 2, red shows the two teachers who teach the course: Marketing: Fundamentals, Pedro Cuesta and Estela Nunez. Both have access and permissions to upload documents to the common platform for all groups. Green shows on-line users of this platform, the students. This tool helps us to work together and use the same documents for all groups.

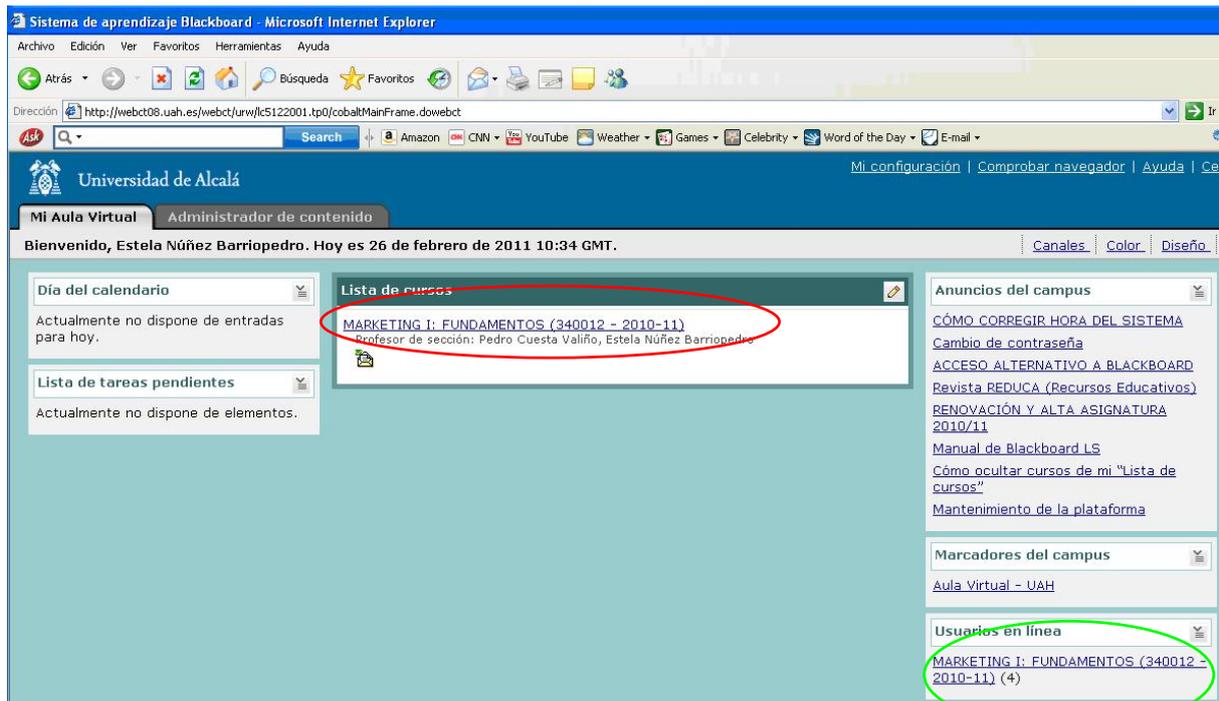


Figure 2. The UAH platform as a tool for teaching innovation and coordination. The case of coordination between teachers and students in the subject: Marketing: Fundamentals of the Business Administration Degree. Source: The authors.

We can also observe the coordination between the teachers and their students (marked in green) on 26 February 2011, at 10:35 (Fig. 3); please note that the names of the students have been distorted to protect their privacy.

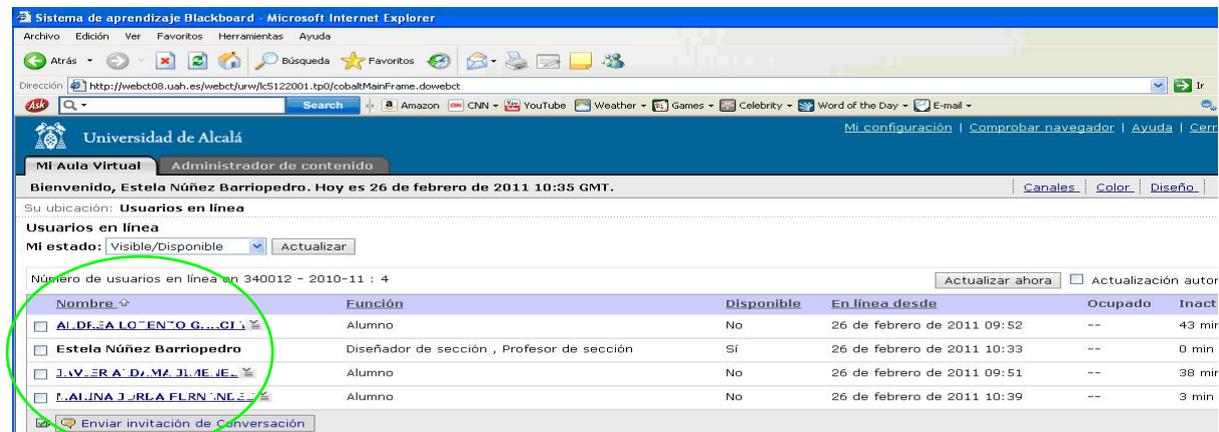


Figure 3. The UAH platform as a tool for teaching innovation and coordination. The case of coordination between teachers and students in the subject: Marketing: Fundamentals of the Business Administration Degree. Source: The authors.

Using the teaching guide as a key tool for an adequate organization, development and evaluation of the classes.

This document lays out rights and obligations of both teachers and students; the schedule for theoretical and practical lessons; and the criteria for continuous and final evaluations. In this sense, at the beginning of the course the students must submit a signed document stating their preference regarding the form of evaluation in the course. This instrument allows for better organization and coordination between teachers and students and helps ensure compliance by both parts. The teaching guide, with the attached documents, is provided to the students through the "Blackboard" platform so they can download, save or print it.

Periodically, the teaching staff holds meetings, having previously summoned the meeting on-line, informing of the place and date

One of the priority meetings before the start of the school year is the meeting of the faculty, in which all the fundamental aspects to consider are raised; i.e. the teaching guides, content sharing, procedures, clarification of doubts and the importance of these documents is established.

During the year, and before the start of classes, we hold another meeting, also summoned on-line, in which we address common points regarding the planning, organization, development and control of classroom work and home assignments. Here we set the following aspects:

- » establishment of a guide on common working procedures;
- » communication of theoretical and practical learning experiences that have worked well in previous years;
- » planning of new teaching practices with the use of new technologies that allow for innovation and acquisition of new skills by the student; and
- » clarification of questions, recommendations and proposals for actions to improve the development of classes, evaluation assignments and the preparation of exams.

The pooling of all these aspects offers the following advantages:

- » Support for all teachers in the area of marketing and market research who will ultimately work on the same line.
- » Allowing us to offer students a picture of complete coordination, working in harmony.
- » Helping us make an assessment under the same criteria and the same working procedures. Therefore, we achieve better results both in the learning of our students, who are more satisfied with development of classes, their home assignments and their continuous and final evaluations.
- » Learning about the teaching experience.
- » Learning and implementing new practices of teaching innovation and coordination.
- » Development of continuous improvement initiatives.

During the school year, we held meetings with other teachers from different areas that teach or have taught classes of the Business Administration degree (ADE) and class representatives who represent students from large and small ADE groups. In such meetings we usually expound on what traditional and "new technology" procedures have worked better and worse; the student's perception about them; we have also highlighted the challenges faced by teachers and students alike.

The recent creation of a Teaching Innovation Group named INDOMA (Group for Educational Innovation in Marketing) by the Marketing and Market Research Department in 2010

We also wish to highlight the members of the aforementioned group have undergone training in new innovative tools such as for example the "Blackboard" between others tools, which is the virtual platform used at the UAH. This group of teachers of the Department is coordinated and advised by an external teacher to our Department, who is an expert in teaching innovation with whom we have regular meetings, virtual and in person, who we address in case of doubts and new teaching innovation projects.

Conclusions

The set of innovative didactical tools based on e-learning, used in the area of Marketing and Market Research in the Business Administration degree, specifically in the subject of Marketing: Fundamentals, it can be used in other disciplines and lifelong learning. Particularly, it can provide education in territories facing the risk of education exclusion due to geographic remoteness, social disadvantage or poor facilities

The implementation of the EHEA in Spanish universities involves a process of change from the previous model, making it necessary to incorporate a system for teaching coordination and innovation according to the proposed reform.

In the case of the Marketing and Market Research Department of the Business Administration degree, we have included a package of multimedia tools for coordination between faculty, students and PAS in

order to work under a common project, learning from experience, and working on the development of innovation and continuous improvement. With these working procedures, coupled with the use of the tools listed above, we not only meet the learning needs of our students better, but we also adapt better and in a dynamic way in the current EHEA environment.

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E-COLLABORATION TOOLS AND STRATEGIES FOR RURAL AREAS ADDRESSING THE NEEDS OF SPARSE COMMUNITIES IN DEVELOPED COUNTRIES

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Abstract

Rural areas, and in particular agricultural communities, while sharing emerging learning needs with other sectors, show also specific peculiarities. So, to the generic needs on continuous education that arise from a global change in the society, they add the specific needs deriving from being, almost by definition, sparsely populated area. Furthermore the heterogeneity of the territories has lead in most countries to a regional governance of the sector. But while some knowledge is actually territorial specific, much knowledge remains shareable between different communities, with the same competences required in every region. On top of this, modern agricultural policies increased the pressure of a switch from a few "traditional" supported activities to a wider array of activities to better meet marked demand, where increased competition require a quicker technological progress.

To address these needs, new technologies and methods that emphasis learning by collaboration and knowledge sharing seems particular appropriates. We therefore advocate on this paper e-collaboration as a way to boost traditional e-learning approaches, where roles division between "teachers" and "students" remain strong, in the direction to bottom-up approaches, where the objective is to provide networking services trough easy to use but powerful tools for the self-formation of communities and socialisation.

Keywords: agriculture, rural area, knowledge sharing, learning communities.

Introduction

This paper advocate the usage of ICT tools to promote a collaborative social learning environment in the agricultural sector. The paper is organised in two parts, in the first one (sections 1 and 2 and 3) we present a context analysis to highlight the advantages of such approach, and in the second one (section 4) we give an example of how these tools could be practically implemented.

In fact the idea that ICT tools can be used to build specialised social networks (e.g. sector specific networks or targeted oriented communities) is becoming quite common, with no academic publications on this topic in 1990 and over 543 publications in the year 2007 alone, according to [1]. However, due a physiological isolation from research teams with sociological and economical backgrounds on one side and research teams more oriented trough the ICT sector, often this idea doesn't get applied.

The importance of the technique shouldn't be dismissed. For example, when Google arose as the most successful internet search engine, it did it without inventing any new concept, as search engines was already in the market for a while. It was just a marginally better search (and storage) algorithm that allowed Google to overcome them.

However, on the other side, we shouldn't ask ourselves which practical implementation to adopt for newly available ICT tools. As noted in both [2] and [3], the right approach should start instead from the educational needs of individual and communities and the research question should be the opposite, that is what is the most appropriate, cost-effective and sustainable way to address that needs.

Accordingly, our approach starts from an analysis of the farmers needs (section 2) where we evidence how the main problematic, at least in the developed countries, is the shortage of an appropriate human capital rather than a financial or land one.

In section 3 we develop the idea of learning communities as a way to integrate both top-down formal education with bottom-up informal knowledge sharing, in a so-called hourglass approach.

Once our approach has been discussed, in section 4 we give a detail of the implementation at the platform level. Among other issues, we discuss the importance of delegation, manage user relationships and how to represent trust in a social network.

Finally section 5 concludes.

Farming learning needs

Citizens of rural area, while sharing similar needs to those of urban areas, have specific disadvantages. [2] cites that geographical remoteness means transportation difficulties; that distance from markets can be a disincentive to new business growth.

To this issues [4] adds to note how rural areas are characterised by a plethora of micro-businesses (both land-based and high tech), meaning that an employer-based and employer-led initiative seems almost bound to fail. Self-employed people, for example, have no choice but to take responsibility for their own learning. Micro businesses means also that the owner must make decisions on a heterogeneous range of topics, for many of which no "exact answer" exist ([5]).

In the specific contest of farming, the impossibility to implement economies of agglomeration has lead the economic agents in the agricultural sector to disperse their activity along the regions. And, as their activity is strictly interconnected with the territorial characteristics, also the governance of the sector is typically strongly distributed. E.g. in Italy the agricultural sector is a regional (NUTS2) delegated field. However, while some activities are indeed regional specific, others are much more general, presenting the needs of the same knowledge - both for the end users and for their governance bodies - within each local community. For example the technical information on how deep to till to save fuel and preserve soil while keeping high production levels, or the administrative skills required to apply for rural funding.

Further to that, [1] notes that the small size and spatially dispersed nature of most farming businesses is such that, unlike other industrial sectors, farmers are unable to carry out their own research and development (R&D) and there are no major players from which spillover R&D can occur. Overall, remoteness usually means a lack of access to education, training and professional updating.

However, in today knowledge-based society, human capital is often seen as the main source of competitive advantage. This is particularly true in the agricultural domain, where a new wave of political reforms are deeply changing the sector in the direction of a higher level of competitiveness. And, while up to recent times, there was a deep division between the period of (school or university) training and the period of the application of the acquired skills at work. The changing socio-economic conditions, in which the labour market has undoubtedly increased dynamism, made this approach inadequate.

To the traditional dichotomy between school and work (or acquisition vs. usage of the skills) a new model of continuous learning is prevailing where the two functions coexist requiring a greater level of flexibility to adapt to the different times, rhythms and needs of the learners.

If we have as objective to improve the human capital in the agricultural sector we can't direct our projects toward farmers alone. In fact [1], studying farmers network of practices, notes how many other people and organisations who are not farmers contribute to the learning and knowledge management of the individual farmers.

The reason of this is that "farmers are a very particular case as a network of practice as they are producing both a public good and are private enterprises. Enabling their practice means that they necessarily draw on a wide network of people, including those who are not part of their professional or practice community, (or network), yet are significant influencers on that practice".

From distance learning to e-collaboration

While distance learning is certainly not a novel approach in the agricultural sector, in the last decades, boosted by advanced in the ICT industry, there has been a resurgence of interest on distance learning as a potentially useful strategy for addressing human development issues. [3] offers a historical viewpoint on distance learning, with a list on mayor programs that have occurred since the 1960s.

We should distinguish programs for development countries and programs for developed ones very sharply, as objectives and issues are very different.

In the first case in fact the main objective is often to provide a primary education, reaching a multitude of users keeping costs down. Limitations in this case are more of infrastructural type, e.g. poor internet connections, sometimes even inadequate power supply. This often leads to a mix of delivery methods where low cost and conventional learning technologies continue to play a crucial role in distance education programs [6]. [2] adds that while pedagogical readiness about new technologies should be certainly taken into consideration, in developing countries "the motivation and determination of many learners in rural, disadvantaged areas often overcome what would be considered insurmountable

hurdles even in developed countries." Further to that, farmers in developing regions have a much lower age than farmers in developed regions and have more kids that are the real innovators in the farmer's families regarding ICT tools.

In developed areas the use of ICT to improve the human capital through distance learning programs in the agricultural sector is very different. Firstly the objectives are different: we analysed in section 2 that the aim is to provide a continuous education rather than tackle with basic education. Furthermore real limitations often don't arise from a shortage of ICT infrastructures, but rather on the pedagogical readiness of the farmers. [4], citing a UK government report, claims that internet access is more used in rural areas than small town or even larger towns.

However in both developing and developed countries we can also understand some common points: as noted in [2] and [3] other activities will lead the adoption of technologies used by e-learning applications, which are unlikely to be the primary reason for initial ICT take-up. E-learning is a growing market but e-shopping, communications and entertainment are the primary drivers of ICT take-up. This is true for both the infrastructural aspects (broadband, and multimedia devices in developed countries, smartphones in developing ones) and the pedagogical readiness. For example the usage of general-purposes social networks will make the users aware of concepts like login, post, thread, notification that can be used in a didactic context.

E-collaboration

When the target is reaching a large number of users requiring basic education, like in the developing countries, top-down approaches seems particularly suited, and the usage of ICT in distance learning can fruitfully take the shape of e-learning courses.

However, when the needs are instead of continuous education, like we saw in section 2 being the case for farmers in the developed countries, an approach that integrate both the top-down formal education with a bottom-up informal learning, in a so-called hourglass approach seems more appropriate, where "traditional" e-learning course provision acts as a stimulus for the "social learning" facilitation.

On this topic, [1] argues that "formal education and training, beyond initial training when farmers were young, did not feature as something that farmers wanted or that they perceived as particularly needed". This is also the conclusion of [2] stating that "informal learning, pursuing leisure interests, peer-to-peer learning in online communities, and accessing information (i.e., about health matters), are as big a component of the e-learning market-space as formal, accredited online courses".

Informal self-learning is anyhow something that has always existed in rural areas, as noted by [4]. This imply a change in the role of the institutions. Educational institutional in this context have the role of facilitating the informal learning opportunities within their targeted community. Already in 1996 [7] was stating, referring to the broader concept of community participation:

"What we do know is that if computer networking is a medium that can help increase community participation, it will not do this by itself. We, as citizens and community leaders must create the "structures" and the "space" - a virtual commons - within which discussion can flourish. We must cultivate group participation by moderating discussion, updating content, archiving conference discussions, and organizing information into dynamic, usable, and readily accessible, material full of feedback options."

So if the first visionary ideas about a community facilitating role of public institutions have at least 15 years, it is only recently that such approaches could have undergo practical implementation.

Often, when services migrate from the physical word to the virtual one of internet, they are inclined to replicate existing structures and metaphors, in order to use concepts to which users are accustomed in the traditional context. For example, in the Voice over IP industry (VoIP), the early versions of the software were modelled in an extremely faithful way to the characteristics and the look of the old-style phones.

Only when these services reach a maturity stage they can develop in a new original way, differentiating themselves while tacking advantage of the characteristics of the new media.

For example, referring again to the VoIP services, software can be enriched with contact and presence status, alphanumeric usernames, video communication, file transfers, screen sharing, etc. All this "new original features", if on one side they lead to a maturation of the service, covering the

needs of their users, on the other side they yield such services more and more far from the traditional telephones appearances and functions (Figure 1).



Figure 1: Processes need time to adapt to the new medium

The same can be said about learning initiatives. The first initiatives that used internet as a medium were merely a transfer in the virtual world of processes and methods consolidated in the traditional educational practices. Therefore, elearning initiatives were organised in "courses" and "lectures", virtual "classrooms" and "libraries", virtual "registers", etc. ...

Only with the advancement of the technology (and of the readiness) it is now possible to propose solutions that will allow not only to replicate existing learning approaches over the internet, but also to experiment with approaches that, while widely recognised for their pedagogical value, can not easily be used in traditional learning environments.

We think to social platform that integrate elearning structured courses with a social network approach as a methodological evolution, as it can better serve the needs of rural areas of a formal training with a informal, shared social learning.

The next section will highlight the early stage of such an application that we are currently implementing.

An e-collaboration platform for the Agricultural sector

This section presents the key features of a web platform in its early stage of development, designed to facilitate a collaborative social learning environment in the agricultural sector.

We move therefore from a contextual analysis of the agricultural sector to the software layer, where we try to describe the characteristics that the software should include to be able to perform the designed networking role.

Figure 2 shows the home page of the platform. The main point of this platform it to integrate top-down learning material with a social network. In this implementation the former take the shape of journal articles, structured e-learning courses, physical seminars, live webcastings. When the community manager post some content, he/she also choose which are the groups that are more related to the content. This one is always open to interaction (from simple comments to webcasting chat participation), effectively acting as a stimulus for the discussion in the relevant (sub) communities.

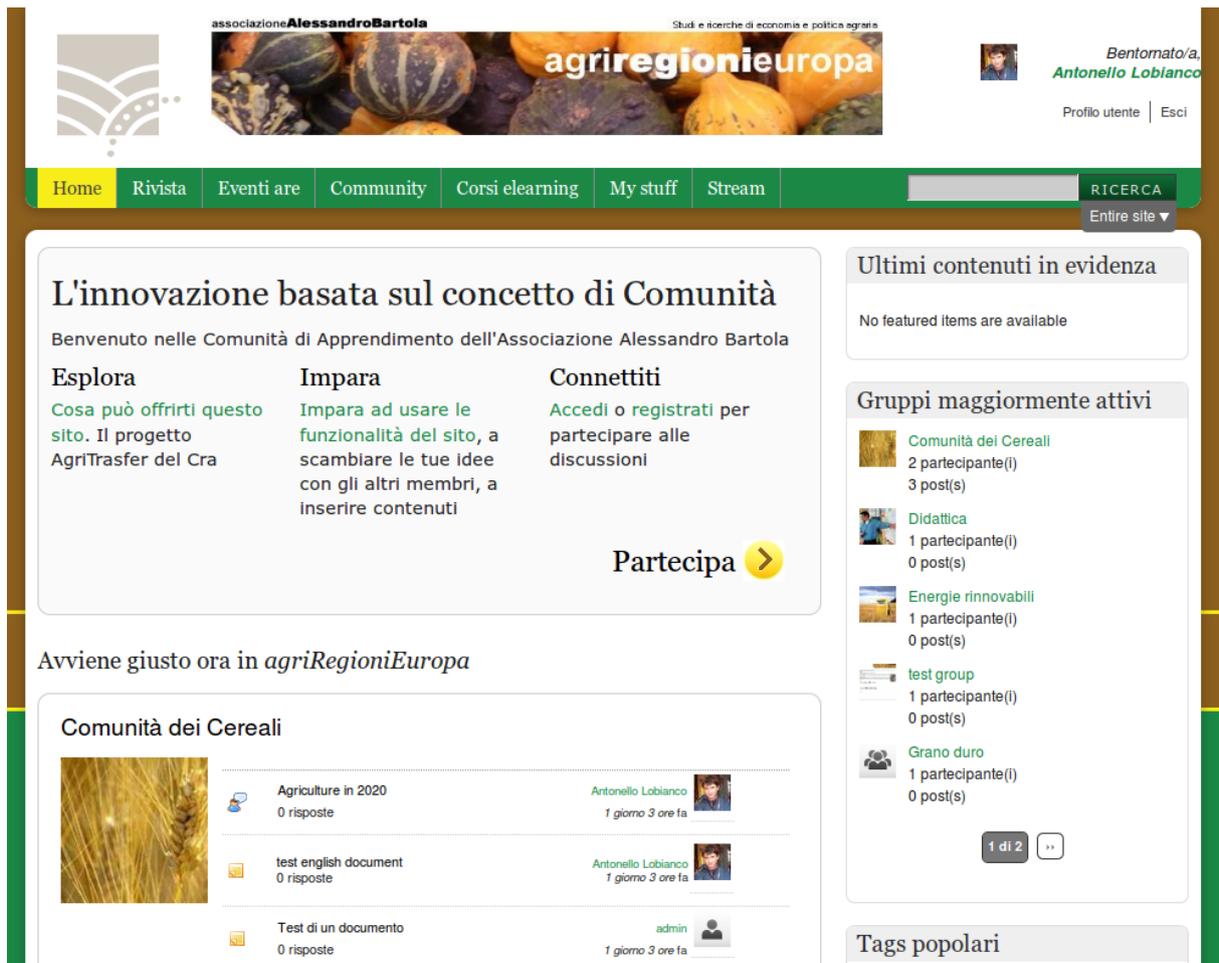


Figure 2: Home page of the platform

Access Control List

The social aspects are implemented through a series of features, the first one is the platform being able to recognise different roles in the community, each one with a different set of associated permissions.

In order to do so the platform must be able to use a flexible ACL (Access Control List) that allows to define roles and permissions associated to each role. Example of "permissions" are the possibility to view, create or edit a specific type of content or a component of it (e.g. a single field, like in Figure 3).

Permission	anonymous user	authenticated user	community manager
edit own field_working_organisation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
edit own field_working_organisation_dept	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_authors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_barometer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_body	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_emb_reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
view own field_article_finestra_number	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 3: Each role has its own set of permission

Versioning

A second key aspect is that since the learning community must be able to interact using content as the main medium, the creation and updating of content must be at least partially delegated to the end users.

In order for this to work, the platform should allow for ex-post (community or centralised) verification rather than using ex-ante control. For example, rather than throwing any user-generated content in an approval queue, it should allow for an initial real-time automatic check against evident spam, followed by immediate publication and then community check (and, possibly, improvement). Therefore the platform must provide a full versioning of the content, with the possibility to see, merge and restore previous versions (Figure 4). While this is important for any social network, it is essential in a learning context, and it is no coincidence that versioning capability is the foundation of sites like Wikipedia.

Home > For an Ambitious Reform of the Common Agricultural Policy

View Edit Revisions Track Translate Devel

Revision	Show diff	Operations
23 Oct 2011 - 16:34 by admin	<input type="radio"/>	<input checked="" type="radio"/> <i>current revision</i>
23 Oct 2011 - 16:32 by Antonello Lobianco	<input checked="" type="radio"/>	<input type="radio"/> revert delete
12 Aug 2011 - 16:46 by Antonello Lobianco	<input type="radio"/>	<input type="radio"/> revert delete

Imported with node_import.

Figure 4: Each modification of a content creates a new independent version

Hierarchical groups

Often the problem is not the availability of information, but to be able to quickly identify relevant and reliable material amongst large amounts of data ([2]). End users must therefore be able to self organise themselves around common topics of interest, where the information is more pertinent. This means to be able to autonomously create groups, better if hierarchically organised (Figure 5).

Groups should be a whole “dimension” of the platform, where each type of content and activity used in the platform should take groups into account. So each group could have its own forum, its own documents, its own agenda, etc.

In our implementation, articles can refer to a specific group, as do seminars or webcasting events.

Figure 5: Groups page

Notifications

The importance of filtering the relevant information is also the basis of selective notification, where users choose what and how to be notified about.

Referring on "what" to be notified, we can distinguish in (a) content-based notification, when e.g. users choose a single topic to be notified; (b) a context based notification, when the choice involve a group or a particular topic or (c) a individual member notification, when it involves a single member to be notified about his/her activity. Figure 6 shows an implementation of this functionality, where the user is presented with a list of notification options.

The notification mode can also be chosen by the users among the available channels offered by the platform, varying from traditional email to on-screen pop-ups or mobile SMS.

Figure 6: User's choice on subscription level

Credits

The choice made by the users about the information to filter is influenced not only by the contents of the information itself, but also by its properties, like its age or the trustworthiness of its source.

The importance of trust in learning has been enlighten in ([5]). If in formal education it is a long time that ways to recognise trust are in place (e.g. the journal "impact factor" in the academic sector) a popular criticism of bottom-up learning approaches is that they don't allow for proper reputation meccanism. Indeed, most social platform include a way to represent reputation. The trust could be summarily indicated with a pointing system, with the most modern ICT platform offering a flexible method to define the algebra arising to such pointing in order to adapt to the context, for example the level of participation in the community could depend on the number of content or comment entries made, the expertise could be measured by the number of "thanks" received, and so on. Figure 7 shows a subset of options that lead to the algebraic calculation of the user level of participation in our implementation.

▼ Facebook-style Statuses

Userpoints for changing one's own status:

Userpoints for posting a status message to another entity:

Maximum number of Userpoints from posting statuses per day:

Set to zero for no limit. Note that the actual number of points awarded per day could be higher than this if this v

▶ Facebook-style Statuses Comments

Go to [Userpoints Badges Settings](#) to edit userpoint badges

▼ Points for posting nodes

Take away points on node delete

Points for posting a Blog entry:

Points for posting a Poll:

Points for posting a Discussion:

Points for posting a Document:

Figure 7: A flexible pointing sytem

Relationships

Last but not least, at the core of the functionalities of a social network there are the interpersonal relationships. While most of the interaction can be mediated by the content, it is useful to provide ways of direct communication between users. With a flexible relationship manager (Figure 8) the community manager can design the platform for the characteristics of the community. Users can hence select the other users they are related and follow their activity, or at the opposite decide which type of actions let the own followers see from them.

Relationships

[Home](#) > [Administer](#) > [User management](#)

List Add type Settings

Relationship Types					
Name	Plural	Type	Requires Approval	Expiration	Operations
Friend	Friends	mutual	yes	Never	edit delete
Regional agronomist	agronomists	one way	yes	Never	edit delete
Customer	Customers	reciprocal	yes	Never	edit delete
Supplier	Suppliers	reciprocal	yes	Never	edit delete

Figure 8: Flexible relationships manager

Concluding remarks

Through this paper we analysed the learning needs in rural areas. These areas are characterised, almost by definition, by the presence of sparse communities.

On one side remoteness and the interrelated small size of businesses means many disadvantages in a knowledge-based society: self-responsibility for the own's learning but at the same time impossibility to carry out in-house research and development (R&D) activities; difficulties in physical networking activities; distance from centers of excellence.

On the other side however, rural areas are characterised by a strong cultural identity and a high willingness to collaborate.

Furthermore, at least in the developed countries, the main needs concern a provision of continuous education rather than primary education.

In this context, an approach that integrate both the top-down formal education with a bottom-up informal learning in a so-called hourglass approach seems more appropriate, where "traditional" e-learning course provision acts as a stimulus for the "social learning" facilitation.

We presented in section 4 an implementation of a web platform that allows to integrate the two approaches: the platform allows users to be considered as nodes of a networked community where the type of relation depends of the context. This will enable the creation of both e-learning courses where the relations are typically polarised over a teacher-students dualism and learning communities where instead the relations between users are more of equal footing.

The platform must be flexible enough to be designed around the specific characteristics of the targeted community and the project goals, and a number of key features, without which the platform can not operate the role of social networking in an education context, has been discussed.

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Chapter 5

Innovative learning methodologies (Workshop 2)

BLENDING THE OLD WITH THE NEW: AN INTEGRATED APPROACH TO ESL LEARNING

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Abstract

In many regions of the world, whether in Eastern or Western regions, there is always a disadvantaged population wanting to learn a second language but hindered by its geographic remoteness, weak or no internet access, or serious financial constraints. It is, therefore, the purpose of this qualitative action-research study to demonstrate various practical, innovative and inexpensive teaching tools that help ESL young adult learners develop their listening, reading and writing skills, as tested against some learning outcomes of their course. Learning tools such as English newspapers in areas with no internet access, and downloadable recordings from the National Public Radio (NPR) in areas with occasional internet access (www.npr.org) have shown to involve learners in interactive, skill-integrated activities regardless of their socio-economic backgrounds and geographic locations. Therefore, as researchers in the area of the development of critical pedagogy stated that instead of teaching learners to simply read the word, they are taught to read the world (Freire and Macedo, 1987).

Introduction and literature review:

In our twenty -first century and globalized world, one tends to forget that not all people are fortunate enough to have regular access to modern day's technology and innovative devices, particularly in language learning settings. As instructors worldwide have grown to be dependent on technology as a major tool aiding both the teaching and learning processes, it is becoming a challenge to even envision how populations in geographically remote areas of the world, whether in the Eastern or Western hemispheres, can, despite the many challenges facing their lives, still become successful L2 learners. Approximately two decades ago, Kolb (1997), Rogers (1996) and others strongly believed that the core of learning an L2 lies in the way students process the learning experience. Therefore, a needed shift away from teacher centered and technology centered classrooms is needed in environments where technology is scarce and facilities are limited. Many researchers have advocated this shift, where focus shifted towards the development of learners' skills and critical thinking abilities as lifelong learning tools which they can apply in most learning environments (Baxter and Gray, 2001, Sadlo, 1997). It is, therefore, becoming imperative that educators reform, revise and revamp their teaching instructions and teaching tools in a way that encourage students' involvement with both their peers and available resources, thus, increasing their motivation to learn. When peers are regarded as an important factor in the learning process, learners become involved in critical thinking activities and interaction with each other (Morris and Stew, 2007) because when given the opportunity to select their own materials and present their own summaries, they learn to develop their critical thinking skills. Educators often neglect the value of peer interaction as a means of achieving the learning objectives of a course. As Goldschmid and Goldschmid stated that "a students' colleagues often represent the least recognized, least used and possibly the most important of all the resources available" (Goldschmid and Goldschmid, 1976, p. 23). These processes of peer work, group discussions and self reflection all interact to develop the learners' critical thinking skills. For the purpose of this qualitative action research study, the term "critical thinking" is used to refer to what Pascarella and Terenzini (1991) describe as involving the learners' ability to "identify central issues and assumptions in an argument, recognize important relationships, make correct inferences from data, deduce conclusions, interpret whether conclusions are warranted on the basis of the given information and evaluate evidence or authority" (Pascarella et al, 1991, p. 118). Despite the seemingly ambitious objectives of

the study, findings revealed overall gains in their scores in most of their reading, vocabulary and writing scores.

Purpose of the study:

It is the purpose of this study to investigate the effects of using newspaper articles and audio recordings on learners' reading and writing skills, as seen in major assessment tasks during 2 academic years. *It is, therefore, hypothesized that the use of newspaper articles and audio recordings will improve students reading, vocabulary and writing scores.*

The Study:

Participants are 62 ESL freshman students enrolled in an academic reading and writing course in the American University in Cairo. Classes include 14 to 18 students and meet 4 days per week. All instruction is in English.

Some of the learning outcomes of this intensive program are summarized as follows:

1. To demonstrate comprehension of a given text/article.
2. To guess meanings of vocabulary in context.
3. To identify the main and subordinate ideas in a given oral or written text.
4. To demonstrate effective paraphrasing and avoid plagiarism.
5. To demonstrate language accuracy in a concise summary and essay.
6. To communicate effectively with their peers in an academic setting.

Based on these learning outcomes, the researcher carried out the study bearing in mind that little technology is to be used, and only inexpensive resources are available.

Method and Instruments:

Participants were divided into two groups labeled *group 1* (Fall 2009 and 2010 semesters) and *group 2* (spring 2009 and 2010 semesters). The first group received various English newspaper articles while the second listened to recorded NPR selections.

The task: Group (1)

Group 1 participants were asked to work in pairs then select an article from provided newspapers. This selection process developed their feeling of autonomy and enabled them to work with authentic, up-to-date information, thus bringing the world into the learning process. Once the articles were selected, and each pair felt comfortable with their choice, the instructor began to explain the task.

Participants were asked to read the article over a period of 2 days so as to enable each one to share it with their peer, assuming there is no access to a copy center. They were asked to summarize the text's main and subordinate points, find meanings of new lexical items by borrowing their instructor's dictionaries and organize the information so as to share it with their peers in class on their assigned day. In addition, they were also encouraged to guess some meanings of any ambiguous words and discuss them in class since this is a strategy they had been practicing in class. After the instructor checked their work, they were taught to present the information in an outline form, use their outlines for a 3 minute oral presentation about the information in the article, or engage in a 5 minute debate where each person argues for or against the information in the article. This last task depends on the academic level of the learners as well as the actual topic of the article, since factual topics will not lend themselves to argumentation. The teacher, throughout the task, has been the facilitator who monitored the learners' work, gave them guidance and support, and encouraged them to work in pairs, thus fostering both independence and collegiality, hence, encouraging group work and team spirit along the way. Participants share their work in class, in pairs, and are asked to complete a self-assessment questionnaire where they reflect on their own work, the processes involved in carrying out their task, the strategies they had used to reach their goals, the skills they had used or need to work on, as well as how they felt about the activity. This self reflection process brings a kind of closure to the task, and acts as a new beginning for further tasks in the course. All grades of major assessment tasks were compiled.

The task: Group (2)

Participants were asked to listen to a downloadable NPR audio recording selected by the class. The instructor downloaded recordings either from the “Morning Edition” or “All Things Considered” which are both available on www.npr.org. These audio recordings are authentic, up-to-date audio recordings with accompanying transcripts which can be used to help instructors develop more activities focusing on the skill area being taught. Both instructors and participants can select topics from a range of thematically categorized recordings. Recordings related to topics on environment, education, health, business, politics, education science, technology, and even entertainment are among some of the wealth of information available in this site. Here, the assumption is that the learners are in remote geographic areas with no internet access, or are suffering from financial constraints and schools with little facilities. The instructor needs to download, ahead of time, several audio recordings for the class to select from. There are also many archived recordings in the same site available for use. It is imperative that the learners feel that they are part of the learning process by active participation in the selection process, thus increasing their motivation to carry out the task to learn something new. The authenticity of the recordings, reflecting opinions of interviewers and interviewees from various countries, played an important, effective and crucial role in the learning process. This way, the geographic barriers are kept to a minimum, and the learners feel that they are one with the global world which they are part of, not apart from.

After each pair selects an audio recording of their choice, participants were asked to outline the main and subordinate ideas, discuss meanings of new vocabulary in its context, share with their peers the outline of the information listened to, and role-play the characters listened to, since most NPR recordings are presented in dialogue format. These activities required 2 days to prepare, and a few class sessions to be presented, depending on the class size. In very large classes, instead of pair work, it is recommended that groups of 5 can work together and divide the tasks amongst themselves. This also creates the feeling of team work and collegiality, in addition to developing their sense of responsibility, accountability and autonomy since the instructor is more a facilitator than an authority figure. With simple tasks as such, and with the integration of the important skills of reading, listening, speaking, writing and team work, the participants not only learn the language, but also enjoy the process of learning.

Findings:

All participants took 3 major assessment examinations during the semester (16 weeks). The first exam tested their reading, vocabulary and writing skills. The reading examination consisted of 5 reading passages, followed by 5 comprehension questions and 4 vocabulary in context questions. All questions had 4 multiple choice distracters. All mean grades are tabulated.

Four weeks later, participants took the second major examination which tested their reading and vocabulary skills as well as summary writing. Four weeks later, they took the final examination testing their reading, vocabulary and writing proficiency. All results are tabulated below.

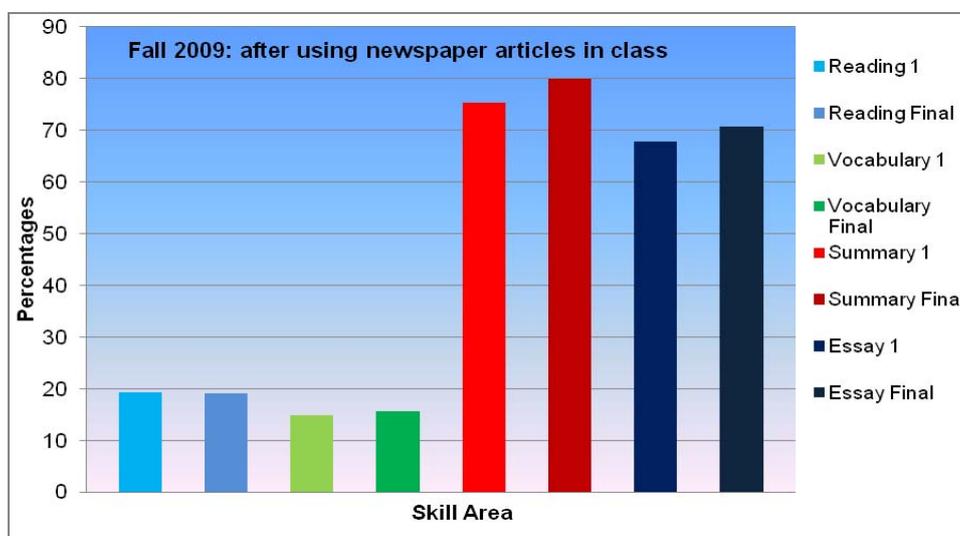


Figure 1

Fall 2009 :after using newspaper articles in class	
Skill Area /Tests	Mean
Reading 1	19.2222222
Reading Final	19.00
Vocabulary 1	14.8333333
Vocabulary Final	15.6111111
Summer 1	75.3038194
Summer Final	79.8611111
Essay 1	67.805556
Essay Final	70.77778

Table 1

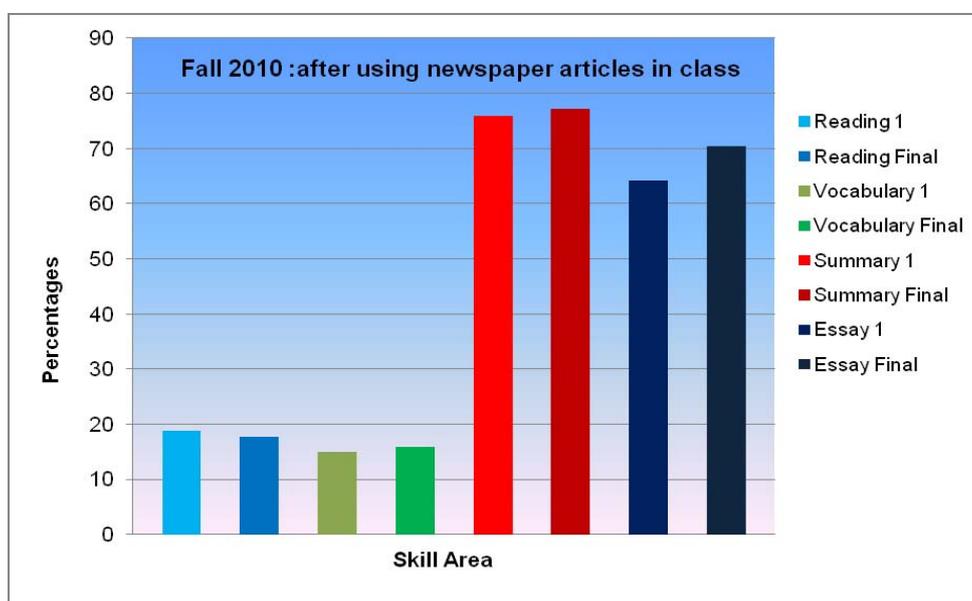


Figure 2

Fall 2010 :after using newspaper articles in class	
Skill Area/ Test	Mean
Reading 1	18.7333333
Reading Final	17.73
Vocabulary 1	14.8666667
Vocabulary Final	15.80
Summary 1	75.84
Summary Final	77.17
Essay 1	64.15
Essay Final	70.38

Table 2

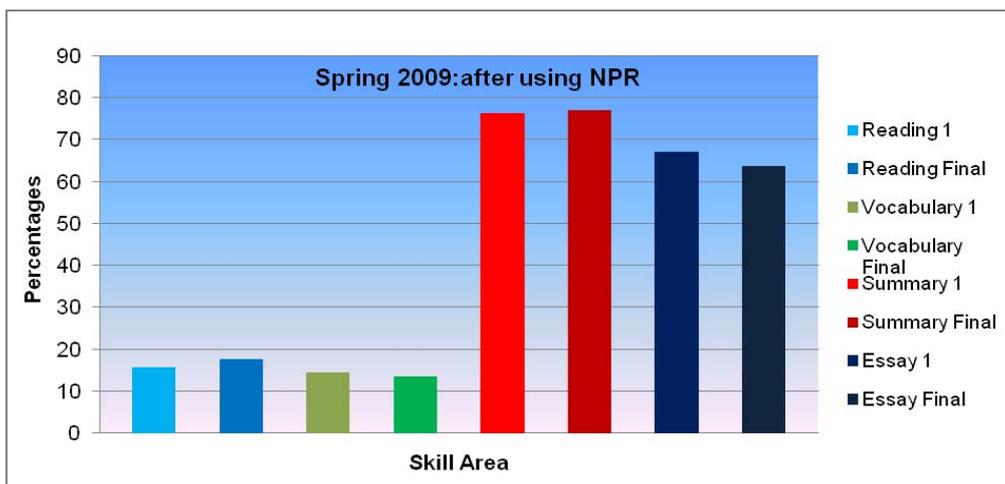


Figure 3

Spring 2009:after using NPR	
Skill Area/Test	Mean
Reading 1	15.6666667
Reading Final	17.73
Vocabulary 1	14.4444467
Vocabulary Final	13.60
Summary 1	76.25
Summary Final	77.17
Essay 1	67.15
Essay Final	63.75

Table 3

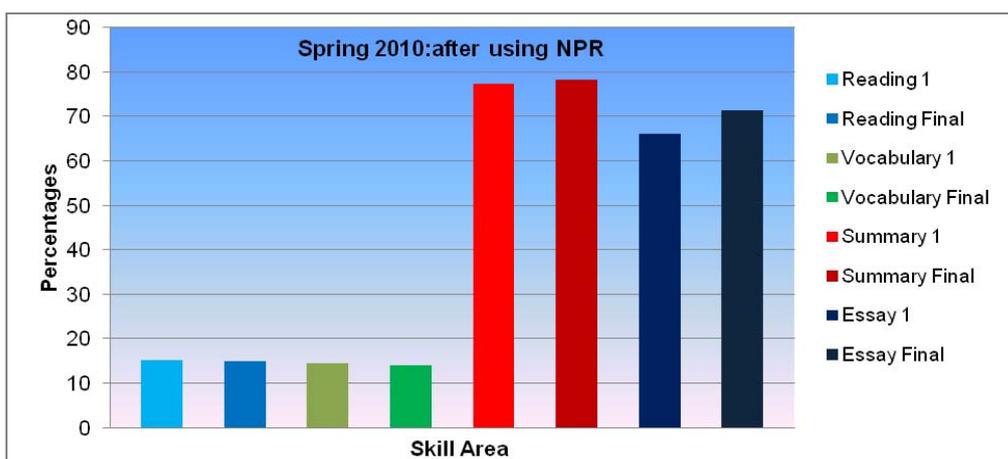


Figure 4

Spring 2010:after using NPR	
Skill Area/Test	Mean
Reading 1	15.14285714
Reading Final	15.00
Vocabulary 1	14.42857143
Vocabulary Final	14.0714286
Summary 1	77.36
Summary Final	78.21
Essay 1	66.10714286
Essay Final	71.32142857

Table 4

Analysis of Findings:

By examining the charts above, it becomes clear that the use of newspaper has led to an increase of participants' vocabulary and essay scores, as well as their ability to summarize given texts. This supports the hypothesis that the use of authentic newspaper texts improves learners' vocabulary and writing skills. However, the reading grades did not improve, which indicates a strong discrepancy between the readability level of the reading passages on the examinations and those in the newspapers selected by the students. Here, the hypothesis was not supported.

Regarding the use of NPR audio recordings during the spring semesters 2010 and 2011, again there was an increase in participants' summary writing abilities as seen in their grades, but there was no significant increase in their vocabulary and essay grades during both semesters. Their vocabulary grades have increased twice and decreased 2 other times (from 14.4 to 13.6 and from 14.4 to 14.0), but their essay scores have shown a different pattern (from 67.1 to 63 and from 66.1 to 71.3). This inconsistent fall and rise in their essay grades indicated that there are other variables affecting their grades such as the ease or difficulty of the essay prompt and their abilities to integrate information learnt from the audio recordings in the content of their essays. Therefore, the hypothesis has been supported with respect to the effect of the audio recordings on improving participants' writing skills. However, the hypothesis has not been supported with respect to the effect of audio recordings on improving learners' reading and vocabulary grades during those 2 academic semesters.

Implications and conclusion:

Like any qualitative, action research study, there are many variables unaccounted for since focus is on one or two variables only, and their effects on the learning process and students' improvement. Based on the findings, further research has to be done in a more controlled testing condition, where the researcher can test for one variable at a time, thus studying the effects of newspaper articles, for example, on reading comprehension only. This will lead to more reliable findings. Despite the lack of support of the hypothesis with respect to the improvement of participants' reading scores, they have gained much information about the world around them. Through the listening activities they had engaged in, they had come in close contact with world events, thus enriching their content on their essay tasks. It is also important to break down all barriers between the skill areas since the objective of this course is to prepare learners to face academic courses in all areas so as to select the major of their choice. This can only be done when instructors look at the process of teaching as a "whole" not just as skills taught separately.

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CREATING LANGUAGE PATHWAYS THROUGH COLLABORATIVE SOCIAL MEDIA

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Abstract

It is increasingly important for working adults to have opportunities for learning and improving a second or third language for both professional and social purposes. The cognitive advantages of the formation of online communities for second language learning are well-documented and new communicative approaches can be found through the use of online group tasks using social media. This paper illustrates the benefits of creating online learning communities for adult language learners (ALLs) throughout Italy who have participated in blended Business and Medical English language courses from the Common European Framework of Reference for Languages (CEFR) levels A2 to C1, offered by the University of Siena Language Centre, Italy, from 2005 to the present. Adult language learners present a range of learning styles and motivations for learning a second language that requires effective strategies for creating flexible learning pathways, readily available through collaborative approaches using social media. Considering the importance of motivation and self-confidence in discourse development, the cognitive and affective responses to learning in an online environment in comparison with the classroom, will be discussed. This paper aims to present effective collaborative language learning activities implemented through shared texts in wikis and group conversations created with online tools such as *VoiceThread*, *Skype* and *Voxopop*. Because most working adults do not have the opportunity to study at the workplace, the paper includes an analysis of the location and access of online participants in rural Italy.

Keywords: blended learning, inclusive learning, continuing education, constructivism, English courses.

Introduction

The University of Siena Language Centre has been involved in the pedagogic design of a blended English language program that has been offered from January 2006 to the present for more than 1100 adult learners located throughout Italy. During this period, 40 blended courses were completed by university technical-administrative personnel involving more than 500 participants. Sixteen blended courses have been offered to the medical and administrative personnel at the hospital, *Azienda Ospedaliera Universitaria Senese*, in Medical English for over 300 participants. In the online learning environment, *CLA Siena Online*, reading and writing abilities are refined through tutor-guided asynchronous forum discussion activities based on the integration of authentic internet resources for reading comprehension, listening, grammar and vocabulary building. In addition, the *CLA WebLingua* language resources [1] are integrated into each online lesson and consist of carefully selected Internet materials, podcasts and other web 2.0 tools in four ability levels. Laurillard [2] states, "the Web provides very well for the lifelong learner who has *learned how to learn* and has the skills needed to explore and evaluate the multiply-connected network of knowledge in their own and related fields."

Learning how to learn in a blended English course encompasses both language learning and the development of new skills in technologies for online study, peer interaction and collaboration [3]. Therefore, aspects of both formal and informal learning are found in the pedagogical approach of this project. Due to the varied needs of adult learners, a combination of several complementary pedagogies is most appropriate for the various elements of this blended learning program. The philosophy of *connectedness* [4] is closely tied to the context of learning a second language, where connections and contact between peers are necessary for knowledge *and discourse* construction. Collaborative group work has been used extensively in traditional language teaching for decades. The communicative approach for language teaching [5] involves small group activities and elements of social constructionist theory, such as the shift of focus from the teacher to the learner and seeks to meet the needs of various learning styles. The communicative language teacher sees her role as a facilitator of communication, often interacting with learners in ways that are similar to everyday conversation. This collaborative interaction can easily be carried out online in forum discussion, which is an effective means for developing communicative language ability as well as forming a learning community of professional adults. However, the new online environment creates a steep learning curve for those who have never studied online before. In addition to face-to-face lessons involving

conversation in the second language (L2), which is often difficult enough, learners must participate in small online groups by writing in English, which is permanently recorded, including any inevitable errors. So in the implementation of language learning pedagogies online, attention must be paid to provide ongoing support, clear indications of objectives and learning outcomes in order to avoid feelings of discouragement [6].

Pedagogical approaches

Based on the multifaceted needs of adult learners, a combined approach of several complementary pedagogies is most appropriate for the various elements of this blended learning program. Some elements of *instruction* are necessary especially for learners at lower-ability language levels to provide for the development of basic language structures, lexical items and pronunciation. At the same time, it is useful to keep in mind that instruction should be mixed with periods of more learner-centred activities that build and expand on the points previously learned.

In particular, the pedagogical approach for adult lifelong learners involves key elements that are inter-related and explained in Laurillard's [7] *conversational framework* which illustrates the importance of discursive and interactive processes, providing the learner with the opportunity to experiment by putting ideas into practice through interaction in L2. This is closely related to principles of *constructivism*, discussed below. It should be noted that the core concept of *connected learning* is woven into Laurillard's framework for designing online activities and includes 4 processes:

- *discursive process* – dialogue, idea exchange, explanation of concepts
- *interactive process* – task-based experimentation, receiving meaningful feedback
- *adaptive process* – linking or adapting the ideas learned from theory to practice
- *reflective process* – thinking back on the interactive process and feedback in order to achieve the task objectives.

This cycle for processing ideas is the basis for the type of complex learning that takes place while developing communicative ability in L2. The conversational framework describes the learning cycle and also represents a principled online teaching strategy in which the teacher foresees learner needs and provides different kinds of support through the way the learning environment is designed. Learning strategies for the blended English courses for working adults require a mixture of online teaching approaches and types of activities appropriate for a wide-variety of learning styles [8].

Constructivism

In consideration of how society has changed in light of the transition from an industrialized society to the Information Society, Beaty, et.al, argue that we need to also change our pedagogical approaches from 'the predominantly instructional paradigm [...] to a more constructivist one' [9]. Furthermore, Papert [10] suggests that the industrialized view of society and the linear curriculum associated with it must give way to innovative pedagogical models available through digital technologies, which are more appropriate for our complex and rapidly changing world. Research has shown that social constructivist approaches are especially effective in the acquisition of a second language [11]. However to generalize that constructivism should be considered as the most effective approach for online learning is too simplistic a concept. In order to plan for a successful learning experience online a strong pedagogical foundation is necessary, which should be based on several factors, as outlined by Weller:

- the personal beliefs of the educator;
- the approach that is best suited to the materials and skills required for a particular topic;
- the level at which a course is taught;
- the experiences students have had on other courses;
- the needs and beliefs of the various types of students involved in a course;
- the range of resources necessary and levels of technology available. [12]

The specific context of each course will most likely require a mixture of pedagogical approaches in order to satisfy course objectives and learner needs as well. Language learners at lower levels need more instruction in learning grammatical forms, collocations and basic communicative structures in order to develop a sound base for the gradual progression up to higher levels of communication and peer interaction in the second language. After progressing to intermediate language levels, learners are capable of knowledge construction through collaborative, conversational activities in L2.

Adult learners

For the adult learner, new pedagogical models are based on active participation rather than on transmission, as stated by Knowles [13] in his theory of andragogy. Although the characteristics of adult learning include greater autonomy, many are not prepared for a radical change of direction from more prescriptive modes and need support in *learning to learn* in this new environment [14]. So learning support can be as equally important as the course objectives themselves. Within sociocultural theory the metaphor of *scaffolding* is used to illustrate the provision of 'just enough assistance to guide the learner to participate in the activity and to assume increased responsibility for arriving at the appropriate performance' [15]. In the case of online group collaboration, the concern may be to determine ways in which scaffolding aids the development of both electronic literacy and language skills, gradually forming the basis for a learner's electronic communicative competence [16].

In the context of second language teaching and learning, elements of a constructivist approach can provide positive conditions for the development of communicative abilities. Research has shown that when communicating online some adult learners show fewer inhibitions, less social anxiety and greater willingness to take risks [17, 18, 19]. This lower level of inhibition is advantageous in second language learning, since it can result in increased discourse production, also referred to by Chapelle as "*willingness to communicate*", [20]. Research into computer aided learning also refers to this phenomenon as 'disinhibition', which Adam Joinson defines as "any behavior that is characterized by an apparent reduction in concerns for self-preservation and the judgment of others", [21]. Asynchronous forum discussion activities provide important opportunities for discourse development in L2 and also increase *willingness to communicate* in normally timid students due to the relatively anonymous feeling of online identity and the extended time available for expressing ideas. So, an online communicative approach based on a constructivist philosophy, through the use of asynchronous computer-mediated communication (CMC) activities, can offer significant advantages as well as provide opportunities for emergent learning.

Collaboration and social media

The program of blended English courses for working adults at the Siena University Language Centre is composed of approximately 60% face-to-face lessons and 40% online study. Asynchronous forum activities, wikis and social media tools have been implemented for collaborative activities in English. The online environment provides the opportunity to extend the time for interaction and conversation that begins in the classroom. In addition, behind constructivist principles lies the philosophy that *learning is a social process* and so the collaboration involved promotes the development of communication skills, reflection, active learning and a deeper understanding through peer learning. One particularly interesting study explored the role of CMC as a medium for peer writing feedback, in comparison to face-to-face interaction. Foreign language students receiving computer-mediated feedback made more detailed revisions in their writing, whereas those receiving oral feedback made more global changes [22]. CMC discussion resulted in more complex language use than face-to-face discussion, more equal participation, an approach to language learning using noticing and use of linguistic 'chunks' and an increase in 'willingness to communicate'. A *wiki* can be an excellent tool for collaborative writing and peer corrections in L2 and can be used at all language levels from a simple exercise in 'correct the errors', as seen in Figure 1, to a higher-level group business or medical report writing project in L2.

Common error	Student correction	Tutor's Feedback
... the next year I'd like to do a Masters degree in Finance	Next year I'd like to do a Master degree in Finance Eugenio's correction	Correct! 😊
I have the horse is name is stellina because in the front of the face there is a white stain that seem a star	I have a horse whose name is Stellina because on her face there is a white spot that looks like a star. (Maryann's correction)	Correct! 😊
I think that you know myself very much!	I think that you know me very much! Eugenio's correction I think that you know me very well! Eugenio's correction (2)	Correct! 😊 <i>(Well done, Eugenio!)</i>
I study economy . I came from Sicily .	I study Economics. I come from Sicily.	Correct! 😊
My family is composed of 5 people.	my family is formed by 5 people My family is made up of 4 people. Valerio's correction	Correct! 😊 <i>(Well done, Valerio!)</i>
I want study English because I like it and I think it's useful for my future works.	I want to study English because I like it and I think it's useful for my future works. Alessia's correction	Correct! 😊

Figure 1. Wiki – peer revision and corrections with tutor feedback

From 2009 to 2010 a project to develop group speaking activities online was completed through collaboration between the Language Centre and the Interaction Design Area, Communication Science Dept., University of Siena, with student teams developing learning objects (LOs) as part of the course *Learning Technologies Design*. Through the collaboration of Prof. Patrizia Marti and the student designers, multimedia LOs have been developed for synchronous and asynchronous speaking activities in L2, which allow participants in blended courses to record real-time conversations with peers while completing specific language tasks aimed at building vocabulary or taking part in role play situations. Through the use of *VoiceThread*, (Figures 2 & 3), *Skype*, *Voxopop* and other social media applications, online conversations are possible between small groups, audio files are saved and voice feedback can be given by the teacher in either synchronous or asynchronous modes. These activities can be used to improve pronunciation and develop effective communication skills.

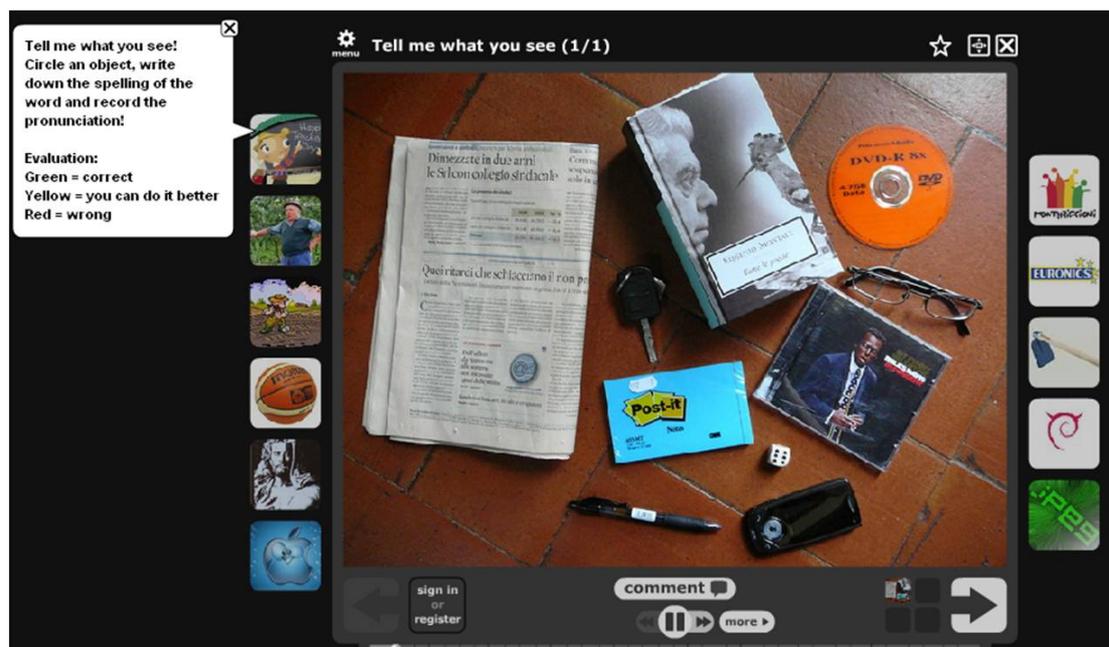


Figure 2. Collaborative group speaking activity in *VoiceThread*

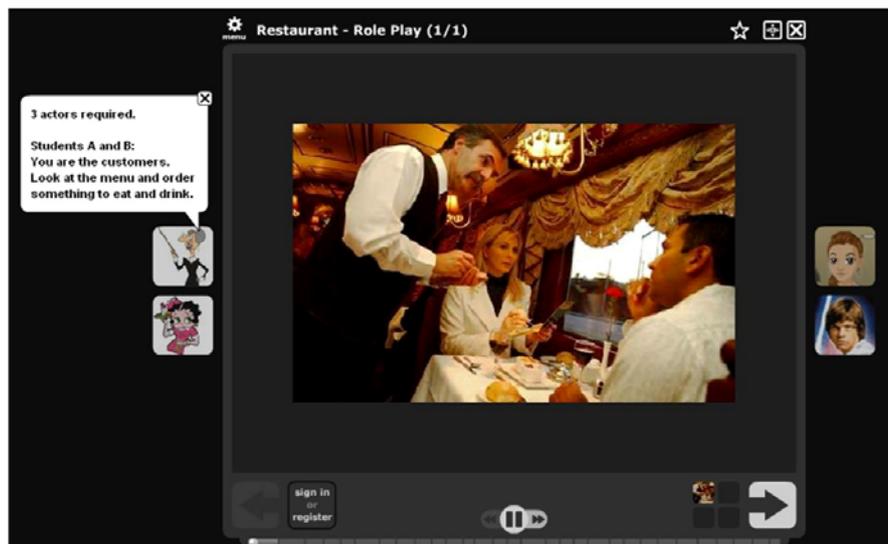


Figure 3. Small group role play

Location

In order to monitor the location of online learners, a Google Analytics application was installed on the open source platform used for the online lessons, *Moodle*. Monitoring can be done for individual courses or for the entire site during various periods of time. An analysis of the blended courses shows that participants accessed the online lessons from 167 cities and villages in Italy as well as from the UK, Northern and Eastern Europe. The rural areas include villages such as Eboli, Manduria, Oggiono, San Giovanni la Punta, Oristano (Sardinia), Foligno, Gallarate, Belluno and Caltanissetta.



Figure 4. Access location of online learners

Feedback and conclusions

A period of course evaluation was completed from 2009 to 2010 by means of a questionnaire aimed at identifying specific advantages and disadvantages of blended learning and the emotions experienced by students, such as interest, joy, gratification, curiosity, embarrassment, fear, frustration, surprise, boredom and anger, while participating in the face-to-face and online elements of the course. The emotions experienced during the learning process are of significant importance and may either reduce or enhance motivation, resulting in a more-effective, long-lasting learning experience. One hundred forty-eight learners participated in the two-year study, 76 employees from the local hospital in Siena studying Medical English and 72 adult learners enrolled in the University of Siena who were studying Business English, including part-time students and working adults located in various cities and rural areas throughout Italy. At the conclusion of the study it was found that the relative differences between the online and in-class learning environments were not great. In the online context, the older adults were found to be able to articulate their emotional experience in each situation more clearly and distinguish between specifically cognitive emotions (interest, curiosity) and social emotions (embarrassment, frustration). Overall, it was found that the characteristics of both complex environments can enrich the learning experience [23] and in combination they offer potentially fruitful flexible learning pathways.

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LANGUAGE AND CULTURE MEDIATION SKILLS IN LEGAL DOMAIN: INCLUSIVE WEB-BASED TRAINING

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Abstract

The paper analyses the methodology for inclusive web-based training of language and culture mediation skills in a specific domain. Legal practice in a bilingual (English- Russian) environment is taken as an example. Some key ICT sources for such training are pointed out. The experimental training of lawyers-to be is described, final test results are provided with comments.

Keywords: language and culture mediation, inclusive training.

Introduction

The phenomenon of language and culture mediation involves different definitions and research aspects, including cultural psychology and anthropology, hermeneutics, law, linguistics, foreign languages training.

While there is an increasing development and diversification of domain-specific knowledge across nations and cultures the language and culture mediation phenomenon has to be analysed taking into account different professional and institutional settings[1].

Apart from discussing mediation as a tool to solve conflicts and provide non-citizens with equal access to justice we have to admit that today specialists in different fields along with their professional activities act as language and culture mediators in the domain-related area [2]. The respective skills require special training.

Taking into account our experience in teaching Legal English to –lawyers-to-be we assume that it is of current importance to develop and promote university-based training language and culture mediation skills within the foreign language for specific purposes (LSP) curriculum module as far as lawyers-to-be are concerned.

As the university provides for different learning formats, students are more interested to combine academic studies and work, they prefer part-time distance and blended learning formats that makes it of vital importance to provide for students' educational inclusion despite their choice of learning format.

In the digital age it is ICT that can be both a medium and a powerful tool in supporting inclusive practice. But a special discussion on methodology to use ICT for inclusive training Language and Culture Mediation Skills in Legal Domain is required.

Methodology

The competency-based educational paradigm has become the mainstream of educational policies and ICT –supported inclusive training is supposed to be conducted within this framework that, in turn, integrates a number of teaching approaches including the social-constructivist, communicative, cognitive, cross cultural, learner-centered approaches [3].

As far as teaching technologies are to be accumulated, our preliminary hypothesis envisages the following ones:

- active and collaborative teaching;
- context- oriented and content-based training through authentic vision, with real world cultural and language mediation challenges to be solved under real constraints;
- task-based teaching, elaborating multiple and viable solutions to problems that emerge naturally from authentic language and culture mediation in legal domain (instead of a correct answer and solution);

- the combination of function-, process-, and product-oriented approaches to language and culture mediation in a domain-specific area, as the degree of expertise in the field is revealed and proved in both the process and the outcome.

The above mentioned training technologies are outlined and analyzed in a number of scientific publications [4,5,6].

When integrated into the inclusive educational environment these technologies are supposed to be combined and adapted to blended and on-line training formats requirements [7,8].

Language and culture mediation takes place in oral and writing forms.

Our experimental teaching involved oral and written tasks but focused on the written mediation in the legal domain due to its priority status in the legal interaction between individuals and the state or corporations. The teaching environment was bilingual and involved lawyers-to-be mediation activities in Russian and English.

The inclusive mode of training required from teachers to design web-based educational materials that integrated Internet sources that lawyers use in their daily practice while working in the multicultural environment.

These sources included legal and parallel corpora and concordances, translation memory and terminology management tools, semantic maps, multilingual legal dictionaries and encyclopedias, multilingual legislation sources, on-line samples of legal drafting.

Experimental Training: Description, Results and Discussion

Taking into account the above methodology the experimental training started. The experiment lasted for a spring term. There were two groups with the same gender distribution. The first group used a standard printed textbook of English for Russian for lawyers-to-be during their classroom activities and homework. The second – experimental –group did inclusive training based on the web-based multilingual legal sources. They did the on-line course and met in the traditional classroom twice a month for the project presentations.

As cross cultural legal mediation skills are supposed to combine language, culture and translation skills in the legal domain the preliminary placement test was conducted and revealed the students of both groups had the same level of legal English (A2 – 67%, B1 -32%) and legal translation skills level.

The inclusive web-based training with the focus on language and mediation skills made student fulfil a number of specific tasks that were based on case study analysis:

- case reading (cases were taken from web portals on language and culture mediation practice across Europe);
- case analysis (using legal concordances database) with focus on the core challenges and legal instruments to solve the problems through the mediation procedure;
- comparative analysis of domestic and foreign legal sources and civil practices that can be used in the mediation process in regard to the concrete case under study.

The second stage included the study of linguistic aspects of problem solving and mediation procedures in the legal sphere.

Each student conducted argumentation analysis of the language and cultura mediation discourse, analysed different types of arguments, searched for tools to build and strengthen their validity and soundness, to identify hidden assumptions, etc.

Also students had to carry out meaning analysis through concepts study in a foreign language to clarify the relevant meaning of key terms. Students used legal on-line dictionaries, encyclopedia, cognitive semantics map technology to understand different types of definitions, specificity of reasoning in mediation.

The students of the experimental group performed these tasks individually on-line thus creating their personal learning environment.

The results of these individually performed task-based activities were published twice a week in the blog that was designed by the experimental group.

Besides, students had to watch on-line videos on cross cultural legal mediation practice topics to identify the behaviour specificity that was rooted in the national traditions.

The next stage involved on-line group activities. The group was divided into four small teams, in each one there were two students who opposed the discussed language and cultural mediation practice in principle, all the groups had the choice of several solutions basing on the domestic legislation, each group deliberated and announced its final point of view.

The final stage was focused on writing skills for mediation purposes. This stage involved legal drafting in micro project groups. The task presumed preliminary study of the necessary documents, published on-line. The winding point was individual essay writing to sum up an individual view on the issue discussed and to point out the individual reflection on the above activities.

Additional web resources were also offered for additional study and individual writing task/project work.

Students also created their own variants for the mid-term on line test and each other online.

The final test revealed that at the end of the term the students of the group that used a standard printed textbook of English for Russian for lawyers-to-be during their classroom activities and homework got the following results in the legal English test: A2 – 16%, B1 – 67%, B2 – 17%. The experimental group showed the following results A2 – 0%, B1 – 63%, B2 – 37%). As far as legal translation skills are concerned the figures are the following: in the experimental group 41% of students got excellent marks and 59% were good at translation legal documents. Meanwhile in the second group only 29 % got excellent marks, 41% were good and 30% got satisfactory marks.

When asked about their inclusive language and culture mediation skills training experience students underlined that it was more important for them to be taught language and culture mediation skills in the field for their future profession than just to learn Legal English. Besides, they appreciated the inclusive mode of learning that allowed them to identify and build up their individual trajectories for learning, on the one side, and to exchange learning experiences, on the other. They also stressed that the inclusive format broke the lines between conventional and e-learning formats. The on-line consultations, and group discussions, and blog writing practice made students act as agents of inclusive learning.

Conclusion

The experimental training proved that it is possible to develop and promote university-based inclusive training language and culture mediation skills within the foreign language for specific purposes curriculum module as far as lawyers-to-be are concerned.

But for this purpose the curriculum has to be rhetorically framed to help students, through experience in a range of workplace genres, develop expert practices in such areas as client –centered approach, reader-centred writing, research in law, administration and culture, use of digital technologies, and collaboration.

Within the LSP course the system of tasks has to be designed to develop and train information processing skills (the ability to frame questions and gather information), understanding and evaluation skills (the ability to understand others' ideas and evaluate facts and arguments offered in support of them), and advocacy skills (the ability to build and verbalise positions and support them in a manner that contribute to promote a reasoned solution).

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FACEBOOK AND VISUAL LITERACY: A CASE STUDY OF ALGERIAN FOREIGN LANGUAGES LEARNERS

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Abstract

Our work is an analysis of the role of Facebook in the informal learning process of Algerian students of foreign languages. Beyond the classical language-related skills, many learners endeavor to acquire skills in visual learning. Hence, the increase of Facebook users enabled the use of social networks and informal learning, especially areas regarding visual literacy (cinema, pop culture, photography, design, fashion...etc).

We purport to map the learning behaviors of learners via Facebook, analyze the content of the informal learning corpus, and ultimately define the impact of the above on the academic achievements and learners' motivation especially in rural areas.

Our proposal aims, also, at measuring (through a qualitative description) the degree and frequency of reception to both intercultural and linguistic competences.

Introduction

ICT is nowadays deeply rooted in the behaviors, customs and actions of young people, all over the world, and Algeria is no exception. The birth of the first cybercafés (in the early 2000's) opened perspectives of communication and information that soon become concrete. By 2011, more than 5 millions of Algerians declare possessing a Home computer and an ADSL network, the rest remain regular customers of outdoor internet services.

At the higher education level, the 36 Algerian universities; 16 university centers and the various institutions (High schools, and preparatory institutes) installed internet connections and Wi-Fi networks. At a micro teaching level, teachers and students have frequent use of the net, inside and outside the class. This use is predicated on a simultaneous need of information and communication.

The democratization of internet use combined with the spread of social networks (Facebook and Twitter) enabled the spread of communication in English, French, and Spanish, and consequently aided students of foreign languages to put into practice the different skills: Writing, Reading, Listening and Speaking. These social networks often substitute linguistic stays abroad, and permit a virtual practice of the target language.

ICT, the Facebook Case

For better and for worse, Facebook has definitely marked the history of humanity. Facebook was launched by Mark Zuckerberg in 2004, and by 2011 the number of subscribed users is estimated to 750 million⁶⁸ worldwide (Fig.1). This social network purports to keep friends and mates interconnected. All the actions of these mates are daily displayed: activities, photos, news and events regarding these mates.

⁶⁸ Source MSNBC, January 2011.

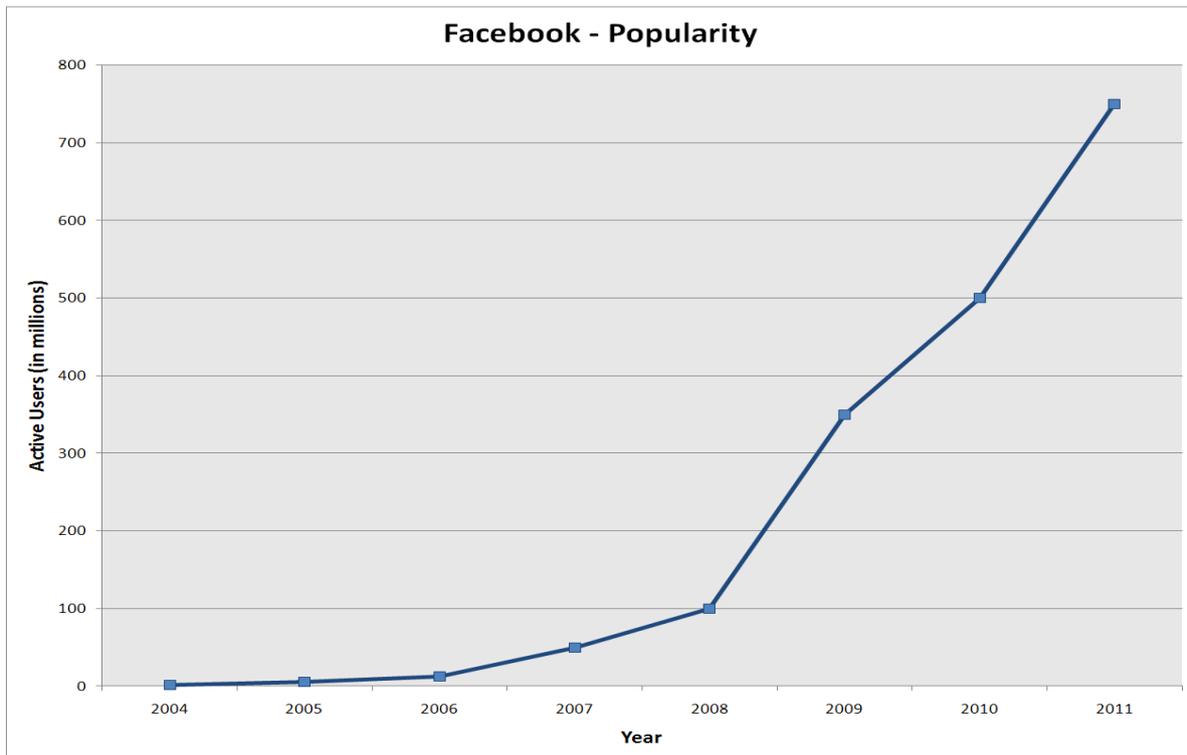


Figure 1. Source: Facebook. Inc.

Facebook is also an accessible professional visit card. It may group a large number of professionals into specific fields and forums. In that, Facebook is similar to My Space. The differences are in customization and Facebook's exigencies of truth regarding the identity information.

The below diagram (Fig.2) shows age ranges of Facebook users. One may note the prevailing use by youth. In this respect, Facebook would be a useful tool for teachers dealing with young adults and 20-somethings.

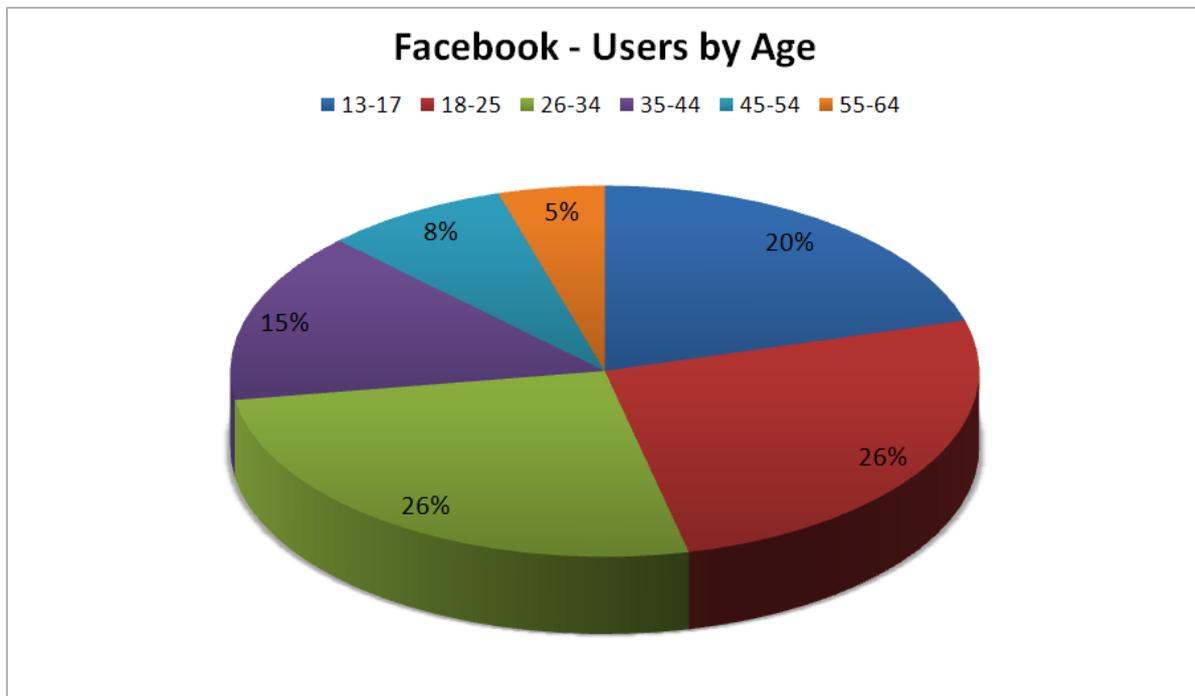


Figure 2. Source: Facebook. Inc.

Moreover, Facebook is the most used social network in English speaking countries⁶⁹: Canada, USA, Australia, the United Kingdom...etc. English language remains the first language used in Facebook. For teachers of EFL (English as a Foreign Language), It is a didactic aid susceptible of exposing learners to various varieties of English, running the gamut from high standard academic forms to slang.

Visual Learners

Facebook, like other media, seems to fit the needs of visual learners. This category of learners. These subjects possess a different style of learning, generally predicated on spatial memory. In that, they differ from others by their capacity to focus exclusively on what they see.

They are characterized by a cognitive association of concepts to images, charts, and diagrams. Furthermore, they initiate movie-like montage to process information in a theoretical framework. The majority of visual learners pay strong attention to space management (body language, movement, shapes, colors...). The process of retention is enhanced beyond the verbal method. In addition to that, visual learners proved to possess over-developed aesthetic skills, the ones that could be exploited in creative activities.

Visual learning was underrated by the theoreticians, especially in the development of semiotic skills of modern learners. Nevertheless, practitioners realized the prominence of learners' acquaintance with media, sounds, pictures, and creational activities.

Learning Behaviors and EFL

The David A. Kolb model proposes four types of learners: Converger; Diverger; Assimilator and Accommodator. There is a wide variety of learning behaviors, corresponding to the specter theory. The latter considers several layers of shades in cognitive attitudes, and learners' abilities. In the case of Algerian EFL learners, there is a set of behaviors that are not enough stimulated. What is targeted here is a guided instruction toward regular exposure to genuine forms of English. In other words creating and modifying educational environments. By educational environment there is a direct reference to classrooms and outdoors educational situations; settings in which the learners may put into practice some of the skills taught in school:

"Perhaps the most compelling challenge in educational research is to determine those aspects of the educational environment that contribute to student learning. Factors to be explored include obvious ones, as, for example, pedagogical methods or tasks students undertake to demonstrate they have mastered content or skills. But the impact of relatively newer pedagogical practices, such as problem-based learning, or recently developed educational technologies also needs to be understood"⁷⁰

As noted by Mitchell, cognitive abilities must be associated with behavior modification within the educational environment.

⁶⁹ Yum, Kenny. Facebook says 'Thanks, Canada. National Post (Toronto). May 18, 2007

⁷⁰ Rudolph Mitchell, Learning Behavior Surveys. Excerpted from the journal of Assessment and Evaluation Teaching and Learning Laboratory Massachusetts Institute of Technology

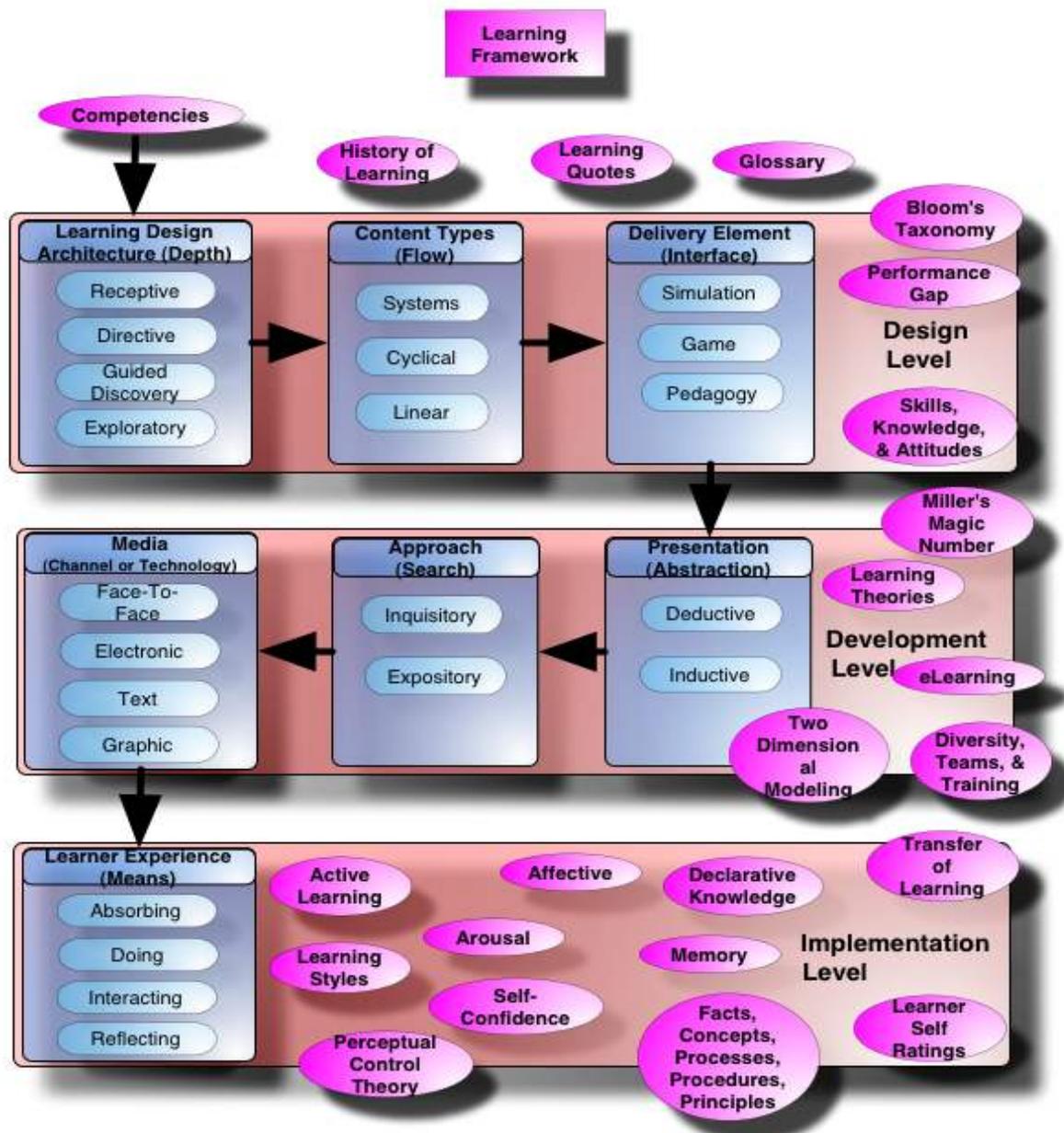


Figure 3. The Learning Map. Source nwlinc.com

The above learning map (Fig. 3) constitutes a detailed view of the various steps of the learning process. The implementation of Facebook can be implemented in many of the phases: instruction, problem solving, concept learning, feedback...etc.

Field work: Face book and learning strategies

Facebook as medium is not primarily meant for learning and teaching activities. However, a considerable number of EFL teachers⁷¹ declare using Facebook for teaching / learning purposes. More than 60% of the Algerian teachers declare using Facebook (regularly) with students living in rural areas. They explain this choice by a need of formal and informal tutorial. The invested teachers declare that students living in remote and rural areas display excessive social shyness, and that they tend to withdraw in oral communication settings. There is a cultural and social heritage banning extrovert behavior. The weight of these tradition block oral communication.

⁷¹ Based on the result of a questionnaire-based survey (March 2009 – June 2009). 120 EFL teachers in the Universities of Batna, Setif, Bejaia, Khenchela, Skikda, Algiers, Tizi Ouzou, and Mostaganem were asked qualitative questions on ICT and rural students.

The female component is the most affected. Teachers of oral expression express strong difficulties when trying to make female learners talk. In creative settings (conversation, art criticism, brainstorming...etc) female subjects remain extremely introvert; they refuse communication and remain silent.

Pedagogical perspectives

Facebook enables synchrony and asynchrony in terms of communication. Teachers can interact with students instantaneously – breaking thus social shyness. It also permits feedbacks on various conversations. The shift can be achieved from written to verbal communication: webcam, microphone...In addition, tutorials and guidance may be performed via this medium. This is particularly efficient for learners living in remote areas, and facing difficulties of movement. In other words, it is a concrete application of distance-learning, as a direct complement of in-situ learning.

Visual learners, on the other hand, are stimulated by the abundance of semiotic references in the process of communication. The majority respondents to a questionnaire⁷² declare “enjoying” interacting with their teachers on Facebook. What they put forward, in addition, the colored-content of the teachers’ pages: pictures, videos, sounds, and software applications that constitute a common ground, beyond generation gap. The striking fact is that Facebook has overwhelmed other pedagogical tools, at least in terms of accessibility to different generations.

Didactic perspectives

Teachers can transfer certain aspects of the curricular to their personal pages, or involve the learners into the creation of a collective Facebook. The first option enhances collaborative learning and may call upon the competency-based and the project-based approaches. Learners, thus, maintain a constructivist approach, and participate in the creation of customized learning material. One positive outcome could be a march toward autonomy. The interviewed teachers agree (in majority) the inductive nature of the process. Most of them do not explain to learners the objective of these outdoor tasks.

Indoors, Facebook is a tool of implementation of micro teaching. It is an easy-to-use gateway to information, courses, tasks, and online evaluation. Teachers often include links to educational sites, databases, and training applications. Course content may be displayed for learners who are eager to retrieve information. In here, teachers may include visual and audio versions of the course for the disabled learners.

The Algerian EFL teachers who set Facebook as a didactic tool declare that their students performances. These achievements were measured in the oral and written expressions. Teachers tend to think that reading and listening skills have also developed, as both pairs are interrelated.

Handicaps & Constraints

Some difficulties persist in the naturalization of ICT and Facebook use in EFL teaching:

- Cultural resistance - in which Teachers find comfort in traditional methods.
- The denial of semiotic literacy as an important skill in learning styles.
- The Absence of public-sector sustained policies of ICT for the modest classes.
- A delay in 3G technologies. Algerian learners are not yet able to use their mobiles for a fast ADSL service.

Conclusions

A reappraisal of the previous indicates the growing role of ICT in higher education. The Algerian EFL learners incarnate the premises of the success on ICT inclusion in blended learning. Facebook, one of many social networks, offers several shortcuts to special needs learners with an added value. Pedagogy-linked issues, such as communication and social shyness are handled differently, and probably more efficiently. Facebook, as a trans-generation phenomenon, is supposed to break generation gaps. On the didactic level, Facebook offers a large and accessible mode of knowledge diffusion. Course content is subjected to variety and fun. Furthermore, customization is possible and fitting the needs of visual learners. The perspectives of enhancing semiotic literacy are encouraging for urban and rural learners.

⁷² 26- Items Questionnaire administered to 105 EFL students (70% females/30 males) at Batna and Setif University (May 2011 / June 2011)

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Chapter 6

Different facets of inclusive learning (Workshop 3)

CURRICULUM DIFFERENTIATION AND THE TERRITORIAL DIMENSIONS OF INCLUSIVE LEARNING

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Abstract

It aims to analyze the Program of Educational Territories of Priority Intervention (TEIP) as a policy and practice of curriculum differentiation. A Grouping of Concelho Vila Nova de Famalicão - Portugal, was chosen to realize a case study. The TEIP Program aims to contribute to creating conditions for promoting the school success of students integrated in educational communities affected by social and economic problems, valorizing the diversity and difference, through the territorialization of educational policies, according to criteria of priority and positive discrimination in particular socio educational contexts. In the Field of Curriculum, the work is inserted in the debate about territorial dimensions of inclusive learning, with questions about diversity and difference in the curricular development. The starting point was the referential for analysis of curriculum policy, identified by Pacheco (2003) as "equality / inequality" and "homogenizing / diversity", and of the proposed conceptual of the "Triangle of difference", constructed by Wieviorka (2002), its three poles interlinked: the collective identity, the modern individual, the subject. Following a qualitative approach, we chose to focus groups, direct observation of meetings and events, along with analysis of institutional and normative documents. In the search results are emphasized: the ICT are used as tools of inclusive learning; the strategies to promote school success and transition to active life; the educational project appropriation by the community; the actions of tutoring and facilitators of Didactic Project; monitoring and evaluation of Project Educational TEIP. We conclude that the students of Grouping Pedome are included in the school starting from the differences that specify them, as students in an integrated educational community affected by social and economic problems, with characteristics of rural territory facing the risk of education exclusion, that is, they are included starting from their "collective identity" territorial.

Keywords: Inclusive learning, Diversity and difference, Curriculum differentiation.

Introduction

According with Roldão (2000), in western societies, issues of curriculum differentiation emerge in the second half of the twentieth century as a result of a process of temporal extension of schooling and its gradual generalization to all school-age population, bringing a set of changes to educational systems, and difficulties for the school in dealing with a diverse public.

Tensions arose as a result of massified access to education, with high the indices of failure and dropout, in front of a school that failed to change structurally, which continued to be organized the same way, develop the same curriculum, use the same strategies methodological and the same language of pedagogical action, which developed as an institution destined to a class of public homogeneous and socially pre-selected.

Among the tensions caused by the massified access to education, we highlight tensions characterizing today's society, that relate to the growing dominance of the information society or knowledge, which is structured around the new dimensions of communication and accessibility to information abundant and diverse that revolutionize totally the traditional relationship with the modes of access, construction and circulation of knowledge, which are incorporated in the process of curriculum differentiation in their territorial dimensions of inclusive learning, with regard to the pedagogical work with the difference (Roldão, 2000).

We alert that the pedagogical work with the difference, the information must be tempered with judgment intellectual, critical thinking, ethics and self-reflection. Pinar (2007) argues about the "complex conversation" to illustrate a curriculum at that the academic knowledge, subjectivity and society are inextricably united, requiring creativity, intellectuality, interdisciplinarity, erudition and self-reflection.

In a time of great development of technologies of information and communication, the possibility of understanding and expansion of space and time proposed by new technologies has enormous potentiality curricular (Veiga-Neto, 2002), how much the form creative, interdisciplinary and self-reflective of dealing with differences in school, conducted "by interests that which the people meet dialogically each other" (1968 Freire cited in Pinar, 2007, p 290).

This understanding requires a different conception of dialogue, which Pinar (Ibid.) designates as analytic dialogue, with the sense of participation in cultural production continuous, interminable, which is the teaching. It is this sense that the "learning technologies", as the computer, and the "intellectual technologies" as the hypertext, should be centered in analytic dialogue.

We emphasize the meanings of the contents in the dynamics and strategies of interaction of teachers as curriculum authors (Pacheco, 2003), or agents of the social construction of knowledge in the pedagogical work with the difference in inclusive learning.

Faced with this context, the issues related to curriculum differentiation led to the political debate the necessity of do to evolve the school and teachers to develop curriculum practices that combine of form consistently the significant contextualization of learning for each student, with the guarantee of achieving levels of learning and higher competences for all.

It is this sense that it identifies some lines of evolution in education policy at international level that are incorporated in the different education systems (Roldão, 2000, pp. 127-128):

- the recognition of the inadequacy of uniform curricula, of educational systems centralists and organized rigidly;
- the necessity to strengthen the school decider role, in the plan of curriculum and organizational;
- the necessity of curriculum differentiation either in the field of organization of learning content, both in plan of processes and teaching methods.

In the context of the Portuguese Education System, the Program of Educational Territories of Priority Intervention (TEIP Program), while policy and practice of curriculum differentiation, created by *Despacho* No. 147-B/ME/1996 of 01 August (Portugal, 1996), aims to contribute to creating conditions to promote the school success of students in integrated educational communities affected by social and economic problems.

It is with this objective that the TEIP Program values diversity and difference with the territorialization of educational policies, according to criteria of priority and positive discrimination in particular socio-educational contexts, through a proposed curriculum differentiation that keeps the national curriculum, but adds actions learning support and social integration of students and their families, through measures such as the creation of offices for student support and family and the animation of patios and school spaces, who value the territorial dimensions of inclusive learning.

We understand that the curriculum of TEIP Program can be analyzed from the perspective of diversity and difference, in two senses:

1. Starting from the concept of difference in curriculum policies of the late twentieth century oriented towards "educating *the* difference", "educating *at* difference", "educate *to the* difference", slogans present in the education plans of government agencies and educational projects of schools (Gallo, 2009), when students are confronted with different school tracks, in perspective of alternative curricula (Pacheco, 2008);
2. In another perspective, the curriculum differentiation is understood as adapting the curriculum to the characteristics of each student, with the objective of maximizes their opportunities for school success.

It is understood, however, that curriculum differentiation is a concept that represents, to in addition to changes in content, changes in methodology and assessment, presupposing that students have the same track in their options, but ones that need to follow different ways so that all can reach the educational success.

With this concern, this study considers that a curriculum sensitive to the difference is essentially inclusive and takes the worry in finding ways to make all students acquire meaningful learning and potentiality for new learning, especially in regard to territorial dimensions of inclusive learning, considered essential to the exercise of citizenship.

Methodology

Seeking to understand the practice of curriculum differentiation in the school quotidian, the Vertical Grouping of Schools Pedome (Grouping Pedome), Concelho Vila Nova de Famalicão, located in the territory of the Direction Regional of Education North (DREN), Portugal, was chosen to conduct a case study. During the school year 2008/2009, the Grouping was awarded the TEIP Program with approval by the Ministry of Education of the "Education Project TEIP: family life at school". This school year 2010/2011, the Grouping is benefiting from the program TEIP2.

As for research instruments to collect empirical data, followed by a qualitative approach, we chose the focus group technique, direct observation of meetings and events, and the analysis of normative and institutional documents that carry out the Monitoring and Evaluation of Project Educational TEIP of Grouping Pedome.

The starting point was the referential for analysis of curriculum policy, identified by Pacheco (2003, p. 118-119) as "equality / inequality" and "homogenizing / diversity" in its four possibilities: a) A curriculum policy equal and homogeneous; b) A curriculum policy equal and diversified; c) A curriculum policy diversified and unequal; d) A curriculum policy homogeneous and unequal.

With respect to the analysis of conceptions of curriculum differentiation, we considered the concept proposal of the "Triangle of difference" proposed by Wieviorka (2002), in its three interlinked components that delimit the theoretical space of difference: the collective identity, the modern individual, the subject.

Define the conditions under which the affirmation of a difference is acceptable and legitimate, indicates propose an optimal configuration of the triangle of difference, since it equates to reconcile the requirements of singular individuals, as individuals and as subjects, with the requirements of cultural particularism and the requirements of the entire society (Wieviorka, 2002). Thus, the analysis of empirical data will be sustained in the possibility of approximation of the practices of curriculum differentiation with the optimal configuration of the triangle of difference.

Results and discussion

The Grouping Pedome, created in 1999, consists of eleven Basic Schools of 1st cycle, nine of Kindergarten and an Integrated Basic School (1st to 9th grade), distributed into eleven *Freguesias* with characteristics of rural territory. The Grouping has a headquarters at the School Basic Integrated of Pedome.

The Education Project TEIP Pedome maintains the national curriculum, but adds fifteen actions to support learning and social integration of students and their families. In this study we emphasize seven actions:

A1 – "We read with..."

A2 – "Yes, we can... because English is fun!"

A3 – "I'll beat mathematics because it is fun!"

A4 – "The future waits for me ... social being by Vocational Guidance"

A10 – "Tutoring"

A12 – "To support, to differentiate, to improve, to work collectively..."

A15 - "Pedagogy differentiated to service of the success".

These actions aim to potentialize, operationalize and reach targets until the end of the school year 2012, the curriculum areas with the greatest failure, that is, Portuguese, English and Mathematics.

In this study, prioritize the data for the 2nd and 3rd cycles (5th to 9th grade) of the School Basic Integrated of Pedome (EBI of Pedome). The results of the analysis of empirical data leads us to emphasize: the ICT are used as tools of inclusive learning; the strategies to promote school success and transition to active life; the educational project appropriation by the community; the actions of tutoring and facilitators of Didactic Project; monitoring and evaluation of Project Educational TEIP.

The ICT are used as tools of inclusive learning

In action A15 - "Pedagogy differentiated to service of the success", stands out the access to resources of information technologies (ICT), particularly with the use of Moodle Platform as a tool for work and communication with students, as well as greater use of technologies in the context of the classroom (applets, dynamic geometry environments). We found that the teachers of EBI Pedome have used ICT differentiated pedagogies, which are used as tools learning inclusive.

The strategies to promote school success

In order to meet the objectives of the Action A12 - "To support, to differentiate, to improve, to work collectively...", the Assessorial has been considered as the main methodology of support for the improvement of learning, but other complementary modalities are offered: Tutoring, Plus Educational Support, Accompanied Study.

We focus, in school year 2010/2011, all classes from 5th to 9th year of EBI Pedome benefited from the methodology of Assessorial in the areas of Portuguese, English and Mathematics.

However, we identify in the empirical data that the Assessorial have not been sufficient to produce an effective improvement of learning, the results revealed less than expected, indicating a high rate of school failure. We question the validity of the Assessorial as a strategy of curriculum differentiation to promote school success, especially the way it is applied through complementary activities in the classroom, that the activity proposals are prepared and produced similarly to the national assessment tests, with repetition of chips evaluation.

The strategies to transition to active life

The Program for Educational and Vocational Guidance is being implemented in all classes of 9th year. The activities developed are contained in the action A 4 - "The Future is waiting for me ... Be social by Vocational Guidance."

There is a proposal to hold of Courses Education and Formation Youth (Courses CEF) for students in the 9th year of the EBI of Pedome with school failure, in order to encourage them to study the curriculum areas of basic formation, through professional qualification insertion in the labor market, with the completion of training in companies in the region, allowing a dual certification.

This proposal assumes that these students directed to the Courses CEF will not continue their studies in formal secondary education, with early entry into the labor market.

The educational project appropriation by the community

Partition Pedagogical Seminary has been characterized as a privileged moment of community integration, so that parents / guardians to appropriate the achievements of the "Education Project TEIP: family life at school".

About the way of disseminate information it was decided to dynamization of different blogs schools and of the School Libraries Grouping, the website, the Moodle platform, the Journal of the Grouping and local media.

However, empirical data indicate that the community, especially parents and guardians do not know the "Education Project TEIP: family life at school", and have not been involved in the activities developed by the Grouping Pedome specifically the actions of the 2nd and 3rd cycles of Pedome EBI.

Teachers say that this lack of involvement of parents and guardians in the actions developed by the EBI Pedome, has been the main motive of the school failure, particularly of students in 9th year. However, we believe that there is a need to review strategies for differentiating curriculum, bringing into the school the responsibility for school failure.

The actions of tutoring

For our study about curriculum differentiation, we highlight the action A10 - "Tutoring" because it has been considered the main methodology to prevention of abandonment, failure or lack of discipline, under the guidance of the Cabinet of Student Support and Family.

The mentoring process is designed to monitor students in the 2nd and 3rd cycles sent by the Class Directors, serving 25 students in total, which is only 6% of the total attendance of Assessorial.

The dimensions worked in Tutoring relate to the habits and methods of study, the organization and responsibility, the development of interpersonal relationship competences (assertiveness), attention and concentration, motivation, the interest toward school, self-esteem, and the integration at school.

We question the scope and effectiveness of tutoring as a strategy for curriculum differentiation that aims to prevent abandonment, failure or lack of discipline, since only serves 25 students and involved 21 tutors' teachers, being the failure much broader.

Facilitators of Didactic Project

The institutional documents indicate that the student work in class is optimized with the work collectively in Didactic Project, due to the strategy to support their learning be planned jointly between teachers holders, teacher assessors and tutors as facilitators of the Didactic Project.

However, we note that the absence of students in this collective planning has hampered the interest and involvement of students in the activities developed, leading to an excessive workload of teachers who do not rebate on academic success, generating dissatisfaction among teachers with the poor results. Thus, the teachers and professionals working in the Pedome TEIP Program, place more abroad (participation of parents and guardians, unfavorable socioeconomic environment) than inside the school (joint between teachers, student motivation, teaching practices), the causes of school failure.

Monitoring and evaluation of Project Educational TEIP

Various activities of monitoring and evaluation of the Education Project TEIP Pedome were held during the school year 2010/2011, with the participation of various stakeholders including the Ministry of Education, with representatives of the Regional Department of Education North (DREN) and the Team support for Schools, and the external expert.

In the direct observations of these activities of monitoring and evaluation, we found that curriculum differentiation of Program TEIP, specifically in Grouping Pedome, has characterized as a continuous process in construction and that school performance cannot be confined solely to the ratings obtained in the assessment of school learning and in the examination of national benchmarking, should also be recorded and valued educational outcomes of each student.

Conclusions

In the analysis of TEIP Program as a policy and practice of curriculum differentiation, we conclude that students of the Grouping Pedome are included in school starting from the differences that specify them, as students in an integrated educational community affected by social and economic problems, with characteristics of rural territory facing the risk of education exclusion, that is, they are include starting from their "collective identity" territorial.

However, differences related to the "modern individual" and to the "subject" in his subjectivity are not considered by curriculum practices, which homogenize the students and promote inequality and school failure. Is this sense that the TEIP Program has been yet configured as part of curriculum policies homogeneous and unequals,

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WIRING INDIVIDUALIZED SPECIAL EDUCATION: MULTI-PERSPECTIVE AND PERSONALIZED ACCESS TO A KNOWLEDGE HUB

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Abstract

This paper focuses on the difficulty that educators and stakeholders meet to access information, resources as well as formal and informal learning initiatives for homebound people (HBs). An HB is a person who is confined to his/her home (or to specific institutions such as hospitals) usually by illness or disability, since going out requires a considerable effort and the support of specific aids or people. This contribution describes the initiative carried out by the WISE Project to design and develop a system which bridges HBs' educational needs with information, resources, initiatives and tools that fit with them.

Keywords: Homebound, International Classification for Functioning, Knowledge Hub, User Modeling, Special Needs Education (SEN).

Introduction

Among the main needs noticed from educators and stakeholders operating in the field of Special Needs Education (SNE) mostly arise:

- the need for searching information, resources, and educational tracks functional and effective with respect to the specific requirements of people with difficulties;
- the demand for relationships and exchange of experiences, resources, good practices.

Undoubtedly the use of Web offers undeniable advantages for the above mentioned needs; nevertheless the Web itself constitutes a further problem in the SNE context for the huge deal of information which circulate (intended as structured and meaningful data) along with the possibility of gaining value (increasingly associated with Innovation) from these information. The knowledge technologies in general and the semantics particularly are considered by many as the starting point (the basic infrastructure) upon which building answers (the technological solutions) to these problems. On the light of this scenario, difficulties and problems concerning information search arise, which often becomes an experience with an high "cognitive load": the retrieved information frequently replies to the request marginally only (low pertinence to a query) and, sometimes, it doesn't return truly significant results (low relevance with the target subject). The distributed nature of information related to this context, the amount of available information repositories, as well as the potential knowledge heritage embedded in social networks and in the collective intelligence, underlines the real need of covering innovative routes able to suggest and validate interactive techniques for web information discovery and for processing the information themselves.

So it is increasingly pressing the need to identify new conceptual models on which to develop technological and methodological solutions for Special Education Needs (SEN), allowing to model educational paths and manage contents according to a specific user needs.

This contribution describes the initiative carried out by the WISE (Wiring Individualized Special Education) Project [1] to design and develop a system for Homebound people (HBs) and their stakeholders, thanks to the development of a system of knowledge management & sharing (the "Knowledge Hub" – KH) [2], integrating functions proper of a knowledge base with those related to semantic retrieval. In particular the project aims to fill teachers' and trainers' skills gap, concerning the design and management of technology-enhanced special education initiatives, by providing resources, information and an effective methodological scaffold.

Moreover the added value of the project is the definition of a user-model based on ICF (International Classification for Functioning) [3] to personalize the fruition of services and material available in the system, supporting user in the personalization of search and in the sharing of contents, experiences and practices.

The WISE PROJECT

WISE (Wiring Individualized Special Education) is a three-year FIRB Project (basic research funding) funded by the Italian Ministry of Education, University and Research [1].

The project aims to design and develop a system which bridges homebound people (HBs) educational needs with information, resources, initiatives and tools that fit with them.

The term homebound (HB) refers to people who find difficult to leave home by illness or disability. These obstacles often prevent them from attending education traditional courses or from professional training and requalification, excluding them from educational opportunities and from the possibility of building their professional and life perspectives.

A HB could be confined to his/her home or live in a nursing home; both these settings can be characterized by specific physical barriers (stairs, rooms, etc) or facilitators (lifts, equipments, etc.). HBs context also include people supporting them for different needs (doctors, parents, friends...). Moreover, Information and Communication Technologies (ICT) could play a fundamental role in HB context providing them with new ways of interaction and communication, new contacts and new accesses to information and knowledge. Aside to contextual elements, HB personal characteristics condition the quality level of his/her life: in fact, homebound people come from a variety of backgrounds and have different physical and psychological problems; they differ in age, school level and previous work experiences and face different periods of immobility.

An objective pursued by WISE is the development of a complex system offering support to HBs and their caregivers combining informative, educational and relational issues. This objective was drawn up on the following core-processes:

- the definition of a user-model based on ICF (International Classification for Functioning) to personalize the fruition of services and material available in the system, supporting user in the personalization of search and in the sharing of contents, experiences and practices;
- the development of a system of knowledge management & sharing (the "Knowledge Hub" – KH), integrating functions proper of a knowledge base with those related to semantic retrieval. The KH offers recommendation functionalities besides personalized search of resources, making moreover available a set of social functionalities such as social rating and bookmarking.

The new conceptual model for SpEd defined within WISE through the user-model has shaped the development of a horizontal support system which, projecting itself towards the web 2.0 and 3.0 dimensions, is characterized as an auto-sustainable system and potentially expandable from the same users whom it addresses.

The definition of a user-model based on ICF International Classification for Functioning

According to the definition given by OMS [3], disability is the consequence of an interplay between the health conditions of an individual, and personal and environmental factors, characteristic of his/her living condition.

The ICF aims at providing a tool of analysis of the individual's health conditions, establishing a connection between health and environment, and finally reaching a definition of disability as a particular health condition in an unfavorable environment.

The ICF organizes disability along two dimensions [Fig. 1]: functioning and disability (including body functions/structures and activities/participation in society), and contextual factors (environmental and personal), that include other components. This ICF definition shifts the focus from disability as an innate deficit to disability as constructed through the interaction between the individual and the environment.

The classification system based on the ICF provides the possibility of collecting an exhaustive and detailed body of information of a PERSON, on his/her ENVIRONMENT, and on the way that person PARTICIPATES in the activities which characterize the context in which he/she lives. For each components the ICF contains a hierarchy of classifications and codes. On the basis of such information, one can therefore describe the health status of the subject, taking into account not only pathologies, but also the functions that the subject is able to perform in his/her environment.

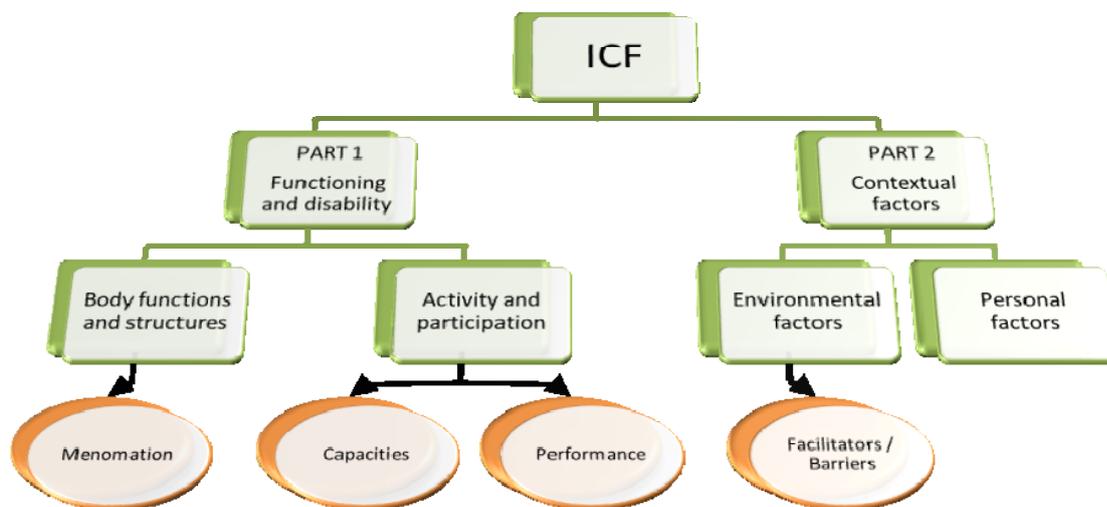


Figure1: The summary representation of the ICF structure

We took inspiration from the ICF classification and we modeled, in the WISE project, both personal and contextual features of the homebound, and the features of some stakeholders [4].

The range of information codified by ICF codes is too wide to be formalized in the semantic system of WISE, and goes beyond the goals of the project. We therefore propose to limit the use of this classification to collect the information which are actually useful to the WISE system.

After an accurate analysis of the ICF structure, we selected a number of elements which could effectively describe a specific characteristic of WISE referential HB, concerning:

- both the tasks and the functions the referential HB is able to perform;
- and his/her context, characterized by environmental, social and personal elements.

In particular, we focused on different ICF components, domains, chapters and categories, selecting elements at different levels of the taxonomy, on the base of the project objectives and information needs.

Once identified a set of descriptive elements, we had to adapt the ICF terminology so as to be easily understood by the WISE users. This process has been carried out both about the name of the descriptors and about the values of their possible vocabularies.

Once defined the subset of descriptors we identified when and how the system could gather from the user the information necessary to build the user-model.

The development of a system of knowledge management & sharing: the Knowledge Hub (KH)

The Knowledge Hub (KH) is an information repository of semantically-described resources that establishes its own operation on some key issues: resources, user profile, supply & demand matrix, personalized search [2].

Within the KH an info-knowable resource is constituted by two elements:

1. the content, alternatively composed by (a) a file or (b) an archive composed of more files or (c) a link to an external resource;
2. the metadata, that is a set of couples (descriptor, value) where the descriptor belongs to a definite scheme within WISE Project and the value is one selected among those admissible for the descriptor.

In particular, the WISE KH includes different typologies of resources [Fig. 2]: from those purely educational, aimed at supporting educators and trainers in the design of learning courses, to those more informative which support stakeholder in information retrieval specific for their target range.

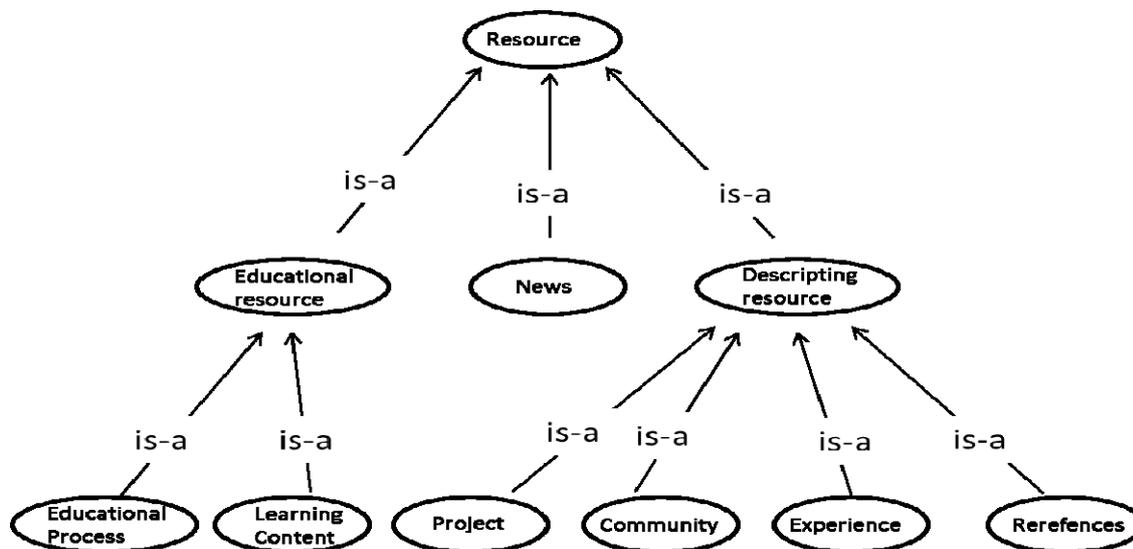


Figure 2. Different Resources in KH

Each resource has a specific set of descriptors in accordance to the scheme defined in the project activity. The metadata, descriptors and vocabularies of admissible values for the single descriptors were modelled in the KH with appropriate ontologies based on standard schemes as SKOS (Simple Knowledge Organization System) and based on RDF **Error! Reference source not found.**

Knowledge Hub will be accessed and personalized through the mediation of a user-model. The user-model underpinning the KH personalizes users' experience with the system by acquiring information about a user so as to adapt the interface and the search results to the profile derived for that user.

The WISE user-model is based on the international standard IMS-LIP [6] and its adaptations [7], but integrates them with other sets of data devoted to describe what we called "the HB-System". In particular, a specific set of descriptors has been derived from a mapping against the World Health Organization's International Classification for Functioning, Disability and Health (ICF) [8].

In particular the user modeling, to describe the registered user's profile that utilize the KH, is structured according to the following 5 categories of information:

1. *socio-demographic information*;
2. *user role*, that is selected from: HBs, parents, teachers, operators, researchers, families, members of association and communities, other;
3. *homebound features*: including needs, clinical diagnosis, skills, capabilities and context characteristics. This category retrieves the information that has been mapped against ICF system and allows a personalization of the search based on determinate data, such as the characteristics of the referential HB and his/her context. These data underline what the user needs and what functions he/she is able to perform in his/her specific context. For example, the user (HB, teacher, parent) is guided by an online form requiring to indicate information about several HB skills such as walking and moving, interpersonal interactions and relationships etc.
4. *a set of related preferences* regarding the modality of presentation of images and content;
5. *a set of information needs* derived from the system according to the information expressed within the first 4 sections of the user profile and refined through the analysis of user behavior.

Also in this case, in order to enhance interoperability, the user profile and the key elements of which it is composed are modeled in the KH through appropriate ontologies obtained from extension of standard schemes such as FOAF (Friend Of A Friend) based on RDF and OWL [9]. The profile is used within personalized search to calculate the relevance of a resource for the user information needs. The relevance count is based on models and algorithms described by a component named profiler.

The profiler enriches the profile with information derived from the analysis of the user behavior during the interaction with the system. In particular, if the first four information categories envisaged in the previous list are defined by the user, the fifth will be inferred from the profiler and described as a set of triples (descriptor, value, weigh) where descriptor is one of those of the resource metadata, value is one of those admissible for the descriptor, and weigh is a real between 0 and 1 that rates the user interest for resources with descriptor equal to value.

A significant contribution to the relevance calculation is given by the search matrix.

The information available in the KH are in fact accessible to the different users through a set of tools and applications. Beyond the possibility of making a simple and personalized search (i.e. the system is able to order results of a standard search on the basis of the compliance of the listed resources to the information needs of a given user), within this work we mind two typologies of search whose relevance is linked to the opportunities of extending the concept of search to scenarios in which the detectable space isn't any more constituted only of document repositories, but of distributed and dynamic sets of information conveying, in a manner more or less structured, experiences and competencies of human resources. The two quoted opportunities are the *Search Matrix* and the *Recommender Systems* (RS).

The *Search Matrix* is conceived as a rapid consultation service of educational and information resources targeted at homebound and at help/care-givers.

In the matrix development we work with the aim of returning to the user looking through it the basic indications to understand which supply (educational or informative) is available, in function of the parameters indicated by the user.

The indications returned to the user are associated with a fitting level of this supply with respect to the parameters entered by the user himself, hence to his own demand, meaning as "demand" the set of characteristics describing the user need and as "supply" each single option (whether a project, a community, an experience...) that the system may suggest to the user as relevant – and at which relevance level – with the indications that she herself has given. The matrix seen from the development perspective is a technique (implemented within the profiler) to measure the relevance of a given resource to a given profile.

Besides, the system is able to suggest to each user the resources which better reply to his/her information needs through the *Recommender Systems* (RS), which give personalized advices to users system about the relevance of items belonging to a given domain for their own specific needs [10].

The techniques through which is possible to foretell unknown ratings starting from those known represent a fundamental aspect, on the light of which it is possible to characterize the systems themselves. In particular, literature [11] accounts three big categories of approaches for recommending:

- cognitive approaches: the user is recommended items similar to the ones the user preferred in the past (it is based on the calculation of similarity among items);
- collaborative approaches: the user is recommended items that people with similar preferences liked in the past (it is based on the calculation of similarity among users);
- hybrid systems: combining the two previous approaches.

The KH implements up-to-date recommender techniques aimed at suggesting to each user, resources more relevant with respect to his own information needs gathered from the analysis of interaction with the portal. The implemented techniques allow to:

- obtain an updated list of N resources recommended by the system to be visualized in an appropriate section of the KH (use case Y4 "Obtain Recommendations" in [12]);
- order the resources list obtained through a standard search on the basis of the relevance with one's own information needs (use case Y2 "Personalized Search" in [12]).

In the context of WISE hybrid approaches based on weighed crossbreeding are exploited, implementing and combining a cognitive component (to exploit the metadata associated to WISE resources) and a collaborative one (to contaminate results considering preferences of similar users).

Conclusions

Today one of the major problems that users meet browsing the Web is the search of functional information or contacts about their specific needs, in particular for people with special needs.

In this paper it was described the project WISE aims at designing and developing a system which bridges homebound people (HBs) educational needs with information, resources, initiatives and tools that fit with them.

The core of the Wise project is a Knowledge Hub modeling through ontologies a knowledge-base about HBs formal and informal learning, basing the user-model against ICF.

With this choice we have tried to embed a new vision of disability into the WISE system and in the services provided by it, and allowed to personalize the user experience with the system according the characteristics of the referential HB.

The KH implements state up to date methodologies for recommending useful informative resources to system users. To do that, a cognitive algorithm based on the analysis of the metadata connected with each resource is hybridized with a collaborative algorithm centred on similarities between users. Next steps will improve the cognitive algorithm by exploiting semantic proximity between possible values for metadata. Such proximity will be explicitly declared through the organization of feasible values in taxonomies (as the ICS standard) or through lightweight ontologies.

The KH also represents relevant information by leveraging on Semantic Web compliant ontologies based on widely diffused specifications like RDF, FOAF and SKOS. This facilitates interoperability with external systems and is compliant with the Linked Data initiative [5].

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THE INCORPORATION OF GIPSY GROUP IN THE CLASSROOM OF MUSIC: THE TEACHING OF *FLAMENCO* THROUGH THE NEW TECHNOLOGIES

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Abstract

Since at least one decade ago, the education of the gipsy race inside the spanish classroom has been notably increased. The cultural history of the above mentioned group has been characterized by the use of an own language, the development of a subsistence economy, self-employment, roaming and very specially by the folklore. So, one of his most distinctive features is the production and development of an own musical style: *flamenco*. The great variety of musical contents that this popular music has (melodies, texts and rythms) that come to enrich the used ones in other styles (more western) studied and used usually in the spanish curriculum (classic, traditional..) it turns it in an appropriate way for the social integration in the classroom of music. So, the gipsy child can show a part of the individuality of his ethnic group, producing a reciprocity in the transmission of learnt knowledge too. However, it must be in mind that all efforts of intercultural education carried out in the schools must be accompanied by the use of the new technologies, determinants in the current society: internet, edublogs, educational blogs. A full incorporation is produced when the school puts at the disposal of the pupils all those resources that the society where they want to be integrated has.

This proposal tries to show diverse cases of using the new technologies in the teaching-learning of *flamenco*. Not only to highlight the learning of concrete musical contents, but also to emphasize the integration potential that the use of this popular music has.

Keywords: Flamenco, Gipsy, Spanish curriculum, new technologies, music lesson.

Introduction

The article 10.1 of the Spanish Constitution proclaims that "the dignity of the person, the inviolable rights which are inherent, the free development of the personality, respect for the law and the rights of others are the foundation of political order and social peace " [1]. In the school area, these concepts have to be translated in a " tidy coexistence, learning to live with others, respecting and assuming the equality of the people, whatever race, ideology, sex or religion may has been" [2]. The above mentioned rules must be considered for all the organs responsible for education, as many educational administrations as individual organs (general and specialist professorship), because these are the issuers and carriers of the necessary contents for an integral formation of the individual. So, the values and models of coexistence which are transmitted to students and, therefore, reproduced inside the classroom, are specially important for the good integration of the different groups that nowadays form the school.

This work wants to centre his attention to how these directives can be carried out from one of the individual organs, that is, it tries to indicate the possibilities that the teacher of music offers to gypsy group for his full integration in class, taking as a reference the teaching of *flamenco* through the new technologies. This proposal obeys that, on the one hand, the increase of gypsy population inside the Spanish classrooms is every time bigger (so the teacher must raise educational actions to integrate and get in touch a group with a high index of marginality) and, on the other hand, the need of that these groups were conscious that school not only transmits the knowledge of the reference group (or group of reception or dominant for some theoretical), but the society in general, as it is in this case, *flamenco* art.

To give light to this proposal must be considered aspects as Spanish educational laws (to know their plannings with regard to social integration), the situation of the gypsy group inside Spanish classrooms (in order to show the educational and social context of him), the didactic and musical elements of *flamenco* (to discriminate his educational contents) and finally, the virtual resources which the teacher has for the learning of *flamenco* (with the aim of clarifying some tools capable of being used by the professorship of music).

The consideration of these four parameters will serve to determine if, as this proposal considers, the class of music and the new technologies are an effective way to achieve the integration in the classroom.

Discussion

Spanish educational laws and social integration

The current Spanish school is a multicultural and multiethnic reality, consequence of the transformations suffered inside a society in continuous movement. In this way, among other factors, the processes of migration, social variabilities and the reception of groups of refugees (because as much to political reasons as racial) have produced changes in the macro-society, general population, that they have had their parallelism in the micro-society, the classroom [3]:

"[...] the social, economic and political relations that the educational system promotes reflect with great accuracy the functioning of the surrounding society [for what] the school not only transmits technical knowledge or mechanical skills, but also [...] socioemotional characteristics necessary in the intended enter the labour market" [4].

This social heterogeneity, on a large and small scale, carries, in many cases, problems derived from the assimilation and acceptance of the features and cultural entities own of every group. For some authors, the obligatory education obtains in many cases that " the dominated classes " value "knowledge" and "know how as legitimate (for example, in law, medicine, technology, enjoyments and art) " undervaluing their own one (" for example, common law, domestic medicine, handcrafted technologies, language and popular arts ...") reverberating thus in " a monopoly of the dominant classes " [5].

On this matter, the Spanish educational system was already considering in his Educational Laws (from 1985) actions that could serve to counteract these difficulties. For example, with regard to students, the Organic Law 8/1985 of July 3 regulatory of the right to education included among the finalities of educational activity the " full development of the personality of pupil and the education in the respect of fundamental rights and freedoms and in the exercise of tolerance and freedom inside the democratic precepts of coexistence " [6].

In spite of these efforts, the "intercultural dimension for the educational policies" experienced a greater advance in the following decades [7]. Inside the aims of the Curriculum of Primary Education of September 6, 1991 in section "g" it is brought the need of " behaving in a solidary way, recognizing and valuing critically the differences of social type and rejecting any discrimination based on differences of sex, social class, believes, race and other individual and social characteristics " [8], agreeing therefore, a cultural diversity in a continuous growth. Years later, the Organic Law 2/2006, of May 3, established as precepts and aims of education the "transmission and putting into practice of values that were favoring personal freedom, democratic responsibility and citizenship, respect and justice, as well as education for prevention of conflicts and for the pacific resolution of the same ones". In addition, in article 121.2 it is established that the educational project of every center has to gather a plan of coexistence that " will have to respect the precepts brought in Law and which performance will have to be guaranteed with the rules of organization and functioning of the center that are defined by the own Law " [9].

More recently, on February 23, 2007, the Spanish Ministry of Education and Science founded the "School Coexistence State Observatory" with the aim to contribute to the active construction of a suitable environment of school coexistence. For getting it, it was promulgated a Royal decree (275/2007) which followed the mentioned directives indicating that "an active construction of a suitable environment of school coexistence is a responsibility that must be shared and assumed for whole educational community" [10].

Gypsy child and school

Gypsy group in Spain has low rates of social participation. School, as basic agent of socialization, has been the space which has been directed a great part of the efforts to achieve the social incorporation of this population. According to the Institute of Woman "nowadays practically the total gypsy population comes to the school in the obligatory age and a good part of the same one continues at school during Primary Education". Nevertheless, this date changes during the stage of Obligatory Secondary Education (ESO), because " an important percentage of gypsy children leaves the school in the previous years or in the step to ESO, being this percentage higher in case of gypsy girls " [11]. This fact can be produced for two reasons: the early age of marriage between gypsies (these " are

carried out between 15 and 20 years old, being gipsy girls habitually younger ") and the attempt, by the parents or patriarches, of conservation and valuation of their own culture:

"Because of the style of discipline imposed in the family, child comes to the school without necessary habits and schemes to adapt himself to school activity, these one that he has, have been developed in other direction; likewise, the low level and scanty valuation of education propitiates that there were no answer to the demands of material, attention and help that professionals of education do to the families of pupils, these are unwilling to invest time and money in an activity that they neither know nor appreciate. At the same time they disaffirm in front of their children that learning that not agree with their customs, traditions or ways of understanding life [12]"

In Spain, education is obligatory from 6 years old and the information obtained by the " Institute of Woman " reflects that in the academic course 2008/09 93,2 % of gipsy students had initiated their education to the indicated age or before, whereas remaining 6'8 % had done it, at least, with a year of delay.

It is remarkable that 84'5 % of gipsy families enrolls in school to their children with less than 6 years and concretely 47'2 % with 3 years, coinciding with Infantile Education is free. That is to say, although Spanish system facilitates the access to education to whole society, economic problems of this group and even his own customs prevent education of the same one: This one carries later problems in his access to work and integration in society.

Methodology

Teaching of *flamenco*

As specialists in Didactics of Music we underline the need of using *flamenco* in the classroom for two main reasons. On the one hand, it is a requirement of Spanish educational law and on the other hand, his musical elements make it suitable to include it between the contents of that subject.

So, the Educational Organic Law (2006) on his chapter II inside the article 17 (Aims) indicates that primary education has to " help to develop in the children capacities that allow them [...] to know and value his natural, social and cultural environment, as well as possibilities of action and care of that one ". In addition, the Royal decree which establishes the minimal teachings for primary education indicates as " cultural and artistic competence " that this one supposes " knowing, understanding, appreciating and valuing culturally among different cultural and artistic manifestations used as source of enrichment and enjoyment and considering them as part of the heritage of populations" [13]. Therefore, *flamenco* like musical heritage of Spanish people must be born in mind inside the compulsory education and, from this one, all educational elements that it carries (musical, sociological, literary, and so on). On effect, teaching of *flamenco* can be realized not only from the subject of music, but also from an interdisciplinary perspective:

" [...] in complementary or out-of-school activities (recital in the Cultural Week, for example, or excursion to a *flamenco* club); the choreographic one in physical education or in workshops of dance or movement; and the literary one, certainly, allows overall in language and literature, to approach metric, stylistic and thematic aspects. The thematic ones will serve us to know realities which study would belong to History, Geography, Religion, Philosophy and so on [14].

Though, the education of *flamenco* does not have, in this case, as main aim "teaching in itself", but rather, teaching of music through this one. Between the musical elements that can extract from education of flamenco can be born in mind:

1. Metrics: It can be worked binary, ternary and twelve time measures with school instruments of percussion, clapping (corporal percussion) brilliant or deaf (more flamencas). In addition, the exercises of full or with rests measures will also be beneficial and these can be percussed with feet, as *flamenco* style: even, the knuckles on the table are a good option for ternary ones. In this way for example it might be taught *sevillanas* and *verdiales* (for three-four time), *fandangoes* (3x4, fist more fingers), *tanguillos* of Cadiz (4x4, rest as leg or heel more three times clapping), *tangos* and *tientos* (for 4x4 time), *fandangoes abandolaos* (3x4, foot, clap, clap) and even any Andalusian folk song of mixed measure as *alegrías*, *cantiñas*, *soleá*, *soleá for bulerías* and *bulerías* (12 times: 2 of 3x4 or 3 of 2x4, that is to say, in amalgam).
2. The form (or structure of the Andalusian folk song): Discriminated by attentive hearing and using for it different elements as *musicogramas*, the differentiation of *copla-estrillo* or, following the plot thread of a text. In addition, the perception of the form or different sections of the Andalusian folk songs will contribute to a greater knowledge of these: for example, discriminating introduction and

cadences (generally effected by guitars), the *falseta* (improvisation of guitar), "ayeos" (intonation to get the tone) and strophes (literary vocal part).

3. Instruments: Specially the guitar, that can be extended by knowledge of peruvian box drum and even with full orchestra (used in more or less new *flamencas* recordings, new *flamencos*, and so on). There are many versions that extend instrumental spectrum with the flute, piano, electric bass and so on.
4. Melody: Working *modal* and *tonal* singings, *microtonalism* (*vibrato pronunciato*).

As any discipline, inside education of *flamenco* there are diverse points of view about how this style should be presented in the classroom:

It is discussed about the convenience or not of initiating pupil to *flamenco* with the "hardest" styles (*soleá*, *seguiriya*, *toná*) or, on the contrary, entering in the same one through the contact with the most sweet or rhythmic styles (*colombianas*, *fandangos*, *alegrías*, *bulerías* and so on). We think that it is difficult to determine it safely: it depends probably on the effect that one or another contact could do in the sensibility of every person and the previous predisposition that each person has. In any case, we agree with the indications of other companions, as Caty León, according to them it is necessary to study first the musical environment - folklorical and *flamenco* - of pupil and, as be this one, to start attracting it towards *flamenco* by a style or other: so, *fandango* in Huelva; *sevillanas* in Sevilla; *verdiales* in Malaga; *tanguillos* in Cadiz; and so on [15].

Nevertheless, we think that a good didactics comes determined first by the knowledge that teacher has of his class: it is he who will have to choose the suitable strategies of teaching-learning.

Internet in education of *flamenco*

The proposal of using the resources that Internet puts within reach of pupil for learning of *flamenco* is owing also, to a requirement of Spanish curriculum. So, the Royal Decree 1513/2006 of July 7 previously mentioned, points out and defends the use of technological resources inside all areas of knowledge. The interest in using these new technologies can justify, some way, for the fact that nowadays, the classroom forms already part or it is immersed in known as "information society" [16]. Definitively, musical education could not obviate the fact that new "information society" alluded by sociologists and pedagogues has brought the use of electronic and digital resources that are conferred like necessary for learning carried out in classrooms. Thus, an integral education across music is also leaded by new technologies. If from the governmental centers (Government, Ministry, and so on) it is urged to his use and researchs reveal the benefits of his use, teachers, educators and professionals of education cannot turn a deaf ear to all these devices.

At present there is a great quantity of web sites dedicated to education - learning of *flamenco* designed so much by governmental educational as private institutions, including the following:

www.flamenco-word.com

www.tristeyazul.com

www.horizonteflamenco.com

www.esflamenco.com

<http://www.andalugia.org/flamenco/>

<http://caf.cica.es/ninadelospeines/newBase.html>

www.juntadeandalucia.avarroes./recursos/culturaandaluza/

<http://flamencoprimaria.blogspot.com/>

We must remember that the use of new technologies in classroom has arisen as answer to the requirements which are raised by the society where pupil lives immersed. From this commitment, professorship must optimize the resources which are provided by these tools and smoot the way that makes them accessible to be constituted like musically competent. Thus, a conscious and reflexive practice calls the attention on the fact that this can be understood as a mere focusing on the sociological factor, to whose reflection we must add the psychological, epistemological and didactical one implied in the development of the curriculum.

Conclusions

The proposal of teaching *flamenco* through different web sites as way of integration of gypsy group obeys a triple purpose. First, it gives response to several requirements of the curriculum: social integration, use of own musical culture and use of new technologies. Secondly, it serves to save a handicap of education on making a transfer of knowledge from a marginal group to the reception one: *flamenco* is a musical style historically nearer to gypsy people though, it is an universal heritage. So, gypsy child gains confidence inside the group because he knows difficulties and musical contents that come from *flamenco*: his companions will be able to lean on them to save certain obstacles. And thirdly, the use of new technologies allows again the communion between the group. A great part of gypsy group is in an economic deficit situation, therefore his access to these tools is limited in many cases to the use and enjoyment that they could do of them in class; nevertheless, another part of the current society uses normally these resources: they are who must help then to the use of these devices. Therefore, while gypsy child can teach the musical content, "payo" child can teach the use of technologies.

The education of *flamenco* through Internet would consist then on a transfer of knowledge between two cultures: developing not only musical education and teaching across the new technologies, but mainly respect and collaboration between all the individuals of a future society.

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CHALLENGES FOR THE 21ST CENTURY: INCLUSIVE LEARNING ON HUMAN SUSTAINABLE DEVELOPMENT

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The Teaching Innovation Group on Human Sustainable Development was constituted in year 2009 with the aim of disseminating the theoretical basis and good practices of sustainability among the university community and the local society. Following Anand & Sen⁷³ our notion of sustainability transcends the characterization of sustainability given by the 'World Commission on Environment and Development' in what is known as the Brundtland Report⁷⁴, in so far as it introduces the issues of "distributional equity" (sharing the capacity for wellbeing between present and future peoples), and a marked concern with the less privileged of *today* because, as Anand and Sen suggest, we cannot ignore the "deprived people today in trying to prevent deprivation in the future"⁷⁵.

The naming of our Teaching Innovation Group as TIG on *Human Sustainable Development* responds to a much thought and debated issue among the members of the group regarding the nomenclature and the terms to be used. Although conscious of the negative connotations of the notion of development, and perhaps because precisely of that, we decided to include the notion of 'human development' in order to grasp the ethical principles and compromises of the group: to situate human beings at the centre of the process of development, to include the sociocultural dimension of sustainability⁷⁶ and to put forward the notion that an alter-development is possible. Learning for Human Sustainable Development means, therefore, to learn⁷⁷ the values of equity and participation and to understand development not in terms of economic indicators, but in terms of Human Rights (health, inequality, longevity, education, clean environment).

1.- Ethical Principles and Practices of the TIG on Human Sustainable Development

The TIG on HSD constitutes a new initiative of the "Aula de Paz y Desarrollo" ("Peace and Development Workshop") that was created in 2001 by an interdisciplinary group of professors interested in promoting a culture of peace and equity in the local society of Burgos and in the context of the university. The group of professors who belong to this Workshop and to the TIG share a common interest in engaging the society-at-large in a learning process towards HSD that: (i) Leads to

⁷³ Anand & Sen (2000) "Human Development and Economic Sustainability". *World Development*, Vol. 28, 12: 2035.

⁷⁴ According to the WCED, sustainable development "is development that meets the needs of the present without compromising the ability of future generations to meet their own needs [...] includes within it two key concepts [i] the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and [ii] the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs", WCED, World Commission on Environment and Development (1987) *Our Common Future*. UN General Assembly, August 4th 1987: p. 54. (See also: Hauff, Volker "Brundtland Report: A 20 years Update". Key note speech, Berlin June 3rd, 2007; Hauff, Volker "The Brundtland Report: An Update". Key note speech, Brussels October 17th, 2007).

⁷⁵ Anand & Sen 2000: 2030.

⁷⁶ The three pillars of and for sustainable development as it was defined in the UN Summit of Rio de Janeiro in 1992 are the social pillar (participation, public opinion), the environment (resources and physical milieu) and the economic (mode of production and of 'growth'); the fourth pillar, the cultural pillar, was added thirteen years later, at the Summit in Porto Alegre in 2005. The inclusion of cultural issues within sustainability is critical because it means to acknowledge that development should be conceived more anthropologically and holistically and that, therefore, cultural diversity and cultural issues must be taking into account.

⁷⁷ Among the long list of academic titles regarding issues of learning for sustainability, we could underline the recent and influential works of (i) Arbuthnott, Katherine D. (2008) "Education for sustainable development beyond attitude change". *International Journal of Sustainability in Higher Education* Vol. 10 No. 2, 2009: 152-16. (ii) Bonnet, Michael (1999) "Education for a Sustainable Development: a Coherent Philosophy for Environmental Education?". In *Cambridge Journal of Education*: 313-324. (iii) Corcoran, Peter Blaze "The Earth Charter as an Integrative Force for Peace Education and Environmental Education". In Wenden, Anita L. *Educating for a Culture of Social and Ecological Peace*: 183-205. Albany: State of New York University Press. (iv) Gadotti, Moacir (2008) "Education for Sustainability: A Critical Contribution to the Decade of Education for Sustainable Development". *Green Theory and Praxis: The Journal of Ecopedagogy*. Vol. 4, N.1: 15-64. (v) Nath, Bhaskar (2003) "Education for Sustainable Development: The Johannesburg Summit and Beyond". In *Environment, Development and Sustainability*, Vol. 5, Iss.1: 231- 254. (vi) Reid, Alan (2010) "Discussing the Possibility of Education for Sustainable Development". *Environmental Education Research*, Vol.8, N. 1: 73-79. (vii) Tilbury, Daniella; Stevenson, Robert B.; Fien, John; Schreuder, Daniel (2002). *Education and Sustainability. Responding to the Global Challenge*. IUCN Commission on Education and Communication CEC.

a more inclusive society by exploring alternatives to national citizenship and to traditional forms of governance. (ii) Leads to the unveiling of inequalities and to their disappearance by asking relevant questions regarding the processes through which inequalities are and have been constructed historically. And (iii) Leads to a more sustainable *modus vivendi* by suggesting and promoting follow-up models of sustainable action beyond the walls of the classroom or other formal educational setting .

Our approach to what is usually known as 'education for sustainability' is guided by three principles that can be best defined as the *ISA Approach*: it is an (i) inclusive and integrative learning process that (ii) is based on the ethical principles of sustainability and (iii) that moves to action. It is an inclusive learning process because, first, great efforts are shed in order to recognise, accommodate and meet the learning needs, capacities and expectatives of the local society; second, because we promote the contents and values of universalism and cultural differences (it is not an 'environmental education'); and, third, because the settings where this process takes place transcend the formal educational contexts and move towards the public spaces where non-formal and informal learning take place. It is developed under the ethical principles of sustainability because the theoretical models that we follow and the alternative practices that we promote are oriented towards the principles of global responsibility, cooperation, reciprocity and solidarity in the management of resources. This learning practice leads to action by challenging the actual paradigm of development and by participating in networks and activities that encourage people to change their values, lifestyles and relationships from individualism and profit towards cooperation and equity.

The activities that we have organized in this decade include conferences, seminars, exhibitions, film screenings, photographic competitions, and the organization of the course "Challenges for the 21st century". Most part of these activities are open to the public and take place not in the context of the university, but in public spaces lend by local NGOs (e.g. Comité Oscar Romero), institutions (e.g. City Hall, Provincial Department) and private enterprises (e.g. Caja Burgos-Banca Cívica). We also take care of the current patterns of work and pleasure and we try to allocate these activities after the established closing time for stores (usually at 20:30 in the afternoon) in order to encourage people to participate⁷⁸.

Among the activities open to the public we could mention, first, the debates and talks over a specific issue (e.g. climatic change, cultural diversity, armed conflicts) where we encourage the inclusion of and debate over different understandings, perspectives and dimensions both in the talk given by the presenter (usually an expert in the theoretical or practical sense: e.g. a biologist and an organic farmer in a talk on biodiversity) and in the colloquium that follows.

A second group of activities developed for the larger local community is what we call "Rethinking the Environment: a Coffee Workshop", a monthly gathering centered more specifically on issues related to the environment. In this case, an expert introduces the audience to an environmental issue (e.g. aquifer's pollution) showing in very comprehensible terms what are the good and bad practices that can reverse such process of deterioration. After the presentation, participants are invited to ask questions and suggest practices in a warm and cozy atmosphere where we provide coffee and some sweets.

A third group of activities that is very well received by the local society of Burgos is the monthly film series dedicated to a specific aspect of sustainability (from peace to cultural diversity, from social inequality to climatic change) where we screen films that are not shown in commercial movie-theatres; occasionally, we have also organized a cine-forum and open discussions with the director, the scriptwriter or the producer of the film.

Finally, we also support other activities organized by local NGOs and associations and include from signing a manifesto against the War in Iraq to participating in debates on gender violence.

Among the practices designed for the university community, we can mention the course entitled "Challenges for the 21st century" that has been taught since year 2001. This course, open to all students at the university, is structured along independent but interrelated work packages and taught by an interdisciplinary team of professors and experts who address different dimensions of sustainability: economic (e.g. globalization as an expansion of capitalism), historical (e.g. wars and conflicts), environmental (e.g. climate change), educational (e.g. conflict resolution) and sociocultural (e.g. transnational migrations).

⁷⁸ We are also conscious that this timing might, on the other hand, restrain other people from participating, such as parents with children in school.

Another innovative experience in the field of inclusive learning on HSD among university professors is what we denominate 'learning reciprocity' or 'co-learning', an activity that consists of learning from each other, of teaching to ourselves the different contents, experiences and practices that we teach our students in the course 'Challenges for the 21st Century'.

The recent approval (last July) of our proposal to create a *Diploma*, a Title on HSD at the University of Burgos, constitutes our latest success. This Title is an enlarged version of the previous course 'Challenges for the 21st Century' with the difference that in this case students will engage in the learning process of HSD not only as 'students', but also as developers of plausible and possible alternatives through the realization of an innovative final paper on any subject of HSD (e.g. alternative understandings of the role and position of humankind regarding the sustainability of life in the planet).

Finally, also within the context of the UBU, we also work together with the 'Cooperation and Solidarity Centre' at the UBU by supporting and encouraging student's projects that deal with issues related to HSD; we have to congratulate ourselves in so far as the number of projects is growing every year, and as the projects become more diversified: a project to improve access to drinking water in impoverished areas of South America, or a project to improve transportation in remote areas that, in turn, would facilitate the access of semi-isolated communities to specific social services such as health and education.

To end this section I would like also to mention what we may call 'small sustainable gestures' developed by the TIG; more specifically I am referring, for instance, to the disinterested support of the professors of the UBU who take part in the activities promoted by our TIG in the sense that we do not receive any economic remuneration (nor are we credited with a reduction in the number of teaching hours). Also, we take care of small but significant details⁷⁹, such as the type and kind of refreshments served in our 'coffee workshops' (Fair Trade), the reusable crockery and recycled not-bleached paper napkins that we use (instead of utilizing plastic containers that contribute to the pollution of the environment -both in its production and disposal).

2.- The Use of ICT in our project of HSD

The development of new, faster and cheaper ICT lies at the basis of the current and irreversible process of globalization⁸⁰ in the sense that it is precisely through these ICT that a global sphere can be constructed; indeed, it is thanks to these ICT that certain issues such as sustainability and HSD no longer constitute a regional or national issue but rather a global question that has to be dealt with in international forums.

As it could not be otherwise, ICT play also a fundamental role in the activities that we organized regarding both the 'contents' (theories, practices, experiences, knowledges that are learned) and the 'methodologies' followed in our activities. Our learning process in Human Sustainable Development includes both the use of ICT as well as traditional face-to-face interaction and reciprocity, and it is in this sense that our pedagogical approach can be understood as a 'blended learning', that is as "the blend of the use of technology alongside traditional, face-to-face learning"⁸¹.

Regarding the use of ICT in the learning process⁸², we follow the "IRI Approach", where ICT are used as vehicles for Information, Relationship and Inclusion. We use ICT as an **informational** tool that

⁷⁹ Of course, we promote walking, riding a bicycle or using public transportation instead of individual cars.

⁸⁰ As several authors have argued, there is nothing, in principle, wrong with globalization. The issue is the road that globalization is following, creating globalized peoples (the losers of globalization according to Gadotti) and the globalizers (the winners), and promoting what Smart has termed "The unsustainable all-consuming global free market *utopia*" (in Hayden, P. & el-Ojeidi, Ch. *Globalization and Utopia: Critical essays*. New York: Palgrave MacMillan 2009: 117-136). Yet, as we know, all historical systems are dynamic and, therefore, change; either to change a given socio-economic system or to reproduce it *requires* human action; this means, in the end, that our actions are important and that we can effectively challenge and change the current unsustainable lifestyle by promoting a unifying view of the planet as a common shared place where all individuals and social groups are included in a kind of what several authors have termed a 'planetary' or a 'global' citizenship (a concept that recalls the notion of 'General Will' as Rousseau defined it in the Social Contract: "It is on the basis of this common interest alone that society must be governed". Rousseau, J.J. [1949] *The Social Contract*: Book II Chapter 1. New York: Hafner Publishing Co.).

⁸¹ Cif. Crump, B. (2004) "Immigrants, Language and ICT: Factors for Success in Blended Learning". In *Proceedings of Informatics and RWICT 2004 International Conference*, Kuala Lumpur, Malaysia, 28-30 July, Vol 2, pp. 1175-1184 <http://sig.massey.ac.nz/pdf/2004%20Malaysia%20Crump.pdf>. See also Armitage, S. and O'Leary, R., "A Guide for Learning Technologists: e-Learning Series No. 4", LTSN Generic Centre, August 2003. http://www.ltsn.ac.uk/application.asp?app=resources.asp&process=full_record§ion=generic&id=324

⁸² The number of publications dealing with the interrelations between ICT and inclusive learning has experimented an important growth in the last ten years due to the quantitative and qualitative growth of ICT, to the increasing applications of ICT to the learning process and to the interest of social scientists in developing inclusive learning processes in this 'informational age'. Besides the influential analysis carried out in the context of the UK with the well known works of Gorard, Selwyn and Madden

allows us to disseminate and share our information to a broad community, to learn about specific dimensions of the HSD, to know experiences on SHD from other parts of the world, to gain access to the last data, and to carry out comparative analysis and define indexes.

ICT are a good source for images and certain webpages offer very interesting maps regarding sustainability indicators per country⁸³, or the world's unequal distribution of resources and human and social capital (e.g. literacy, health, etc.)⁸⁴, among many others. Other webpages give us interesting and dynamic graphics about different aspects of sustainability, such as the relationship between ecological footprint and Human Development⁸⁵, or the differences in the production and expenditure of energetic resources⁸⁶. Certain webpages could give us some clues on good practices towards more sustainable cities, such as the "transition towns totnes webpage"⁸⁷, and the webpage that reports on 'Making Cities Resilient' that constitutes a fundamental source for learning on the ten-point action plan for city resilience⁸⁸.

The portals of international institutions, such as the UN and their collaborative centres offer very comprehensive and visual webpages that combine maps, graphs, data and essays of a wide variety of sustainable issues; we highly recommend the UN webpage⁸⁹, and the GRID-Arendal webpage of the collaborating centre of the United Nations Environment Programme (UNEP) in charge of disseminating "environmental information to policy-makers and facilitate environmental decision-making for change"⁹⁰. Also, the web pages of these institutions are interesting because their more or less continuous updating can be very useful to know, for instance, the latest data on climatic change⁹¹ or on the ozone layer⁹².

We also use and encourage the use of ICT as a **relational** and interactive tool that facilitates the promotion of relationships and networks between individuals and groups who share similar interests (e.g. cultural diversity) but who, being geographically apart, could not share them (not even know them) if it were not by ICT. These new ICT have, indeed, transformed both the forms of relationships (e.g. the experience of migration today does no longer mean a lack of communication for large periods of time as it had been in the past) and the relationships themselves (e.g. Fair Trade), creating new forms of social interaction (e.g. forums, chatting), and turning obsolete other ones (sorry for the nostalgic of handwritten letters).

As members of the inter-university CADEP (Grupo de Trabajo para la Calidad ambiental, el Desarrollo sostenible y la Prevención de Riesgos), a working group of professors and researchers coming from several universities and research centres interested in "environmental quality, sustainable development and risk prevention", we meet regularly through video-conference in order to debate learning processes and initiatives developed by the different universities. In this case, thanks to ICT (we use the program Adobe Connect), we maintain a direct and effective relationship with all the

or the works of Amadio in the context of Latin America we can also mention the theoretical debates explored by Acedo, by Punie or by Ainscow (see (i) Gorard, Stephen; Selwyn, Neil & Madden, Louise "Logged on to learning? assessing the impact of technology on participation in lifelong learning", *International Journal of Lifelong Education*, Vol. 22, N.3, 2003: 281-296. (ii) Gorard, Stephen; Selwyn, Neil "Towards a le@rning society? the impact of technology on patterns of participation in lifelong learning " *British Journal of Sociology of Education*, Volume 26, Number 1, February 2005 , pp. 71-89(19). (iii) Gorard, Stephen; Selwyn, Neil; Madden, Louise & Furlong, John "Technology and lifelong learning: Are we cutting IT? Paper presented to the 'All-Wales Education Research' Conference, University of Wales Conference Centre, Gregynog, 3-5 July 2002. www.cardiff.ac.uk/socsci/ict/; (iv) Amadio, Massimo (2009) "Inclusive education in Latin America and the Caribbean: Exploratory analysis of the national reports presented at the 2008 International Conference on Education". *Prospects*, Vol. 39, N.3: 293-305; (v) Acedo Clementina; Ferrer, Ferran & Pàmies, Jordi (2009) "Inclusive education: Open debates and the road ahead". *Prospects*, Vol. 39, N.1: 227-238; (vi) Acedo, Clementina (2008) "Inclusive education: pushing the boundaries". *Prospects*, Vol. 38, N.1: 13-38; (vii) Punie, Yves "Learning Spaces: an ICT-enabled model of future learning in the Knowledge-based Society", *European Journal of Education*, Vol. 42, No. 2, 2007: 185-199; (viii) Ainscow, Mel & Miles, Susie "Making Education for All inclusive: where next?". *Prospects*, Vol. 38, N. 1: 15-34).

The Special Issue of the *International Journal of Inclusive Education* (February 2011), "Creating Inclusive Communities", dedicated to explore different dimensions of inclusive learning, constitutes a good reference for the latest analysis of the interrelationships between ICT and inclusive learning (see, for instance, Brandon, Toby & Charlton, Joyce "The lessons learned from developing an inclusive learning and teaching community of practice", *International Journal of Inclusive Education*, Vol. 15, N.1: 165-178).

⁸³ <http://www.ibge.gov.br/paisesat/main.php>

⁸⁴ <http://www.sasi.group.shef.ac.uk/worldmapper/display.php?selected=2>

⁸⁵ http://www.footprintnetwork.org/en/index.php/GFN/page/fighting_poverty_our_human_development_initiative

⁸⁶ <http://www.eia.gov/forecasts/ieo/world.cfm>

⁸⁷ <http://www.transitiontowtotnes.org/>

⁸⁸ <http://www.eird.org/camp-10-11/>

⁸⁹ <http://www.un.org/>

⁹⁰ <http://www.grida.no/publications/vg/>

⁹¹ <http://www.climate.gov/#climateWatch>

⁹² <http://ozonewatch.gsfc.nasa.gov/>

members at the same time that we contribute to HSD by diminishing the pollution and the use of economic and energetic resources that would be incurred if the meetings were face-to-face.

We use (and encourage to use) the new ICT as an **inclusive** tool to participate and promote participation in Forums and networks that value alternative opinions, approaches and good practices leading to a HSD. ICT can encourage the development and strengthening of civil society in so far as it is through ICT that today people are mobilized to struggle for their rights (e.g. the FZLN; the 2011 popular revolutions in North Africa; the 'Movement 15M' in Spain and 'Occupy Wall Street' in New York).

Moreover, taking into account that we are based at a University where most studies follow a Bologna style teaching-learning approach, the knowledge and practice of e-learning constitutes a fundamental tool in the process. Indeed, the use of the Moodle Platform in the current Bologna Grades (and even before in the older plans now almost finished) is concomitant to this learning/teaching approach which considers the use of new Information and Communication Technologies as a tool that contribute to a more dynamic learning process⁹³.

Yet, we should also be aware of several facts that limit the use of ICT as an informational, relational, inclusive and democratizing tool, such as (i) the fact that a large population of the planet does not have access to ICT; (ii) the non-recyclable waste that our use and abuse of ICT generate and that ends-up in the very zones where not only access to Internet, but access to ICT are most rare; (iii) the risk of commoditization of Internet: although not completely commoditized, Internet is not outside economic concerns of capitalist profit and accumulation (for instance, to be on the top on google one has to pay a price); (iv) it can mobilize people to participate and, therefore, to act, but it does not preclude that such practices shall be successful; and that (v) it has created a new social cleavage between older and younger people, between non-initiated and initiated in the use of certain ICT.

3.- Final Remarks

The success of our learning process on HSD among the local society of Burgos is paradoxical: on the one hand, these activities are well received by the local community, and participation can be said medium to high (both in numbers and in the degree to which people participate in the debates). Yet, on the other hand, these activities are usually attended by the same group of people, the very same people who are already compromised with changing and challenging the ways in which people in western societies 'consume' their lives. It is still difficult for us to reach to the society-at-large, mainly because the appealing model of citizen-as-consumer where participation in civil society is limited to the role as consumers consuming already-obsolete products has, unfortunately, seduced many of our contemporaries. Nonetheless, we think that it is not the citizens who are to blame for falling on the sirens' chants; as Yates⁹⁴ warns us, to blame citizens for the lack of sustainability runs the risk of not taking into account the role of multinational corporations and industries that produce these commodities and persuade citizens to engage in a never-ending consumption process.

The success of these activities developed in the context of the University is also paradoxical: on the one hand, we have been very active and our efforts have proven to have some success (Diploma on HSD, learning reciprocity); but, on the other hand, there is really a small number of members of the university community who are engaged in issues of HSD and who are willing to collaborate with the group. Nonetheless, we keep our optimism and for the last two years we offer a seminar on HSD addressed to Professors and Administrative personal of the UBU where different panelists present an in-depth analysis of specific aspects of HSD (e.g. from cooperation to air pollution), that has had a very positive reception among our colleagues, although quite often there is not a manifest willingness to continue the debate once the seminar is finished.

The initiative of co-learning or 'learning reciprocity' has proven to be a success in so far as it shows our commitment to lifelong learning and to the criteria of inter-intra-disciplinarity that we put forward in our course. Moreover, the sharing of our knowledge has also meant to engage in critical debates regarding the different approaches towards the teaching/learning processes and towards specific issues of the HSD.

What we have termed 'small gestures' are important because they may constitute imitation models for the local community attending the workshops, and because they show our coherence and congruity between what we teach in theory and how we act in practice: if we are engaged in promoting a change

⁹³ In this sense, we also work closely with the Section 'Students with disabilities' that facilitates the access of the course materials to those students who may require specific formats (e.g. Braille).

⁹⁴ Yates, Lukes (2011) "Critical Consumption". *European Societies*, Vol. 13, N.2: 191-217.

of values from economic profit and individualism to solidarity and cooperation, we must start with/by ourselves.

Regarding the use of ICT to promote Inclusive Sustainable Actions (ISA Approach), we strongly believe that ICT can improve the purposes and aims of our learning activities in so far as they are tools that can be used: (i) To promote critical debates about the need for a more sustainable approach to any aspect of our lives, both professional and quotidian. Thus, for instance, by participating in forums we can learn that small changes can have very significant outcomes (e.g. learning about toxicity of certain chemicals used in food crops and looking for sustainable and ecological alternatives). (ii) To facilitate the dissemination of the concept of sustainability and of good practices associated to a human sustainable development. Thanks to the ICT we can, for instance, contribute to build a 'culture of peace' that avoids any form of coercion and/or physical-symbolic violence by learning of good practices in peaceful conflict resolution; moreover, the ICT also could facilitate a growing awareness and respectfulness to cultural differences such that we recognize the richness involved in inter-cultural dialogue and polyphonies and the genuine and legitimate character of traditional and popular forms of knowledge. Finally, (iii) the ICT can also move to action because by being global, ICT contribute both to accept our global responsibility as active agents for our actions and for the consequences that these actions may have for future generations, and to develop a planetary citizenship and/or a planetary awareness that we share and inhabit one common house: the planet earth.

DIGITAL INCLUSION AND CITIZENSHIP ON THE INTERNET - A PROPOSAL FOR THE INCLUSION OF TEACHERS OF A NATIONAL PROGRAM PROJOVEM USING A SOCIAL NETWORK

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Abstract

Depending on how they are used, virtual social networks can promote discussion, broadening and learning in a variety of topics. In the specific case of the network PROEDI (Teachers in the Digital Age – www.proedi.ning.com), which is a website open to discussion and exchange of experiences among teachers who want to develop their skills in digital literacy, it may contribute significantly to the digital inclusion of teachers in the municipality of São Luís – Maranhão – Brazil, specifically to those who work in the program PROJOVEM. Therefore, the purpose of this communication is to present and discuss some proposals that aim at integrating the educational network PROEDI in the formal/informal context of PROJOVEM program, which has the objective to promote the digital inclusion of its teaching staff so that they can provide their students a rethink about the importance of Communication and Information Technologies and in the Information Society.

Keywords: Social Networks, Projovem, Technologies, Inclusion

Introduction

We believe that education is a key factor for social inclusion because it is by itself a form of inclusion. It is possible to corroborate this perspective with some authors such as Piaget (2002), whose studies indicated the need for collaboration and especially the exchange of ideas and experiences among those involved, considering that the initiative of each one, the respect for the other's ideas, are conditioning factors to the existence of a collective construction of knowledge. Depending on how it is used, it is in this light that social networking can promote discussion, broadening and learning in a variety of topics. In the specific case of the network PROEDI (Teachers in the Digital Age – www.proedi.ning.com), which is a website open for discussion and exchange of experiences among teachers who want to develop their skills in digital literacy, it emphasizes and welcomes the initiative of individual teachers to develop their own educational path, and it can contribute significantly to the digital inclusion of teachers in the state of Maranhão - Brazil⁹⁵, specifically those who work in the program PROJOVEM.

Therefore, the purpose of this communication is to present and discuss some proposals that aim at integrating the educational network PROEDI in the formal/informal context of PROJOVEM program, which has the objective to promote the digital inclusion of its teaching staff so that they can provide their students a rethink about the importance of Communication and Information Technologies in the Information Society, also called "Third Wave" by Toffler (2002) – if we take into account the issues of digital exclusion in which most of the young Brazilians live –, as well as acquire skills in handling some of the tools of the Social Web.

Urban PROJOVEM

To describe PROJOVEM, we took data from the integrated teaching project as reference – which is an official document constructed by various contributors, organized by Salgado (2008) –, the law that established it and also some information from the Municipal Coordination of the program in São Luís of Maranhão, Brazil.

The Urban Projovem – a mode of the National Program of Youth Inclusion - PROJOVEM –, established by federal law No. 11692 of 10 June 2008, aims at ensuring social inclusion and education of young Brazilians who belong to the range group between 18 to 29 years that, despite being literate, did not finish elementary school (8th grade). For this it is necessary to promote human development and citizenship of youngsters involved through the following actions: i) reintegration of youngsters in

⁹⁵ São Luís, capital of Maranhão, which is located north of the state, precisely on the island Upaon-Acu, in the South Atlantic, between the bays of São Marcos and São José de Ribamar (source: Wikipedia) and has a population of 1.014.837 inhabitants (source: IBGE)

the process of schooling (completion of primary education); ii) the identification of potential opportunities and work training for youngsters in the world of work; iii) the participation of youngsters in collective action of public interest; and iv) digital inclusion as a tool for productive involvement and communication; v) expanding the youngsters access to culture (Salgado, 2008).

This course lasts 18 months and to those students that are regularly enrolled and assiduous will be awarded with a payment of 20 installments of R\$100,00 (one hundred reais), which is an allowance to be paid monthly (Law No. 1.,692 of June 10, 2008)

Curriculum Design

According to Salgado (2008), the curriculum design of Projovem is integrated and interdisciplinary (basic training, professional qualification and citizen participation), with a view to inclusion of their potential audience (see Table 1) and has a workload of 2.000 hours (1.560 in classroom and 440 through networking) to be met over 18 months of classes (78 weeks). To do so it is organized like a network because it works like a cohesive whole, as a result of the intersection of structuring axes with the contents of different curricular component. Thus "each axis interacts with each curricular component, so that even keeping the specific point of view of each field of knowledge, the axes and the content address common issues" (idem, p.71).

CONTENTS  STRUCTURING AXES 	Humanities topics	Portuguese Language topics	English topics	Mathematics topics	Natural Sciences topics	Professional qualifications topics	Citizen Participation topics
I- Youth and Culture	Being young today; The culture of the community in which I live (knowledge, doings, beliefs and artistic expression); Suffer prejudice and discrimination; My class has a good quality of life?						
II- Youth and the city	Living in the city My neighborhood, my territory Urban violence invades the day-to-day lives of young people? Education, work and leisure for everyone? Sanitation is important...						
IV – Youth and Communication	Communication: importance for my life and my work Media: integration or exclusion? Sexuality and responsibility Have I access to the media? Environment and communication in a globalized world						
V – Youth and Technology	The production of my body: health and beauty Does technology humanize the city? The difficulty of access to technology is a violence against the citizen... Does technology facilitate my young life? How can technology protect/destroy the environment in which I live?						
VI- Youth and Citizenship	Being a student of Urban Projovem is an experience of citizenship? Can you be happy living in the city? Being a citizen is to be ethical! Being a young citizen on the full exercise of citizenship is... Responsibility for the environment is a young people thing?						

Table 1: Integrative themes of the training units on the Urban Projovem

The component of basic education follows preferentially the curriculum governed by the Law of Guidelines and Bases of National Education - LDBEN 9394/96. Professional Qualification is now seen on three aspects: i) General Technical Training (overview of the working world); ii) occupational Arcos

– course offerings that the program provides, which are 23 in number and from which the municipality chooses at least four according to their demand for employability; iii) Project of vocational guidance – POP –, and besides offering reflections on the world of work, aims at guiding youngsters in their career (Salgado, 2008).

Finally, we have the Citizen Participation component that is intended to provide the basic concepts of this action. To do so we will also include the Community Plan of Action (PLA), which can be characterized as a planning carried out by young people of social actions to be developed, due to a problem experienced in their communities (Salgado, 2008).

Following this logic, each teacher works as a specialist and has to show that each area of knowledge is important because it helps constructing a citizen's knowledge. In addition, this same teacher plays the role of the supervising teacher, with the primary function of ensuring the integration of the three dimensions presented herein.

If we look closely at table 1 above, we will see that the structural axes, composed of integrative themes, permeate all disciplines, which is to say that they function as cross-cutting themes, because "they are focused by the different fields of knowledge (from the three dimensions of the curriculum), according to the specific points of view" (Salgado, 2008. p.73)

Administrative Organization of Projovem

The Pole is the lowest administrative level of the program. It is composed of 16 *nuclei* ranging from 2.400 to 3.200 students. Each pole is composed of 01 Executive Director, 01 Pedagogical Director and 01 Administrative Technician. In addition to these professionals, there are also the Basic Education Teachers, Professional Qualification Teachers and Citizen Participation Teachers (Salgado, 2008).

In turn, each nucleus is composed of 5 classes of 40 students, and exceptionally classes can have up to 20 students. Therefore, the number of professionals needed in each nucleus follows preferably the national guidelines of the program, i.e.: 05 Basic Education Teachers (one from each area of elementary school); Vocational Teachers, where each one of them will teach 04 classes, and Citizen Participation Teachers, where each one of them will teach 10 classes.

The municipality of São Luís of Maranhão, Brazil made available a total of 5.250 vacant posts. Thus, there are 2 poles, making a total of 30 classes, since each nucleus ranges from 150 to 200 students.

Thus we have a teaching staff of 216 teachers, of which 32 are Portuguese language teachers, 32 are Mathematics teachers, 32 are Natural Sciences teachers, 32 are English teachers, 16 are Citizen Participation teachers and 40 are Professional Qualification Teachers (source: Municipal Coordination of the Urban Projovem in São Luís of Maranhão).

PROEDI social network on the Projovem teacher training

PROEDI Social Network was designed with the software NING and aims to be a space for discussion, aiming at the development of skills of digital literacy, with the basic premise of sharing experiences and knowledge among its members.

To achieve these objectives, we use some communication tools such as: Scraps; Post; Tools; Share; Events; Forums; Tutorials; Online library. Among these tools, "the Forum serves as one of the most important tools for us to discuss issues relating to teacher training in ICT" (Lisbôa & Coutinho, 2011, p.1230).

In the specific case of our work, which aims at rethinking the digital inclusion of the teaching staff and its possible application in the context of the classroom, we will focus our attention on just some integrative themes that make up IV and V, as shown below (see Table 2), because we believe they maintain a direct relationship with the use of ICT in the classroom.

Training Units	Integrative themes
IV – Youth and Communication	<ul style="list-style-type: none"> - Communication: importance for my life and my work - Media: integration or exclusion? - Sexuality and responsibility - Have I access to the media? - Environment and communication in a globalized world
V – Youth and Technology	<ul style="list-style-type: none"> -The production of my body: health and beauty -Does technology humanize the city? -The difficulty of access to technology is a violence against the citizen... -Does technology facilitate my young life? -How can technology protect/destroy the environment in which I live?

Table 2: Integrative themes to be used in training

Based on this assumption, we will adopt the following proposals:

Creation of discussion forums in order to reflect on these issues so that we can define together teaching strategies to be implemented in the classroom;

Provide materials in the digital library that address topics such as digital inclusion, informal learning and collaborative learning;

Create awareness among teachers with practical examples about the importance of working on the digital inclusion of students with not only the handling of Web 2.0 tools, but also through the methodology of projects, advocating the significant use Internet in a responsible and prudent way;

Encourage teachers to familiarize students with social networking and its future use for teaching purposes;

Providing videos that are directly related to the subject being studied and from there propose activities to the students;

Provide a list of Web 2.0 tools that can be used in a classroom context;

Provide tutorials on how to use these tools in different learning contexts;

Through discussion forums follow the impacts of these practices observed on improving students' education by adopting these practices.

Although each training unit may last only three months, we believe that network training should take place concurrently with the classroom training provided by trainers from the program itself. We say this because we believe that there will be enough time for teachers to become familiar with the environment. In addition, they can share information and experience with the trainers and the pedagogical coordinators in the training actions and in the weekly planning.

Final considerations

We are aware that training must be lifelong in order to be effective. However, we believe that participating in PROEDI network discussion forums can help teachers to broaden their horizons, since they can exchange ideas with a very large universe of people, including teachers working in the same program, but from other areas of the country who undoubtedly adopt different strategies that can be adapted to the local reality, considering that the problems experienced by youngsters, with regard to the topics covered, do not differ much between regions.

It will also be important to give teachers the opportunity to participate in training as this may sensitize them about the need to rethink pedagogical practices provided to many of these youngsters, who closely experience social exclusion, and opportunities to have access to digital technologies and, most importantly, to not make them feel mere recipients of information, but producers or co-producers of knowledge.

We are sure that this alone will not suffice to ensure digital inclusion of teachers and therefore students, but we believe it is a start to think about actions at the macro level, in order to ensure communication in this world permeated by technology, where knowing how to use ICT as cognitive tools is a *sine qua non* condition for inclusion in the information society.

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Chapter 7

Guiding, motivating and mentoring learners (Workshop 4)

WOMEN IN SOCIAL NETWORKS: FOCUS ON LIFELONG LEARNING AND RAISING SELF ESTEEM

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Abstract

A rocky year in the social network space was 2010. This year many sites closed their doors. Quite a few others continued their decline into yesterday's news as we see more social network users consolidating their social profiles (Chappell B., 2011). According to a study from ComScore (2010), social networking sites reach a higher percentage of women than men. "Women on the Web: How Women Are Shaping the Internet", found that 76% of women visit a social networking site compared to 70% of men. Globally, women demonstrate higher engagement levels with social networking sites than men. Using data from May 2010, ComScore reported that although women comprise 48% of total unique visitors to the social networking category, they consume 57% of pages and account for nearly 57% of total minutes spent on these sites (Dyer P. 2010). Taking into account these global, international and national conditions, presumptions and theories; researchers from A. Stulginskis University together with colleagues from Lithuania, Greece, Denmark, Iceland, Hungary, Bulgaria and Turkey at the end of 2009 initiated project called "Mentoring rural women through social networks" (MW-Sonet). The main aim of this project is to involve and stimulate local inhabitants (with special attention to rural women) to become active participants of local community life, to become mentors for other community members, other rural women. Project group builds a social network to share ideas, knowledge and skills, empower each network member. This paper discuss few challenges- how to encourage rural women to be more active; how to motivate them for lifelong learning; how to build rural women local, national and international networks. MW- Sonet project results show that women could be active and creative and internet helps to raise self-esteem.

Keywords: women networking, rural communities, mentoring, EU project, MW-Sonet

Introduction

Gender equality and women's empowerment issues are very important. Gender equality implies a society in which women and men enjoy the same opportunities, outcomes, rights and obligations in all spheres of life. A critical aspect of promoting gender equality is the empowerment of women, with a focus on identifying and redressing power imbalances and giving women more autonomy to manage their own lives. Women's empowerment is vital to sustainable development and the realization of human rights for all. "Building Bridges: Empowering women in agriculture to succeed" (BB) was one of the best practice projects realized in frames of Leonardo da Vinci (2005 – 2007). The aim of BB was to involve and stimulate farm women in different EU countries to become rural community leaders and moderators for other local women. After the great success of BB project researchers from A. Stulginskis University (Lithuania) together with colleagues from Lithuania, Greece, Denmark, Iceland, Hungary, Bulgaria and Turkey at the end of 2009 initiated Leonardo da Vinci Transfer of Innovations project "Mentoring rural women through social networks"(MW-Sonet). Studies and research in Lithuania and other EU countries done in the frame of MW-Sonet show that there is a great interest in information exchange, entrepreneurial ways of thinking, building capacity and self-esteem, life- long learning and e- services. Knowing the need for re-qualification and life-long learning MW-Sonet project group initiated e-learning short courses for local women nationally and internationally and social networking activities. The project achievements are described in this paper.

Need for re-training in rural areas from MW- Sonet perspective

Various researches shows that women in rural areas in European countries feel isolated and do not get proper acknowledgement as farmers and the deep rooted traditions within the profession maintain the male- domination of the sector (L. Senra, M. Vogt, 2011; J. Geissinger, 2000). Women want to learn from each other. They would like to have other women as professional trainers, managers, leaders or mentors. While trying to bridge a gap between cities and rural areas local tele-cottages are emerging in many EU countries. But there are only few institutions or initiatives to motivate and empower rural woman to be active participants in the agricultural community life. Research, done in MW-Sonet show that rural areas are those parts of the space economy which are least affected by the process of urbanization, and are therefore associated with a much more dispersed pattern of population distribution and economic activity. There is little doubt about the increasing pervasiveness of the impact of ICTs on economies and regions, and on their ability to alter such spatial relationships in the way economies function. In particular rural women as a group are in a vulnerable position when it comes to harnessing existing opportunities for empowerment and self-reliance. Project group analyzed 96 subjects from rural communities in Lithuania (54 respondents), Turkey (16 respondents), Hungary (13 respondents), Bulgaria (7 respondents) and Greece (6 respondents) from a highly diverse range of backgrounds, age groups, occupations and technological knowledge. Qualitative questionnaire that aimed mostly on needs and expectations related data was created by S. Joshi and translated to project partner languages. Some of the emerging trends from questioning sessions in local languages are:

- i. There exists a definite interest, curiosity and willingness to engage with new information technologies for e-learning, with the clear motivation to improve the standard of education, skills and income generation methods;
- ii. Women in these remote rural regions, feel that while they are not explicitly hindered any more with gendered expectations, there are no clear advantages or opportunities that they are aware of, when it comes to employment and self-sustainability;
- iii. In most cases the overarching challenge was infrastructural in nature. In other words, were the women to have reliable internet connectivity or a PC/laptop in their homes or within easy reach, they would engage more actively. At the moment many express concern on how they will access this new technology or course that will be made available to them;
- iv. The women we interviewed provided a long and diverse list of topics they were interested in learning about. These ranged from simple calls for higher education, literacy (both in terms of writing and computer based), to more sophisticated courses on environmental management, marketing, organic farming, to the psychology of leadership;
- v. E-learning courses on how to navigate the internet to best source, search and obtain information is high on the priority list of many of our respondents;
- vi. With regard to the methodology of training, the women emphasized the need for interactive, hands on and practical ways of teaching. They asked for the material to be accessible and yet engaging (with the aid of multimedia), in order for the learning process to be fun. Many asked for a combination of face-to-face interactions with e-learning as a way of easing into the seminar modules;
- vii. With regard to language, all our respondents categorically stated that they would prefer the material to be in their local languages, in order for it to be accessible.
- viii. Finally we witnessed a mixture of enthusiasm for something new and emancipating, with the understandable fear or suspicion of what it entailed. Hence an introductory seminar on what e-learning means would be a good idea before launching directly into the course itself. This is due to the fact that many of our respondents mentioned that they had no prior experience of this paradigm, and hence were not sure what to expect.

From this research we found that all the respondents would like to experience the best practices from BB initiative. So we developed pedagogical model and transferred adapted BB courses or created the new ones and the same time started to create social network for sharing ideas, products, and results and motivate each other.

MW-Sonet pedagogical model

Courses, created and tested in BB empower the women to share knowledge, develop networks, explore further, and develop themselves. The pedagogical model opens doors for the women, gives added value to professional and social life. MW-Sonet made intensive use of e-learning, because the farm women and mentors mostly live in remote areas, often with great distances from each other. E-learning provides an opportunity to access exciting learning opportunities. Main learning stages were:

- I. Kick-off workshop (face to face stage). The objectives of this meeting were to meet each other face to face, become aware about the course issues, challenges and objectives; gain confidence with the new technologies and virtual learning environment; get more motivated for the learning and do first practical experiments.
- II. Intensive online coaching and collaboration, followed by project or group work activities. This stage starts with some warm-up (icebreaking) activities for learners to understand the fun of studying online and for stimulation the social interaction. During this stage participants were introduced with social networking tools and encouraged to use them for learning and for public or private communications. The learners were encouraged to communicate spontaneously and no bothering about making mistakes. They were stimulated to explore, find the required information from course mates and colleagues and from the net.
- III. Final workshop (face to face stage). This stage was useful for personal meetings with the person you communicated online.

We decided on this model mostly because most of farm women were exposed to e-learning for the first time and this model worked in all countries that did course piloting activities. BB e-learning approach, modified and adapted for MW- Sonet is shown in Fig. 1.

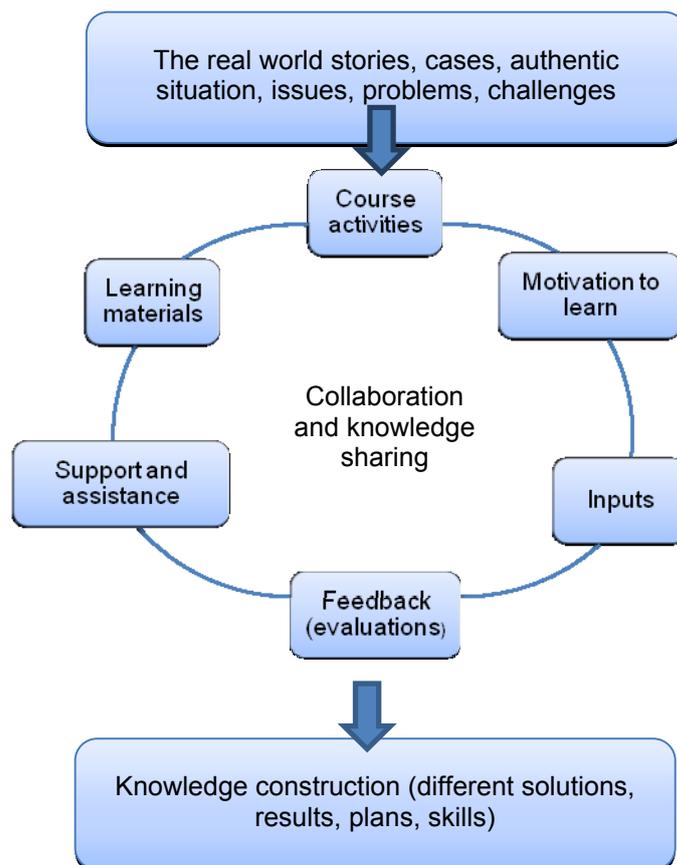


Figure 1. MW-Sonet learning approach

Course piloting sessions in 5 project partner countries showed that it is easier to offer training using the MW-Sonet model as part of an existing and on-going training framework. These trainings were supported by social networking activities. This helps to stimulate teaching- learning process.

MW-Sonet social networking

Looking for the best social networking solution for rural women, researchers in MW-Sonet project experienced using these tools: Mediawiki, Etherpad, Semantic Scuttle, Wordpress, Facebook, Google services and others. They found that mostly these tools are specialised just for one purpose. These tools have excessive amount of adjustments and options to fulfil various special needs. If we would like to use them, we need to create users databases for each of the tool, users need to login separately to every tool as well. We found this inconvenient and not practical. Also the information is scattered among different tools and it's not easy to seek the new information, published by other users and get involved to different discussions. Because of that we decided to use Elgg tool. This tool integrates pages for wiki, groups for discussions, file sharing functions, personal and group blog and bookmarking and friends function. Mw-Sonet group started to adapt Elgg for project purposes at 2010. At that time Elgg was free to download and use. First discussions in Elgg were about women leaders best practices, slow food, how to empower women to succeed, what is to be a volunteer in Europe, how to use social networking for branding and recruiting people, and others. Later on local communities start to discuss about their daily life: organic farming, sheep skills, computer usage, social networking etc. All the time MW-Sonet initiative group encourages the participants to share ideas in local, national and international communities. From social networking activities we could draw the conclusion that women are very active and enthusiastic, but they need mentoring, encouragement and support. This support could be done through the social networks. The best supporters, coaches and mentors are other women with similar background. We think that women social networking would have a positive impact of rural women for social improvement, self- education and LLL, improving self-esteem, awareness of their own special knowledge and of the need to change.

Conclusions

Women are powerful creators, passionate and compassionate leaders, the heart and backbone of a lot of businesses, homes and communities. Women need communication, networking, sharing news, ideas, skills and achievements. MW-Sonet project is a good practice example how to use social networks for rural women needs. Project initiative group developed social networking tool that was practically tested in 7 project partners' countries and local communities in Lithuania, Denmark, Iceland, Hungary, Bulgaria, Greece and Turkey. We found social networking very powerful instrument for life- long learning, creating and developing everyday practical knowledge, making contacts with similar communities, self- development, coaching, mentoring and assisting each other in business and in life.

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CONSTRAINING FACTORS TO THE UPTAKE OF ICT BY MICRO-SMES

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Abstract: The paper draws contributions from the literature and the Leonardo da Vinci project USEREC (2009-1-GR1-LEO 05-01881). Discussed are constraining factors to the uptake of IT in SMEs with particular focus on the gender and learning dimensions. USEREC aimed to study and put in place a reflective natured learning platform for women entrepreneurs. An e-learning course emerged which was recently tested and implemented in Greece. The course is process oriented and its contents aimed at generating reflection on the impact of IT tools to business improvement. Developed as contents were learning demonstrators and self-reflected instruments. The process promoted a collaborative approach to learning through discussion on the identification of owns learning needs.

The review of literature while suggesting that the rationale behind e-learning approaches is conducive to women's learning requirements, it falls short in informing us on how women are facilitated on business process improvement (via e-learning approaches).

The paper concludes with a set of parameters on further research to its thematic orientation.

Introduction

In the current technologically driven world organizations –whether large or small, traditional or contemporary, whether in urban or rural areas have to consider increase knowledge capture and sharing, better problem-solving, more creativity and innovation. According to Clark Quinn (Michael Allen's 2009 e-Learning Annual, 2009 see [Quinnovation](#)) "people need information, knowledge and skills but they need more than just contents; they also need interactive support, communication and more" (p. 2).

The literature is rich on the needs of the sector of SMEs and particularly micro-SMEs to enhance competitiveness. OECD's "Top Barriers and Drivers to SME Internationalization" (2009) highlights that critical constrains to SME's potential for international cooperation are the limited resources and the lack of requisite managerial knowledge. The latter is identified as a more severe factor for the micro-SMEs whether considered from a sectoral or regional perspective.

While adaptation and change is necessary for continued success neither organizations nor individuals find them easy to implement. More and more the leveraging of the capabilities of ICT are considered as a means to address organizational and on-going change.

ICT both from perspective of tools for management or learning offer support although no single solution fills all organizations or all individuals. In regards to the initiatives on the use of ICT as a capable means to enhance the learning capacity of micro-SMEs these have typically remained tactical and have not been integrated into a coherent strategy (Quinn, p.1).

In this paper we report the understandings built from a two year project aiming at enhancing the capacity of micro-SME's to reflect on ICT tools for business process improvement with particular focus on gender. The project discussion pertains to the contexts of Greece, Poland and Germany.

The section that follow outline on the one hand the need for on-going research and development into the factors that impede upon micro-SMEs capacity to utilize ICT –both as a means for business process improvement and as a learning platform, and on the other the approach applied by the USEREC project to address the consideration derived to by the undertaking of the USEREC project to address gaps and requirements. In section one we outline systemic factors that affect the capacity of SMEs to sustain and remain competitive. One of these factors is ICT utilization from diverse perspectives. The second section reports findings from an empirical research study undertaken by the USEREC project aiming at defining IT requirements for micro SMEs. In the third section reported is the process followed to define learning requirements under the scope of upgrading the knowledge base skills and attitudes in relation to IT. Section four discusses the concept of Learning Demonstrators as a means to stimulate reflection of entrepreneurial needs and the fifth outlines the on-line course delivered. The paper concludes with a set of elements for ensuring good practices in the sustainability of e-learning for micro-SMEs.

Section 1

Systemic factors that affect the capacity of SMEs to sustain and remain competitive

SMEs play a significant role in European economies and are the key generators of employment and income, and drivers of innovation and growth. In the European Union, they account for over 99 % of all enterprises. Furthermore, 91 % of these enterprises are micro-firms with less than 10 workers. Given their importance in all economies, they are essential for the economic recovery.

There is no question that in times of economic crisis there is an urgent need for a deeper understanding of persistent challenges that SMEs are faced with in their effort to be sustainable and remain competitive. In an increasingly interconnected and complex economic environment many of these challenges originate well beyond the boundaries of an individual enterprise or a specific sector or a specific geographic region, being of a wider systemic nature at national level, i.e. they have to do with socio-economic patterns, ways of doing business and responding to challenges at national level.

A first important factor is the *international economic context* and its impact and implications regarding the national economic context, which as it has been exhibited in a very bold way by the current global economic and financial crisis, can effectively define the fate of SMEs relatively irrespectively of their specific capacities and potentials. According to the Centre for Entrepreneurship, SMEs and Local Development (2009, p. 6), SMEs are generally more vulnerable in times of crisis because the traditional problem they face of accessing finance is not only becoming much more challenging but also because it is more difficult for them to downsize, they have less diversified activities, they are heavily dependent on credit and have fewer financial options⁹⁶.

Another factor affecting the capacity of SMEs to sustain and remain competitive is their orientation towards the integration of *information technologies* (IT) into their inward and outward activities. The use of IT is of great importance because these technologies do not just help enterprises do things faster or more efficiently but more importantly they offer them the potential to radically alter their ways of doing business, they open up new paths in what they can achieve and how they can change in order to find their place in a highly competitive environment. Variability in IT investments by enterprises across EU countries may imply national-level discrepancies in the readiness of SMEs to reap the benefits of new technologies. According to the latest available Eurostat data (reference year 2009; forecast), Greece enterprises' investments on IT were the lowest among the EU countries (1% of the GDP as compared to Germany's 2,7%, France's 2,5% and Denmark's and Netherlands's 2,9%). It can therefore be assumed that overall SMEs in Greece are much less prepared to integrate new technologies in their inward and outward activities. Another indicator of systemic level factors related to the exploitation of IT for the benefit of doing business is the availability of e-government services. The Eurostat's index of e-government availability (supply side) indicator measures the on-line availability of 20 basic public services. The availability of such services to businesses are likely to speed up business processes and promote their efficiency and effectiveness. The Eurostat data for year 2010 show great variability in the EU national scores in this index. With a maximum score of 100 meaning full electronic case handling, Greece got 47,5, the lowest in EU while Austria, Sweden, Italy and Ireland got a solid 100.

The *human capital*, the people that are daily called to make an enterprise what it is and what it does, what is capable of doing and what is capable of becoming is another important factor in SMEs' success at national and international levels. The human capital in the global knowledge economy is considered one of the most, if not the most, competitive advantage of enterprises. The capacities of people are these which can make a difference and establish a competitive edge in any enterprise. Arguably one of the most defining indicator of the quality and potentials of the human capital at national level is the level of educational attainment of the adult population. It is characteristic that across the 27 EU Member States the share of the adult population aged 25-64 with a tertiary education degree explained more than 20% of the variability in Eurostat's index of labour productivity per person employed (reference year 2010).

⁹⁶ Source: Eurostat. Includes all SMEs except those involved in financial and insurance activities.

Section 2

Training needs and requirements for SMEs

A small scale study of diverse scope per country undertaken in Greece, Poland and Germany within the frame of the USEREC Project aiming at defining the conditions and requirements for the design of an on-line course suggests the following from a country perspective:

Poland: According to the results of the survey on introduction of ICT systems in SMEs it can be observed that the most important course for respondents was the chance to increase the competitiveness of SMEs and reduce costs. Issues such as personal satisfaction, customer satisfaction, or the image of the SME do not constitute causes to introduce ICT systems in Poland. Likewise, IT use for development of new products and services or modification of the object of activity by SMEs or conquering new markets were regarded as important only by 30% of respondents.

According to the survey majority of self-employed proprietors use ICT on everyday basis, the percentage of proprietors using ICT ranged between 40% and 100%. In Poland small and medium enterprises use various channels to get information concerning the use of ICT, among these are seminar announcements coming from Chambers and Business associations and informal sources, like social interactions and information heard from friends (between 20% and 50%).

Noted is that IT trainings and training institution are not perceived as a good source of information about ICT. In respect to the delivery of a training / learning program the results suggest that the best method of deliver is blended learning.

Germany: In Germany companies with 20 or more employees more than 98% used the computer in the course of business or other IT tools like e.g. Intranet, Web Site, E-Commerce and EDI to a comparable extent.

Smaller companies (under 20) took advantage of IT tools primarily for on-line banking.

In the SWOT analysis of SMEs some typical weaknesses could be identified that may refer to the restricted use of IT: static thinking, nepotism, succession problems and the often lacking opportunity of R&D. Often small enterprises are family businesses and not attractive for external persons/mangers.

On the other hand the most important prerequisite to overcome those weak points is a qualified IT management. IT management is described with 4 basic skills: planning, organizing, guiding and controlling. So these skills, referring to IT, are needed or should be trained to enable a person to manage IT in SME. If the owner is not able or not interested in the improvement of his business through the use of IT he has the possibility of using a web based decision support system or to buy external knowledge and expertise. This however is quite often the reason for a lot of subsequent problems caused by this attitude.

Small companies, often being a family business, are "indirectly" leaded by women, because quite often the wives friends, mothers etc. of the male company owner are doing the administration, accounting, taxes etc. To train them in IT management means to take care of their specific situation as mothers etc. and business women, meaning course organisation and structure, has to respect this specific situation. The most important points for the training of women are: help or vocational orientation, support for young women who drop out of school, recognition of informally acquired skills, special training for young women with kids and customised IT training.

Greece: The results of the empirical study involving 300 micro-SMEs based in Crete point to the direction that great many discrepancies exist between SMEs in urban and rural environments regarding use of ICT in general and IT tool for management purposes in particular.

Specifically, only 24% of rural areas based SMEs utilize Information Management Systems of any kind vs 73% in urban based SMEs. If reviewed from the perspective of gender then the percentage drops down to 12.5% for women entrepreneurs in rural areas. Of interest is the fact that of those respondents that use some form of ERP system 2/3 could not respond to the question whether their systems support Internet promotion and sales through e-mail or e-shop, electronic transactions for VAT, social security and tax office payments, document and human resource management.

It is very clear that the critical information on the "system" is drawn from Advertisements and sales representatives (73%). Decisions on the purchase and operation of ERP type of systems appear to be driven by the need to overcome difficulties arising from everyday enterprise operations and conformation with state regulations on taxation and social security. Critical factors as to enter new markets or to develop new products and services and change and/or extend SME activities appear to have a minimal influence on decision to implement Information Management type of systems. Almost

all of the respondents (96%) declare that the investment for an ERP type of system was worth made but only 1/3 state that human effort (for initial training and for every day use) is to their expectations. This raises important issues on the type of training required to undertake full advantage of the systems' functionalities. A ready-made programme / system has been chosen by 93% of the entrepreneur respondents. The common practice is that both the entrepreneur and his/her staff operate the Management System. 1/3 of the respondents report operation only by the owner and another 1/3 only by the staff.

The critical question is what were the perceived benefits for SMEs that derive from ERP implementation to their business: all of the respondents claim that the benefit is saving time (94%) and raising of productivity (46%).

Many SMEs state that system capacity is an obstacle. This is because ready made packages selected as ERPs have standard capabilities according to the needs determined 5 to 20 years ago and are not so flexible as necessary to meet current needs. Also a 30% of the SMEs determine their needs in terms of training in order to exploit all the capabilities of the ERP system they have installed.

Section 3

Pedagogical and organizational considerations for setting up a e-learning course

The scope of activity in USEREC was multi dimensional ranging from IT use in SMEs to the definition of requirements for the design of an on-line course and related tools focusing on business process improvement for women entrepreneurs.

While the requirements on contents for the course derive from the study on IT use by SMEs for management purposes, the requirements for the course design took into account a) the results of discussions from a focus group of women entrepreneurs and b) parameters suggested by Kuhlen (2006) on the female learning culture.

The discourse with women entrepreneurs informed us that an important drawback on their efforts to develop their business is the shortage of free time and the great demands the business has on them. They believe that the use of ICT may be a solution as it is perceived that it will simplify business processes and will minimize the time needed for some operations. Noted should be that the focus group participants while recognizing the benefits ICT might bring onto their business they lacked ICT skills. It appeared that these would benefit from a training program that responds to specific needs of their business, that will offer the flexibility on time for them but most important they would not need to leave their working environment. The training needs identified include: basic skills on ICT usage, webpage design / maintenance, e-commerce, warehouse management, suppliers and client relations, statistics on sales, accounting and social networking.

Considerations on designing an e-learning course

From the reflection phase we concluded that there is a need for a flexible and open training program. The pressure of time doesn't allow for group-type training as each woman has different schedule. This orientation is in line with Lawless's findings which suggest that managers don't feel able to spend long periods away from work and that they prefer short chunks of training (Lawless et al, 2000).

The absence of previous e-learning experience or knowledge of e-learning tools limits the possibility of a training model based exclusively on e-learning methods. The combination of delivering methods of training is necessary as ICT cannot replace face-to-face interaction completely, as managers feel equally strongly about the importance of the personal touch in communication according to Stokes (2001). The interaction between the trainer and the trainee via face-to-face meeting is essential so that to build a personal relationship which can facilitate communication online. We further had to take into account that adults had been shown to learn better by actively 'doing' rather than being taught. When faced with relevant subject content which is problem rather than contented centered adults learn best (Knowles, 1984).

Two realizations derived from the exercise on investigating conditions, requirements and needs of SME female entrepreneurs to increase capacity on reflecting onto Business Process Improvement via ICT tools through e-learning lead us to conclude: a) basic ICT skills development is a prerequisite condition, and b) technology enhanced learning is supportive of the conditions for learning by women entrepreneurs provided it is supported by face-to-face sessions. The second condition has to do with the "female learning culture". Thus, it is necessary to contrast male and female learning cultures and depicted the elements that should guide the learning process of a course focusing on the needs of women entrepreneurs, those being flexibility, collaborative, distributed work tasks, project and team based, reflective, guided and supportive.

Section 4

Sample tools to enhance reflections on need and purpose

In the context of the USEREC project developed were socio-cultural sensitive learning model products labelled Learning Demonstrators (LD), as a means to introduce the concept of IT management / decision making in micro-SMEs focusing on the context of Greece. These constitute parts of the contents integrated in the USEREC on-line course.

Three LD were developed addressing the sectors of bakery, accommodation, catering and all contain modules on client management, inventory management and personnel and enterprise management.

The Learning Demonstrators take the form of micro-ERPs and aim to provoke reflections on current practices. The learning participants, through their interaction with these tools, enhance their reflective competencies in relation to IT for business improvement. More specifically, the Learning Demonstrators pursue a reflective process not only to enable feedback and improvement of the learning contents, but also to reflect on the progress of putting the learnt knowledge and skills onto long-term practice. *The basic idea to use the learning demonstrators is not really to learn what these tools can do, but rather use the tools as a means to reflect on and support process phases of the Bench-effect® method as these tools are demonstrators, not simulators.*

The tools enable the participants to a) reflect on their ICT needs for management purposes and relate these to specific practical results that will be beneficial to business, b) outline problems and solutions that ICT can be supportive of as well as opportunities arising for the development of the business, c) connect business needs with micro-ERP systems and solutions that these support, d) develop an awareness of the relevant issues in micro-ERP use for their own business, e) identify the changes that the ICT may bring to their business and the necessary changes that have to be performed by the participant to exploit the micro-ERP benefits in full.

The USEREC Learning Demonstrators are accessible via <http://promitheas.iacm.forth.gr:8080/E-learning/index.jsp> and are available in English and Greek. These tools have been tested and reviewed by institutions in Poland, Germany, Bulgaria and Romania.

Section 5

The USEREC Course

The USEREC Course is founded on principles of learning centered participative, hands-on pedagogical methods and as such it aims to stimulate a collaborative and reflective approach to learning. The course central objective is to enhance the capacity of SMEs in relation to IT business solutions through a technology enhanced driven approach. Under this scope the course came to address issues pertaining to e-learning and issues pertaining to IT tools for enhancing reflectioning on IT tools for SME management.

The principles on which the course is based on derive from the review of literature, empirical research and experimentation on the learning culture conducive to women entrepreneurs. It implies a blended learning orientation and the implied learning method draws aspects from the Bencheffect® Method.

Specifically, the Course promotes

1. The assessment and analysis of the current situation
2. The drafting and planning of an approach to a solution
3. The implementation of the approach to the solution.

Its design is supportive of the Bencheffect method's phases "determining targets", "tackling targets" and "implementing targets" are both from contents and structure perspectives.

Noted should be that the specific method was adopted as it enables and promotes a continual process on one's own situation and the potential of one's business and staff as the successful realization of the target set. In that way the method specifically supports what many small businesses struggle with on a day-to-day basis, namely,

- pausing and taking time to strategically plan and proceed with a more long-term perspective, and
- not only initiating processes of change but also successfully carrying them out and seeing them through.

This approach gives the learners a sense and reassurance that they haven't "trained in vain" and it also contributes to a high level of satisfaction.

Each module has a specific title and educational content and is structured in terms of:

- Goal
- Expected results
- Learning material
- Expected outcomes
- Self-assessment test

The aggregated modules and their titles are as follows:

Module 1: *Basic principles for e-learning*

Module 2: *Training of Enterprises*

Module 3: *A self-evaluation test on the learning culture of your enterprise*

Module 4: *Principles, regulations and examples of business good practices*

Module 5: *Characteristics of system tools managing Enterprise Resource Planning (ERP)*

Module 6: *Examples of tools for the acquaintance of enterprise re-organization techniques (learning demos)*

Module 7: *Practical training in micro-ERP system environment*

Conclusions

The implementation of the USEREC project confirms that there are impeding factors to the uptake of ICT by micro-SMEs both from the perspective of learning and as a means for business process re-engineering. These are well rooted in the nature, structure and operations of the sector, which constitute it a unique environment for research and development. Enhancing capacity of micro-SMEs to consider IT for management and learning requires first and foremost a discursive approach to the identification of learning and business operation needs and requirements. Using a reflective method, these requirements are easily extrapolated and in turn constitute the source for tailor made solutions. The conception, design, development and implementation of learning concepts need to take into account that the target audience should be enabled to:

- reflect on their ICT needs and relate them to specific practical results that will benefit their business;
- outline the problems that ICT will solve and the opportunities they will have for the development of their business;
- connect their business needs with ERP systems and solutions that they represent;
- develop an awareness of the relevant issues in ERP use for their own business;
- develop a clear vision on implementing ERP in their own business;
- identify the changes that the ICT may bring to their business and the necessary changes that have to be made by the participant to best exploit the ERP benefits.

The concept of the Learning Demonstrators as reflective stimulators appears to be a viable solution to enhance micro-SMEs capacity to consider IT as a means to micro-business process re-engineering.

The design of learning provisions targeted towards the sector audience need to take into account a multiplicity of elements the combination of which imply effectiveness for the learner and sustainability of the provisions. The elements for consideration identified in the USEREC project appear to be consistent with Trentin's (2007) eight-dimensional model for e-learning sustainability. These pertain to the axes of "Management and Resources", Culture and Professionalism, and contains elements of: Informal Dimension, Socio-cultural Dimension, Pedagogical Dimension, Content Dimension, Organizational Dimension, Economical and Technological Dimensions.

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MAIN ASPECTS OF EWIL

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Abstract

The EWIL (European Women Interactive Learning) project founded by Grundtvig Learning Partnership of Lifelong Learning Program with the participation of 6 partners (from Italy, Hungary, Greece, France, Turkey and Norway – more information: www.ewil.org).

Partners agree that at EU level women face a disadvantage in finding a job suiting their skills and education and also face difficulties in balancing their career and family life or maintaining their status. In these times of economic crisis the gender gap – and the problem - is getting bigger and bigger.

The Partnership has stated solutions should be found to relieve the problem by creating more effective versions of informal education of women in order to obtain a double impact: to stimulate women's motivation to learn and to raise the quality of education opportunities directed to women in informal contexts, with a view to fight women's marginalisation in society and to open up opportunities in the job market in emerging sectors.

Within EWIL project there is a learning needs assessment survey with the participation of more than 3000 women from partner countries. Our questionnaire seeks to gather women's opinion in regard to interactive ICT possibilities in learning. Our project aims to discuss learning methods based on ICT to promote women's participation in adult learning and maximising their ICT knowledge.

Antecedents

During the past years questions concerning employment and the quality of employees have become increasingly important.

Earlier emphasis was laid on unemployment. In the wake of the world economic crisis questions have changed, and reserachers' scope of interest have broadened. These days labour force problems are scrutinized in a more complex, often interdisciplinary way.

A significant proof of the above mentioned change is the fact that the 2010 Nobel prize in economics was given to the authors of a labour market model. As you may remember, the American Peter Diamond and Dale T. Mortensen as well as the British Christopher A. Pissarides examined how many unemployed can be present at the market while at the same time there are a lot of vacant jobs. They created a mathematical model to describe the so-called 'labor market friction'.

It is true for the whole of Europe that in the quickly aging societies social services cannot be maintained at the present level if the rate of the employed is not increased considerably within the range of the able citizens. It is not enough to economize on expenditure (in other words: to decrease expenses) in state administration and social services.

In 2009 only 69.1% of EU citizens between the ages of 20 and 64 were employed. (In Hungary that rate is 60.5%, and only Malta is worse in that respect).

The 'EU draft strategy 2020' will very probably contain the employment rate as one of the most important indicating factor. The recommended value for the planned employment rate is defined as 75% by the European Committee.

What does that mean for Hungary? In 2009 the number of the population in the mentioned age group was 6.18 millions. To reach the 75% employment rate, there should be 4.635 millions of employed if the number of the citizens is unchanged. The present number, 3.74 millions is less than that by 895 thousands - that is more than double of the number of unemployed in the 20-64 age range (408.8 thousands). It is an interesting question that such a project aim is obtainable or not.

Only by infrastructural development (by the so-called job-creating investments) it is absolutely impossible to reach that aim. It is possible to create jobs, but there would be no one to occupy them.

The question is - beside the so-called 'hard' projects - where is it possible to intervene by 'soft' means?

Concerning that topic the first significant survey of our Lifelong Learning Fund was conducted in 2008 with the title: 'The Relation of Women's Employment and Lifelong Learning'. At that time there were scarcely any research of that scale (involving at least a thousand people).

Our research revealed that it is possible to define the necessary human traits for constant employment which are not entirely the same as the character traits necessary for getting a job.[3] For example we have found that beyond the important traits necessary to gain a job the most important character trait to remain in work is the capacity of problem solving.

The ALL (Adult Literacy and Lifeskills Survey) by OECD concluded in 2010 revealed that our labour capacities depend much more on our problem solving skills than on the number of our diplomas.

With those results in mind we started searching for inner relations of labour statistics focusing first of all on the relationship of the employment rate and other indicating factors.

Preliminary Surveys

We made a correlation analysis by Pearson method on EUROSTAT data of 2009 concerning the population between the ages of 15 and 64. Evaluating the coefficient (r) we introduced the following categories:

- 0-0.25: none or very weak correlation
- 0.25-0.5: weak correlation
- 0.5-0.75: moderately strong – strong correlation
- 0.75-1: very strong – functionlike correlation

Only values under 0.05 significance (S) were taken into consideration.

Pearson Correlation (Sign. 2-tailed)		employment rate 2009	part-time employment rate 2009	rate of employees by fixed-termed contracts (2009)	rate of self- employed (2009)	unemployment rate 2009
part-time employment rate 2009	r	,697	1			
	S	,000				
rate of employees by fixed- termed contracts (2009)	r	,232	,211	1		
	S	,244	,291			
rate of self-employed (2009)	r	-,247	-,201	,296	1	
	S	,234	,335	,151		
unemployment rate 2009	r	-,487	-,384	-,043	-,041	1
	S	,010	,048	,832	,845	
rate of lifelong learning activity – 2009	r	,766	,613	,174	-,318	-,301
	S	,000	,001	,387	,121	,127
GDP/person (EU27=100) (2009)	r	,397	,487	,090	-,240	-,401
	S	,044	,012	,663	,258	,043

Table 1. Correlation matrix

Employment rate – GDP: GDP per capita is the value which is used in most cases to characterize an economy. We found that although those indicating factors correlate significantly, their correlation can only be valued as weak.

Employment rate – unemployment rate: The correlation here is similarly weak.

Employment rate – the rate of employees by fixed-termed contracts and of the self-employed: Examining those atypical methods of employment, we can state that they have no correlations within the framework of our stricts survey conditions.

Employment rate –part- time work rate and the rate of lifelong learning activity: Those two indicators are strong even by the strictest significance level – moreover, they correlate very strongly with employment rate. (They correlate on a lower level but still strongly with each other.)

When examining the two indicating factors genderwise, the correlation is higher between employment and lifelong learning activity in the case of women then in the case of men, but there are strong correlations in both cases. Interestingly there is a stronger correlation between men’s part-time employment rate and lifelong learning than between employment rate and lifelong learning.

		female		male	
		employment rate 2009	part-time employment rate 2009	employment rate 2009	part-time employment rate 2009
part-time employment rate 2009	r.	,467*	1	,510**	1
	S.	0,014		0,007	
rate of lifelong learning activity - 2009	r.	,704**	,507**	,643**	,668**
	S.	0	0,007	0	0

Table 2. Correlation matrix

We also surveyed the relations among the 3 types of lifelong learning activity (examined separately and together as well) and the employment/part-time employment data. Those data are based on EUROSTAT Adult Education Survey (AES), and not derived from the activity rate. In the AES survey 12 months learning activity prior to data collecting were examined. We found that employment rate much strongly correlated with informal learning than with formal education aimed at a newer diploma or with informal, every day experience gathering.

		employment rate2009	part-time employment rate 2009
formal learning rate	r.	,549	,551
	S	,003	,003
non-formal learning rate	r.	,656	,411
	S	,000	,033
informal learning rate	r.	,434	,320
	S	,027	,110
rate of any learning type	r.	,504	,377
	S	,007	,052

Table 3. Correlation matrix

Beside correlation analyses a double variable linear regression model can also be created by using employment rate as dependent variable and lifelong learning activity rate as independent variable. Lifelong learning activity in itself explains employment rate in 69%. The equation of the regression line is: $y = 57.425 + 0.755 * X_{\text{lifelong learning activity}}$

Our model does not include part-time employment rate as an independent variable on the grounds of multicollinearity as it would not bring about significant change in data.

Based on the above mentioned correlation and regression mathematics, we can state that if lifelong learning activity increases in a country, so would increase the value of employment. Concerning that indicator, Scandinavian countries are among the very firsts (Denmark, Sweden, Finland) and Southern as well as Central- European countries are at the end of the line (Bulgaria, Romania, Hungary, Slovakia, Greece).

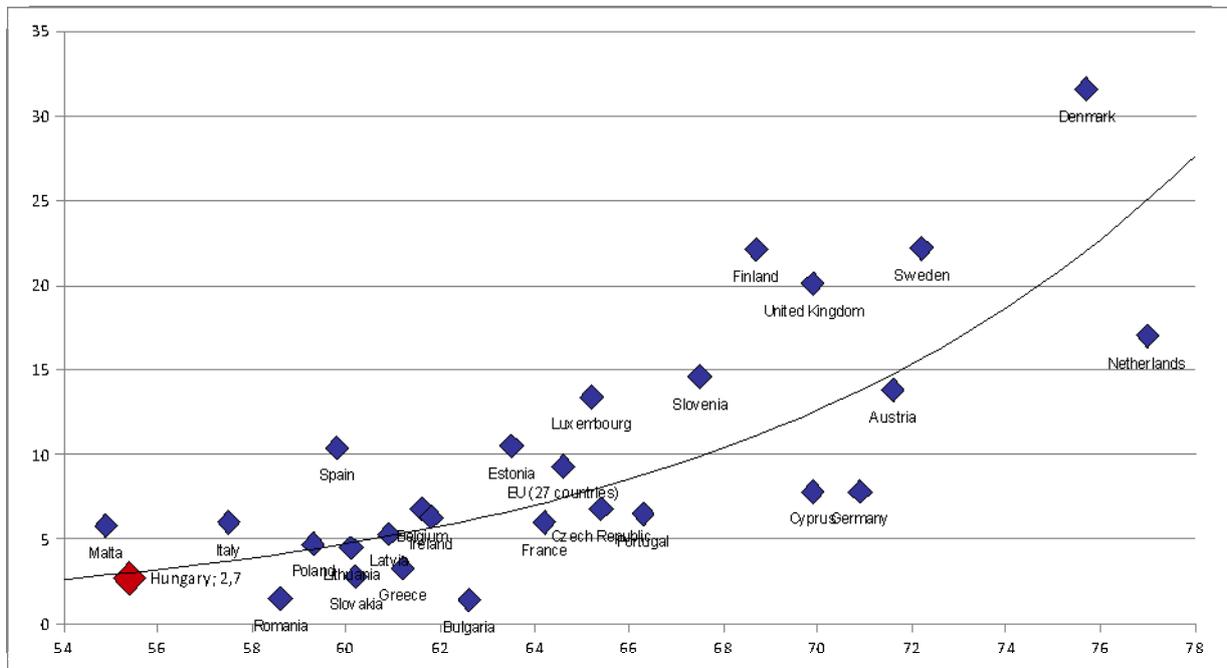


Figure 1. The relationship of lifelong learning activity rate and the rate of employment in EU countries (2009) described with trend line

When evaluating according to gender we see that **men's employment rate is almost always higher than that of women**. The smallest difference of data can be seen in case of the Baltic states (Estonia, Latvia, Lithuania). In those countries the former obligatory employment of women still has an effect, but one can see that in the so-called Visegrad countries and in Romania, Bulgaria there is no such effect.

In Scandinavian countries (Finland, Denmark, Sweden) and in Britain the employment rate shows a greater gender difference than in the Baltic states, but still it is significantly smaller than in other European countries. And lifelong learning activity is also the highest in the above mentioned 4 countries – more than 20% in each countries, where there are the greatest gender differences in that respect. **Women's lifelong learning activity is higher than that of men in almost all countries**. However, the rate of gender differences in relation to the country's overall lifelong learning activity exceeds 30% only in 7 countries (Baltic and Scandinavian states and Britain).

Those statements also show that programs that are:

- **regular and**
- **can be executed in any form** (so not only formal education but a program combining and actively using formal and informal learning methods),
- **and can be reached by all economically active age groups,**
- and **facilitate learning activities,**

influence the employment rate in the most positive ways.

To be more effective, we should change our views on lifelong learning. Lifelong learning does not mean a lifelong school attendance.

The EWIL Project

The partnership has a wide EU geographical coverage. It includes countries from Northern, Western, Central and Southern Europe, old (EU-15) and recent member states; candidate countries and Norway which has always been very close to the European Union.

This geographical diversity brings about a diverse outlook on the issues to be considered. The partners are also very diverse in terms of sectoral and complementary competences, and it should be stressed that they would not be able to reach the project objectives working alone.

The partners of the project are:

- Consulmarc Sviluppo s.r.l. – Italy – leading partner
- Lifelong Learning Hungary Foundation - Hungary
- European Centre for Women and Technology (ECWT) - Norway
- Life Long Learning Research Institute (3L RESEARCH INSTITUTE) - Greece
- Centre de Conservation du Livre (CCL) - France
- Gaziantep il Milli Egitim Mudurlugu - Turkey

The project lasts from September 2010 to August 2012. Work is at midway now, so I can only describe the results of the first phase, the needs analysis. The whole project is planned to be made available for anyone at the closing 'dissemination' event at the beginning of the summer of 2012.

We aim at elaborating a new methodology; for that we conducted a basic tactical survey. Data gathering was made by Computer Assisted Web Interviewing – CAWI method through the system of www.ebenchmark.eu. We got five times as much responds – that is a 1000 valid answers from the target group (from more than 3000 entirely completed questionnaires excluding men and women younger than 35).

We planned to search for the most popular informal learning methods and tools. Out of the 26 tools these are named as the most important in at least 2 of the six countries:

	country
Print based material	6
In-person mentoring /tutoring	4
Personal consultation in a small group	4
Simulations	4
Online assessment & testing	3
Video lectures	2
Clubs with larger number of attendances, personal consultation for a deeper workout on topics	2

The survey revealed the priorities we must consider when we are focusing on others than the youngest population:

- It is very important to include printed or printable educational materials.
- In case of educating adults we must meet demands for quick gathering and processing of information. The most effective method for that is personal tutoring and consultations in small groups. The transfer of knowledge (to transfer info into experience) via simulation is the most effective.
- When evaluating knowledge there is a great demand for an instant feedback which can most easily be reached by on-line tools.
- We should focus on the effective use of films and videos in education (e.g. youtube)
- Women prefer clubs and other informal meetings for information gathering.

Trainings, courses and other informal learning methods which are organized considering the above mentioned facts are the most useful, the most effective, so they can have the most positive impact on women's employment.

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SUPPORTING INCLUSIVE LEARNING DESIGN THROUGH THE E-PEI ONLINE COUNSELING SYSTEM

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Abstract

In this paper we present e-PEI, a Web-based online counseling system intended to support educators of students with special needs. More specifically we target homebound students i.e. students permanently or temporarily confined at home/hospital due to illness or disability. The objective of e-PEI is thus twofold: 1) allows sharing of instructional design experiences, experts' advices and knowhow in inclusive learning design through the elicitation of tacit knowledge and the support of procedural knowledge; 2) it aims at scaffolding the stakeholders in education of all grades in designing inclusive learning experiences availing of the experts know how provided by the system. e-PEI is a Drupal-based collaboration and content management environment

Keywords: instructional design, homebound, online counselling, special needs education.

Introduction

One of the central issues in Instructional Design practices is related to transferring expert knowledge or best practices to the instructor and/or instructional designer in charge of setting up an instructional event. Such issue arises relevant theoretical issues related to the adaptability of general knowledge with respect to contexts and special needs. Today few technological environments are available to support the instructor/instructional designer with meaningful knowledge related to the specific targeted student. On one side, data bases derived from Evidence-based Education [1][2], or available synthesis and meta-analysis [3] provide the evidence of scientific studies which remains to be transferred and adapted into specific projects and interventions. On the other side Instructional Design tried approaches aimed at designing course structuring sequential models [4]. Recent network developments highlighted also the complementary importance of knowledge based on sharing real experiences within the professional communities and networks. It is therefore always more important that new research directions focus on setting up environments aimed at gathering, managing and providing relevant knowledge to the instructor/instructional designer engaged in the design of a specific educational material/course possibly devising and optimizing knowledge gathering for its relevance and reliability and filtering for its suitability to the specific needs. Acknowledging the complexity of such a mission and without purporting to exhaust this topic, in this paper we present our contribution toward this vision.

e-PEI

ePEI is an online counseling system intended to support educators of students with special needs with a special attention devoted to suggest the best teaching strategies. ePEI is developed within the framework of the WISE (Wiring Individualized Special Education) project funded by the Italian Ministry of Research. WISE is a FIRB Project (Basic Research Funding Action) of the Italian Ministry of Education, University and Research. The project aims to design and develop a system which bridges Homebound people (HBs) educational needs with information, resources, initiatives and tools that fit with them; it also aims to fill teachers' and trainers' skills gap, concerning the design and management of technology-enhanced special education initiatives, by providing resources, information and an effective methodological scaffold.

Homebound learner cannot attend regular schooling, university and professional training. A significant numbers of homebound children and youth could be largely excluded from educational opportunities for primary and secondary schooling. Adult homebound instead could be excluded by the lack of possibility to design and access to educational paths for their vocational training.

e-PEI acronym stands for Piano Educativo Individualizzato, i.e. Personalized Instructional Design Plan. The objective of e-PEI is thus twofold: 1) allows sharing of instructional design experiences, advices and know-how of experts in inclusive learning design through the elicitation of tacit knowledge

and the support of procedural knowledge 2) it aims at scaffolding the stakeholders in education of all grades in designing inclusive learning experiences availing of the experts know how provided by the system.

ePEI intends to address the above issues from a Web2.0 design perspective in which more or less expert users participate to the enrichment of the knowledge base through direct insertion of instructional design advices as well as by ranking and commenting on the received feedback. These aspects are more important in a rural contest where very often the educators works alone without any possibility to receive others' supports and advices. e-PEI is designed to support a participative approach to instructional knowledge construction from a non-technical public in order to experiment with an open approach that would allow all users to contribute to the knowledge-base intended as a sort of "collective wisdom" of macro instructional design drawn from evidence-based studies that will encourage the user to make additional connections and insights.

The basic structure of ePEI can be compared to the MACCE system [5], since they both offer solutions suitable for special needs and it is built on sound pedagogic strategies. But while the goal of MACCE is the composition of a course on the basis of pedagogic strategies and adaptation to the specific preferences of the learner, the objective of ePEI is to provide a methodological recommendation and specific support for particular cases of educational settings specified through the input variables.

In the paper we will briefly describe how the two main e-PEI users interact with the system to build and use instructional design knowledge.

Instructional Design

In the educational domain the definition of "teaching strategy" is one of the most ambiguous and debated. The term "strategy" overlaps with that of "method", which is used more frequently. Actually the use of terms such as teaching model, instructional strategy, educational method, educational technique is not fully shared among scholars. Different authors adopt different terms to refer to identical or similar concepts while at the same time each term/concept can be declined according to different meanings. In the available list of instructional strategies [6][7] coexist educational formats, such as lecturing along with cognitive processes such as memorizing or more specific actions such as asking questions. Among the available interesting models the Instructional Strategies Online [8] groups the instructional strategies in five categories: Direct Instruction, Interactive Instruction, Indirect Instruction, Independent Study, Experiential learning. The term "instructional strategy" can refer to the types of action that may apply to the instructional event that a teacher engages directly with the students as well as to other decision-making actions.

We can thus distinguish between strategies oriented towards:

1. setting up an educational project (structure, sequencing, evaluation),
2. setting up and creating learning environments and contexts,
3. developing teaching strategies in a more strict sense.

The above schema is easily mapped into another one declined according to two different directions:

1. instructional strategies (or architectures) specifically designed to regulate "direct" teaching actions and to lead to learning,
2. context strategies (or architectures) aimed more specifically at promoting appropriate environmental and social relationship to favour the success of the educational actions.

To this end the instructional design activity should be supported by reference schema or general frameworks in which strategies are grouped into categories. Clark [9] proposed a framework according to which all formats or specific instructional strategies can be organized. The author refers in this context to the concept of "educational architecture". Clark's model has been extended and developed in relation to the main "canonical" teaching strategies in Calvani [10].

According to Clark the instructional architectures can be seen as macro-categories which differs in relation to several variable factors: the control expected from the teacher or the learner, the degree of structuration of the educational material provided by the teacher, the quantity of the interaction and their direction (learner-teacher, learner-learner, learner-system). The above variables should be linked with the learner's previous experience in the domain, attitudes and metacognitive skills; the preferential choice of one architecture over another depends on the assessment of these variables.

Clark's identifies four main architectures: 1) receptive or transmissive, 2) behavioural or directive-interactive, 3) guided discovery, 4) exploratory.

Once we shift from the face to face educational environment to a TEL (Technology Enhanced Learning) environment we face new constraints as well as new affordances. In terms of constraints we will necessarily face the limits represented by the issues related to accessibility to the technological environment. In terms of the affordances we can leverage on the potential liability of emotional support and assistance as well as in the personalization of learning (and e-mentoring) and enlargement of the relational dimension (peer-to-peer). Designing education in a TEL environment thus involves new learning opportunities that fall within the characteristics of the technological intermediation system: e.g. collaboration can be emphasized and promoted and other strategies and opportunities such as connectivism, serendipity can be accounted for. Moreover, the TEL environment allows personalization opportunities combining multimedia, multimodality and a/synchronicity patterns.

In these cases theories and practices of instructional design must constantly adapt and proof their evidence-based validity, in order to become reference theories or best practices to be applied. The fast update and circulation of effective theories and practices in this field can therefore be a key enabler for their widespread adoption.

ePEI users and main functionality

The two main e-PEI users are 1) instructional design experts who interact with the system giving instructional design knowledge and 2) educators who interact with the system to receive help related to the instructional design for a specific learner. In order to meet the inclusiveness perspective, e-PEI supports both the experts and the stakeholders in analysing the specific situation of the special learner and his/her context as it is suggested by the ICF (International Classification for Functioning Disability and Health) going far beyond the classical diagnostic elements. The knowledge base model underlying the system is designed to be maintainable and extensible. Such knowledge is initially set up by instructional design experts, but is also commented, ranked and revised by more or less expert users of the system i.e. educators that make use of the system to access the counselling services. The adopted design approach is intended in the long term to combine the co-construction of instructional knowledge by educational experts and its extensibility by less experienced users who make use of counselling. E-PEI thus provides contribution related to the combination of pedagogical and technological innovation to support inclusive learning design.

Use case for the instructional design expert

The instructional design expert is an experienced instructional designer. The expert creates the decision rules, which allow the elaboration of the recommendations arising from the instructional models. The expert can also use the system as an end user, providing further knowledge related to case studies, adding authoritative comments or paradigmatic cases to the indications provided by the system. The initial core of knowledge introduced by instructional design experts relies over formalization instructional design models as anticipated in the introductory section and aim at covering both instructional design strategies in a strict sense, as well as context strategies.

Instructional design strategies inserted in the system are matched to the initial input variables which describe the homebound learner and its case/situation, thanks to the metadata tied to the inserted strategies. The system output can be presented as a list of instructional design strategies presented in order of relevance, references to further resources or questions designed to stimulate further insights. Context-related strategies are codified into general guidelines possibly linking to further references. The system requires the expert to indicate which input variables and values are involved and to formalized them into a logical expression with Boolean operators AND and OR. While the machine processes the Boolean expression, the same situation can be described as a narrative explanation for the human consumption. Eventually the expert has to enter the text of the advices associated with the rule, or indicate the type of research to be performed on external archive or search engines to provide further useful information. The instructional design expert can create four types of advices and guidelines: general advices, specific advices, design-related advices, recommended resources, links. Such a taxonomy that identifies the type of advice can be defined by administrator while initializing the system. The advices can be composed of an input text directly inserted into the expert system, or can point to a collection of resources obtained using different research methods on different archives. An example of an advice provided by the expert is illustrated in Fig. 1.

Although the instructional design expert is deputed to feed the system with the most authoritative knowledge, instructors and other stakeholder of the educational system can also feed e-PEI with their

knowledge based on experiences and results providing links to recommended resources and/or pointers to social networks etc. According to such a perspective a variety of subjects can contribute to enriching the system with useful knowledge.

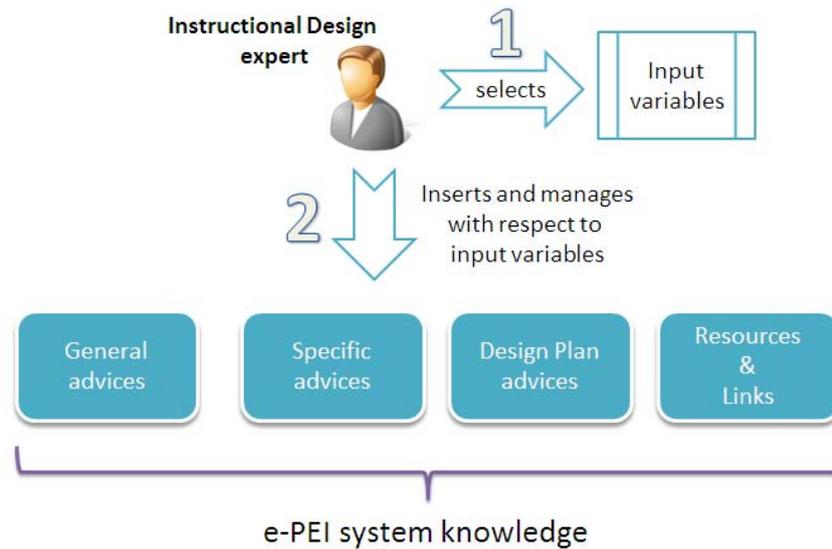


Figure 1. Workflow of the expert interacting with e-PEI system

Use case for the instructor

The end user of the system is the educator who needs to get advices when designing an instructional course, module, content or activity in relation to a specific target learner and his related learning and social context. The user, with more or less expertise level, interacts with the system to get advices to instructional design strategies and indications for content-related strategies. He can also comment, give feedback and interact with the information proposed by the system, indicating their adequacy and usefulness, etc (see Fig.2). More specifically the educator interacts with the e-PEI system to specify the input variables to describe. The input variables used are drawn from the WISE user-model [11], based on the international standard IMS-LIP [12]. The user-model underpinning the semantic-based system personalizes users' experience with the system supporting recommending and search functions on the base of a new vision of health and disability embedded in the OMS's International Classification for Functioning (ICF). In particular a set of descriptors has been derived from a mapping against ICF, so in e-PEI a teacher or a trainer when is designing a learning process is guided by the system to adopt the appropriate educational approach, strategies and tools on the base of the specific characteristics and context of the target.

The counselling system queries the knowledge base in order to extract useful advices related to the specific case to be presented to the user. The provided knowledge can also be enriched by information retrieved from archives outside the system, such as specialized portals, or by information provided directly by end users. Both the advices provided as well as further resources can be evaluated, annotated and integrated by the user, so as to indicate exceptions or deviations instructional design provided advices. Such comments enrich the system knowledge base composed of logical rules.

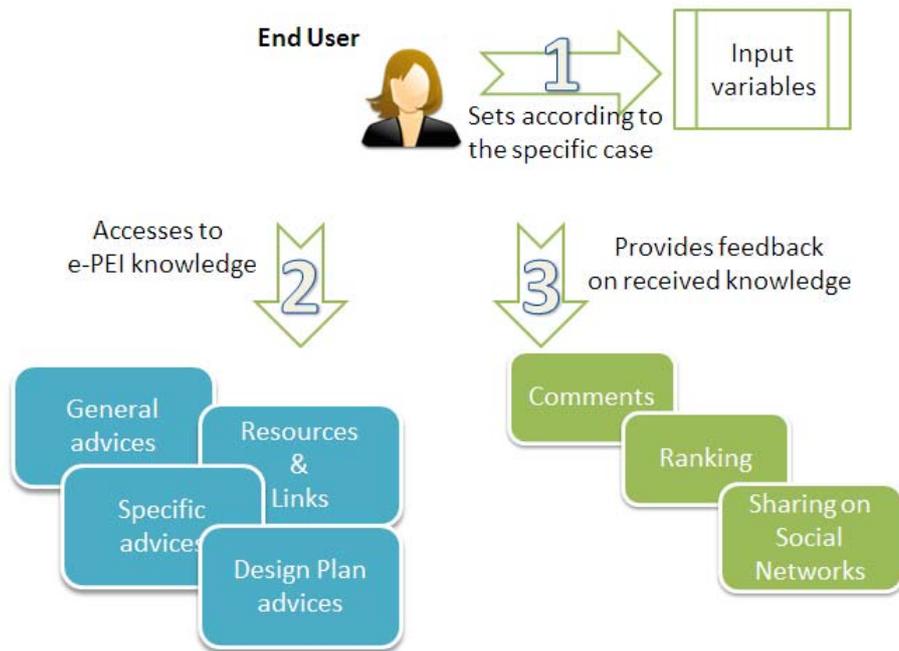


Figure 2. Workflow of the end-user interacting with the e-PEI system

Example of Rules composition

Hereafter we report an example of rule composition by the expert. When prompted by the system, the expert fills the form with the following instructional design advice.

Narrative description of the situation:

Advice applicable to people with special needs (i.e. learning difficulties).

Logical expression of the rule (check the related boxes):

learner with special needs = yes

AND

issues = learning difficulties

Advice:

Design Advice:

In 2003 Vaughn provided a summary of effective instructional approaches related to Learning Disabilities. These are the most important basic techniques:

- carefully sequenced examples and problems, combined with precise task compliant with learners' ability
- organize students in small interactive groups
- adopt the thinking aloud technique while reading, writing, etc. ..
- provide direct and explicit tasks
- monitor on-going progress
- dismantle and mechanize activities such as reading and writing

Reference:

What is special about special education for students with Learning Disabilities?, Sharon Vaughn, Sylvia Linan-Thompson, The Journal of Special Education, Fall 2003, 37, 3, Academic Research Library pg. 140-147

Conclusions

In this paper we described the motivation design approach of online counselling system intended to support educators in the instructional design process both in online and off line settings. The core knowledge used by the system leverages on instructional strategies knowledge. ePEI provides instructional advices to the users. E-PEI system knowledge is continuously updated, commented and ranked by the instructional designers and educators community so as to become a living educational knowledge base. The adopted design approach is therefore intended - on the long term - to combine the co-construction of knowledge by educational experts and its extensibility by less experienced users who make use of the counselling system.

The counseling system can be used in multiple areas, depending on the input variables and decision rules specified. e-PEI is based on a main knowledge engine and several secondary engines. The main engine, handling decision rules, allows the instructional design expert to set the rules, i.e. to explain the conditions under which the system will present one or more instructional design advices. The secondary engines are rely on external repositories of resources, that can return a set of resources based on specific search: search engines, databases, archives etc.

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ICT IN EDUCATIONAL AND VOCATIONAL GUIDANCE AND CAREER COUNSELING

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Introduction

This article analyses the importance of Information and Communication Technology (ICT) in educational and vocational guidance and career counseling with a specific focus on their advantages and disadvantages and modalities to overcome them, and on the risk of unintentional social injustice.

The European Union underlined the importance of ICT in guidance. Indeed the European Council at Lisbon in March 2000 declared the Europe Union's aspiration to become the most competitive and dynamic knowledge-based society in the world by the year 2010. The following year, the European Commission (2001) relying on Communication on Lifelong Learning indicated the key role of lifelong access to guidance and, after a few years, established the constitution of an Expert Group on Lifelong learning that produced its Policy Handbook (Organization for Economic Cooperation and Development & European Commission, 2004). These actions have underlined the importance of Information and Communication Technologies (ICT) in guidance. In addition the European Lifelong Guidance Policy Network (ELGPN) was set up in 2007: it suggested the importance of ICT in guidance and in career guidance more flexible and accessible services (Watts, 2009).

The goals of the ELGPN include four major Work Packages: WP1 identifies which skills and competences are needed for career development at different stages and how they can be developed; WP2 extends access to lifelong guidance thanks to the role of technology (access, marketing of services) and balance between universal services available for everyone and targeted services for individuals with specific needs; WP3 establishes cooperation and coordination mechanisms in guidance practice and policy development; WP4 ensures a better quality of lifelong guidance services, defining how quality-assurance systems needs to be adapted to apply to ICT-based services (Watts, 2009).

The new paradigm for XXI century: focus on ICT and Life Designing Counseling

The advent of the postmodern global economy and information technology has facilitated the development of the new paradigm for career construction in the 21th century, the Life designing (Savickas et al., 2009), within a theoretical framework that includes theories of self-construction (Guichard, 2004, 2005, 2008) and theories of career construction (Savickas, 2001, 2005).

Life Designing Counseling introduces a perspective: contextualized, that promotes experiential learning activities, stimulating a process of continuous integration of individual (knowledge and skills) in one's own context; life-long (attention to the mutability), holistic (various roles), contextual (variability and relationship with the past contexts), preventive (adaptability and ability in narrating) (Savickas et al., 2009). Therefore Life Designing Counseling is an intervention that can make use of ICT in a dynamic way to encourage individual creativity and exploration of their potential (Oyserman, Bybee, & Terry, 2006).

Indeed Bernaud and Di Fabio (as cited in Di Fabio, 2010) suggest that Internet makes a breakthrough in the behaviors of the individuals; Internet is an instrument that has a majority position and can influence or even revolutionize counseling and psychological counseling. Furthermore the construct of decisiveness can be replaced by that of engagement in the work world despite uncertainty (Krieshok, 2003): the subject is encouraged towards a reinterpretation of past memories, present experiences and future aspirations in Life Designing Counseling.

From this perspective, the counselor on the basis of the working alliance, helps the subject to identify the problem, to analyze how he/she imagines the future, to reinterpret the life themes, to analyze the problem according to different perspectives, to identify activities where the new identity can be explicated.

Life designing, through development of narrative skill, helps people to revitalize their stories, revisit them with greater consistency, continuity and complexity. The need to encourage interaction between

specialists in life designing and career management experts emerges, based on the interactive process throughout life consists of life designing and career construction (Savickas et al., 2009). It is therefore important to focus attention on the challenge of ICT in relation to career counseling in its meaning offered by the new paradigm for XXI century, in terms of Life Designing Counseling.

Focus on site typologies

Bernaud and Di Fabio (as cited in Di Fabio, 2010) distinguish four principal site typologies that can influence career counseling: Informal sites (forums, blogs), Information sites, Computer assisted Guidance, Counseling and career counseling at a distance.

The advantages of informal sites are several: allowing control of anxiety related to career choice relying on the experiences of peers and the meaning of similar experiences (social support); offering cheap solutions regarding the times and an economic point of view; authorizing the anonymity; focalizing on cleverness, "tips", coordinates that cannot be found in official documents; thus they give the feeling of being "launched" into a competitive world.

Nevertheless, the weakness of information exchanged is quite problematic; they give the illusion of a personal job about orientation, whereas they give superficial solutions in many cases. Even so, it seems that they configure career problems or personal problems without consequences and are adapted above all for autonomous individuals.

The characteristics of information sites are the following: they consist of information that is available online, categorized and regularly updated; they now consist of the biggest volume of career guidance, counseling and job placement; they include texts and increasingly video about professionals interviews. Nevertheless, the interactivity seems to be poor or non-existence. It is important to remember that too much information kills the information.

With regard to computer assisted guidance, it emerges that there are often tests on guidance on the Internet, but the validity is often unknown, weak or doubtful. Furthermore a high level of service quality following these modalities is very important. Regarding this, Bernaud and Di Fabio (as cited in Di Fabio, 2010) underline that "it looks like a mirage!"

Counseling and career counseling at a distance are the most developed and best forms of distance counseling since they include the presence of a counselor. Different types exist: telephone, e-mail, chat (written), videoconference, or videochat and audiochat. These offer a wide range of answers that address the needs of a distance public. It must be underlined that these emerging practices are yet to be formalized regarding the quality principles of the service.

A provision of career counseling services adequate to online system is considered positively by counselors (Gore & Leuwerke, 2009; Lewis & Coursol, 2007; Maples & Han, 2008). A wide variety of techniques exist both computers and internet based, as an integral part of the career counseling practice (Barak & Bloch, 2006; Mallen & Vogel, 2005): counseling through email.

Advantages of online career counseling

Bernaud and Di Fabio (as cited in Di Fabio, 2010) suggest the following possible advantages of counseling at distance: functional techniques, economic costs; service accessibility.

Primarily Internet eliminates the problem of distance seen as an obstacle to the counseling service. In fact clients can work with a professional from another country, from all over the world (Maples & Han, 2008); those who live in rural areas or places where there are few career counselors can use this technology communication medium to access services.

Online career counseling could also be a way to increase access for groups that traditionally have been underrepresented and not served.

The elimination of distance gives clients the freedom to work with counselors that they are similar in age, gender, sexual orientation, race or ethnicity. This aspect may particularly attract the attention of individuals belonging to different ethnic groups who feel more comfortable with certain career counselors.

Online career counseling also allows access to career services to those who have a disability: eliminating the problem of distance, could be very important for those who are forced to stay at home because of physical problems but also psychological, such as for example agoraphobia or mental disability (Barnett & Scheetz, 2003).

Limits of ICT and modalities to overcome them

Bernaudo and Di Fabio (as cited in Di Fabio, 2010) point out that very little research has been done about online career counseling and the research that has been effected is mostly descriptive and exploratory; furthermore very little research takes into account the professional domain. So research about online counseling process and its effects are to be encouraged and improved (Di Fabio, 2010).

It has also emerged that research has not yet established the effectiveness of online counseling with respect to that of face to face (Manhal-Baugus, 2001; Recupero & Rainey, 2005). In fact, online counseling may close access to non verbal information for counselors.

Another limit is related to the training of counselors, as many intervention programs do not provide specific exercises or supervised experience for professionals in client service through the internet (Berger, 2004).

Counselors working online should have prepared emergency plans to be able to put in contact their customers with local counselors (Recupero & Rainey, 2005) in the event that, during the work, pressing emotional and personal needs emerge.

Nucuta (2009) suggests some ways to cope with the disadvantages of ICT: planning the use of Internet Service Delivery Web sites with the help of a career guidance practitioner or practitioner interaction without use of a website (practitioners can interact with clients via e-mail, chat, telephone, or videoconferencing); planning various services to facilitating at a distance interventions, including supported self-help, brief assistance, or intensive assistance; planning that Web sites give recommendations indicating the circumstances when self-help is inappropriate and guidance intervention is needed. Individuals could in fact use Web-based Self-help resources, experience difficulties, and conclude inappropriately that they cannot be helped.

The risk of unintentional social injustice

Sampson (2009) states that a core aim of career guidance in public policy is to ensure that effective services are truly accessible to people who need them at different times of their lives.

With regard to this matter, the task of professionals is to provide effective career guidance that is truly accessible to promote social justice. Given the limited availability of funds and increasing demand for career guidance, public policy should focus on providing career guidance interventions that the person needs. Thus it is essential that the cost-effectiveness of theory-based career interventions maximized to ensure that client needs are satisfied and also ensure that policy makers understand the importance of career guidance and continue to provide the funds needed to realize career interventions.

Sampson (2009) underlines the need to increase the cost/effectiveness of career guidance interventions through the use of ICT. This has led to some innovations, as for example: the provision of self-help career resources on Web sites (Sampson, 2008); the use of Internet-based assessment (Barak, 2006; Fassinger, 2005); the provision of services that blend face-to-face and internet-based interventions, including social networking (Barnes, 2008). Nevertheless the following risks can be underlined about it (Bernaudo & Di Fabio, as cited in Di Fabio, 2010): 1) lack of efficacy tests relative to the provision of self-help career resources on Web sites; 2) since in the New paradigm for XXI century it is not important to fit but to enable (Savickas, 2004), another important question is understanding if assessment is still relevant and which type of assessment is useful; 3) it's mandatory to explore the provision of services that blend face-to-face and internet-based interventions more, by maximizing videoconferencing, including career counseling in group, e-learning group CSCL on career prevention and career development for all ages (Di Fabio, 2010).

Conclusions

An important question is relative to the importance of using differentiated vocational guidance and career counseling interventions and addressing individuals to the career services that correspond best to the needs of the client at the point in time (Sampson, 2008). Probably individuals who have higher levels of readiness for career choice may be better able to benefit from career guidance interventions with limited assistance, while individuals who show low levels of readiness may not be ready to receive a career intervention without the assistance of a professional (Sampson, 2008).

Differentiated service delivery may maximize the cost-effectiveness of career guidance interventions, limiting the supply of individualized interventions over multiple sessions to people with low readiness for career choice that would probably not benefit from brief or self-help interventions (Sampson,

Reardon, Peterson, & Lenz, 2004). Individuals with moderate to high readiness for decision making could be cost-effectively served by brief or self-help interventions (Sampson et al., 2004).

Limited evidence of effectiveness of self-help use of computer-assisted career guidance interventions emerged (Miller & Brown, 2005). In the perspective of Sampson (2008), the limited effectiveness of self-help computer assisted career guidance intervention seems to be due to individuals with low to moderate readiness. But it is important to ask whether this is really true since we have not enough research on this matter (Di Fabio, 2010).

In any case, when the professional provides the client with their assistance, it greatly increases the effectiveness of intervention (Miller & Brown, 2005; Whiston, Sexton, & Lasoff, 1998). One-to-one counseling has still a key role in providing effective career guidance for individuals with very low readiness for career decision making (Foley, Kelly, & Hartman, 2006).

Watts (2005) shows that it is becoming increasingly common for a large number of self-help information resources to be available in an open access area with clear signposting to locate needed resources, with specialist practitioners available for brief support or longer counseling interviews as needed. Diagnostic help provided on reception can help clients and professionals to choose the most appropriate type of intervention (Watts, 2005).

People that use Internet Web sites to obtain career resources on a self-help basis sometimes have the opportunity to access a distance counseling if necessary. An advantage in relation to the distance counseling process, is that Web-site users can refer to local service providers when necessary (Watts & Dent, 2007). Some research shows the effectiveness of collaborative learning in online contexts, comparing with that in the face to face modality (Francescato, Mebane, Porcelli, Attanasio, & Pulino, 2007; Francescato et al., 2006).

Bernaudo and Di Fabio (as cited in Di Fabio, 2010) suggest caution concerning the need to continue and study in-depth our knowledge through empirical research for example Suler's hypothesis (2004, 2009) refers to the idea of a disinhibition in the use of the net. While online, some people self-disclose or act out more frequently or intensely than they would in person. According to the author the criteria for the facilitation of disinhibition are the following: anonymity, invisibility, asynchrony of exchange, the magic of the use of technology, the amusing character of the exchange, the perception of equality in the exchange.

In addition, Bernaudo (as cited in Di Fabio, 2010) underlines the hypothesis of a paradoxical implication for Internet users. If in online career counseling clients are characterized, on the one hand, by a facility to use interventions (implication), and on the other hand, by a facility to leave them without explanation, sometimes even without giving prior signals (disimplication). This phenomenon is linked to a consumerist attitude on the internet.

In conclusion it is possible to affirm that ICT is an agent of strategic change provided that one keeps the potential risks in mind, one potentiates empirical research on the use of ICT in lifelong guidance interventions, one uses integrated thought centred on the real needs of clients.

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Chapter 8

Technological and delivery innovation (Workshop 5)

TRENDS & INNOVATIVE APPLICATIONS OF LEARNING MEDIA POTENTIALLY APPLICABLE TO REGIONAL DEVELOPMENT INITIATIVES –

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Abstract

This presentation will reflect on and provide an overview of learning media solutions that are at present entering into the market and which will influence the approaches used for design of learning service development initiatives, including those addressing career development, lifelong learning and/or enterprise development ambitions in rural communities. Implications of and changes in the design structures for such learning services will be outlined, including those that derive from usage of social media, and for application of alternative media such as mobile learning, augmented reality, location-sensitive applications and other similar e-services provided via smartphones or Pads for self-managed learning, individual or group discovery and personal development. The presentation will introduce a number of tools and approaches that have been used to accommodate for the new realities that emerge from these trends and tools, and are being introduced/used for remote collaborative work among learning service providers / developers, including those that are operating in a rural context as well as those that operates as joint or community-based local learning support services.

Keywords: design, collaboration, online, conditionality, footprints.

Introduction

Emmerce EEIG has for a number of years been actively engaged in a range of training development initiatives within different sectors and with ambitions to develop and adapt competence development/ learning services for a range of different learning ambitions, modalities and service scenarios (Fig.1).

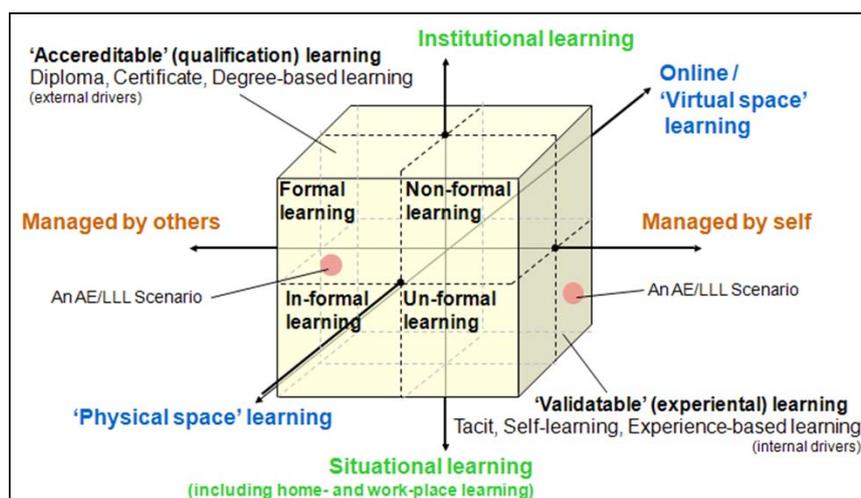


Figure 1 - The scope of provided learning service modalities/scenarios

In order to accommodate for emerging needs/demands for an earlier and higher level of user/stakeholder involvement in the learning service design processes, combined with requests or expectations of higher level of personalisation in the developed learning services, Emmerce and other progressive learning service developers/providers are changing their way of working and tools used.

This presentation will outline some of the more innovative tools and trend adoptions done by us.

Methodology for learning service design

The traditional instructional development models had to a large extent adopted a 'we develop for them' orientation, and the products developed were all too often based on a 'one fits all' assumption. This is increasingly being challenged today, with clients demanding more and early participative orientations of the learning service development processes, as well as with stronger expectations that the developed/provided learning services also are more extensively personalised for each user.

Collaborative and stakeholder-involvement in learning service development

In response to the demands and expectation on more participative approaches and earlier involvement of stakeholders in the learning service design processes, Emmerce has recently introduced a participative approach for learning service design that focus on performance improvements and incremental introduction of learning service solutions on the market (Fig.2).

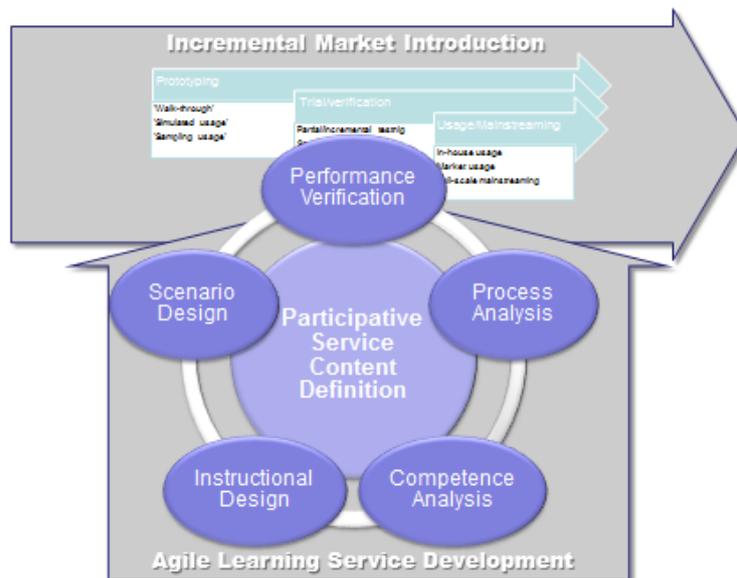


Figure 2 - Main components of a learning service design process

With the application of this participative learning service design model Emmerce are now also better capable to meet client needs/demands, as well as to develop and deliver more agile learning services.

Personalisation of online learning support and participative learning services

The expectations on higher levels of personalisation (Fig. 3) are among other met with the introduction of a set of design approaches and application development engines that among other enable us to better explore user profiles, electronic footprints and other forms of usage 'memories' as contributors to personalisation features/ conditionality-mechanisms being built into the above design process.

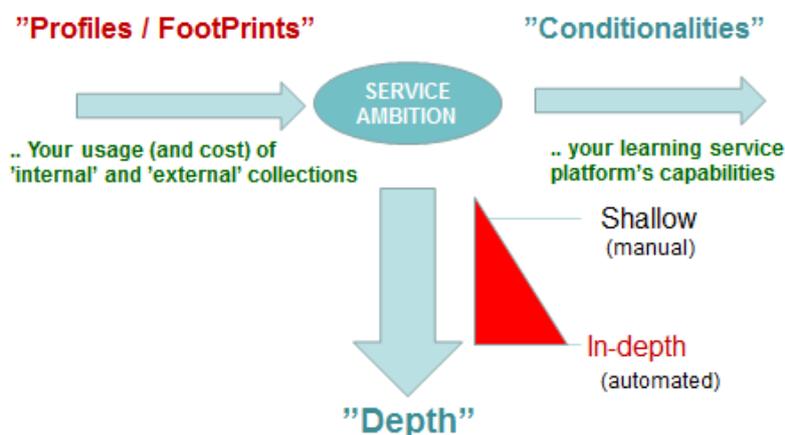


Figure 3 - Design considerations related to personalisation of learning services

Results and discussion

New generation social media, different form of ‘cloud-located’ tools, search engines and other usage and user information seeker/collector services are rapidly changing its manner and is becoming a significant future factor in providing personalisation and profiling data. Today mostly used for advertising/commercial purposes, but it will also for sure enter into the sphere of learning services.

Changes in the manner which profiling data for learning service users are being acquired

Profiling data were in the past mainly collected through manual means, and primarily obtained from the end-users. Today’s online learning services are increasingly collecting such data also by automatic means, however, mostly in a site-specific manner. New, often Internet-wide, profile seeking services connected to social media and search tools is definitely changing those past practices (Fig. 4).

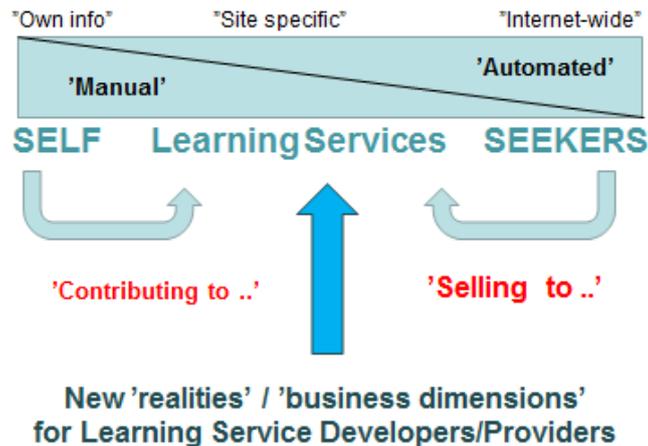


Figure 4 - Trends/changes in profile generation for personalised learning services

It is highly likely that we in near future will base our personalised learning service design not only on self-provided profiling data but also increasingly be using profiles obtained from ‘seeker’ services.

Changes in the manner which online learning service sequences as designed/structured

With the effort required for having access to more comprehensive profiling data, combined with the availability of learning service design tools with which more advanced personalized learning services can be built, e.g with efficient usage of conditionalization of the structure and content (Fig.5) of learning services, we will be better able to design / experience highly personalized learning services.

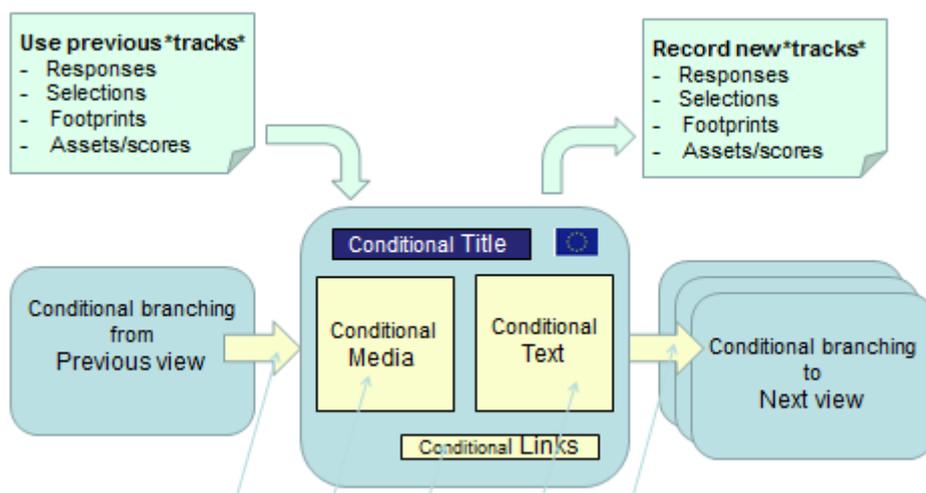


Figure 5 - An example of ‘conditionalized’ personalization of online learning services

Our learning service development initiatives are therefore already turned into the direction of high-level personalisation, and the usage of development tools that have in-built capabilities for introducing advanced levels on conditionality and personalisation, and this without any need for programming or longer development times. Most of these personalisation engines are also collaborative in nature.

Conclusions

The new demands on the learning service design, both in terms of accommodating conditionalization and personalisation capabilities, as well as enabling early end-user and stakeholder engagement in the learning service development, is being catered for by early adoptions of tools/ trends just outlined.

Integration of design engines with conditionalisation capabilities into the design process

One important step forward for us has been to integrate a set of application development engines (Fig.6), all having conditionality capabilities, into the earlier presented learning service design process.

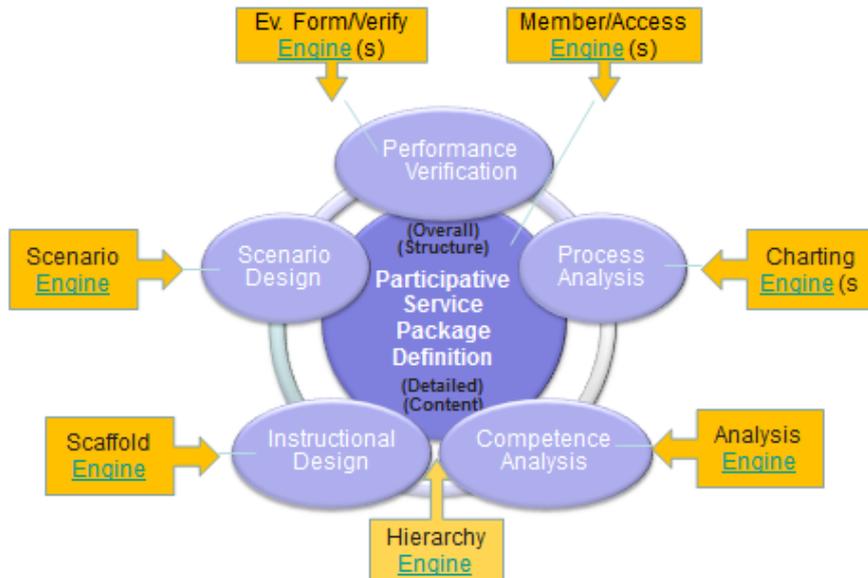


Figure 6 – Integration of application development engines into the design process

These 'engines' respond both to the requirements for operation of the design process in a participative mode, as well as giving us a capability to generate 'in-depth' personalisation of our learning services.

Integration of expanded conditionalities in LMS / online learning service solutions

As we have realised that most LMS solutions available on the market today do not efficiently cater for higher level personalisation, while much learning service materials are still being mediated through such environment, we are increasingly making use of a VCP-LMS integration solution enabling us to provide high-level personalisation via the already installed/established learning service environments.

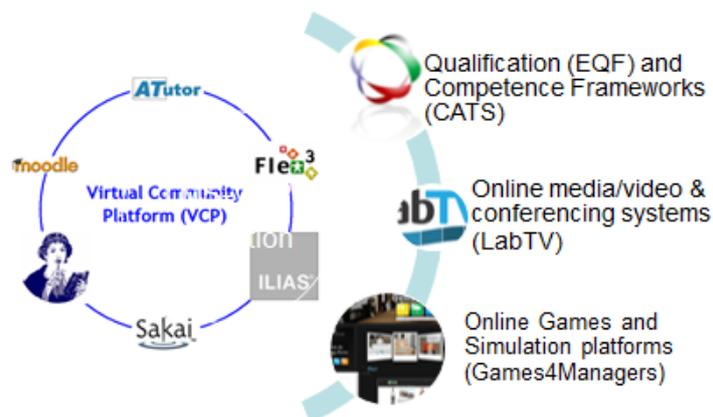


Figure 7 - Integration examples for design/delivery of personalised learning

In addition to LMS integration (Fig.7) we are now also increasingly engaged in interconnection of competence frameworks to more conditionalised learning services, and the integration of interactive video, games and other alternative media. The new generation of learning services has just started.

EDUCATIONAL WEBSITES IN VIRTUAL CAMPUS FOR HIGHER EDUCATION: THE MODEL OF PUBLIDOCNET.COM

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Abstract

Education is undergoing a profound transformation, not only because of changes that come from the EHEA, but also because of the positions that flow from the use of technology. The Internet which has brought revolution and especially social networks is enabling a paradigm shift in teaching.

Publidocnet.com is the Virtual Center for the Conservation of Documentary Heritage. It came into existence five years ago and represents a space within the Internet for study, research, analysis, selection, preservation and dissemination of activities in the world of Spanish-language advertising. It is structured on two fronts:

- Providing news and informative events in the field of advertising and public relations, so that students begin to know the professionals, the mass media brands and learn about their profession.
- Conservation and use of advertising campaigns so that students and teachers can have formats available for printing, graphics and audiovisual advertising and therefore use them as a teaching resource.
- Virtual environments such as Publidocnet, provide support for the Virtual Campus of Universities for students doing practical training. When students finish their career, they continue to use Publidocnet in your professional life, such as a reference for the development of their profession.

Keywords: Publidocnet, Distance Learning, Teaching tools, Web 2.0, Virtual learning environments.

Introduction

Education is undergoing a profound transformation, not only because of the changes that come from the EHEA, but as for the use of technology. Specially, the revolution that the Internet has brought and most of all the social networks, it is enabling a teaching paradigm shift.

Nowadays there isn't any University that does not have available a virtual campus. We would be talking about a first technological phase at the University, in which students and teachers undergo and improve the basic tools of a virtual environment, more specifically, since last year 2004 to 2010. At the present time, we would be in the second phase, where the main concern for teachers and students is to know how to create, maintain, manage and evaluate places where they can find teaching resources for one subject and/or for a very special subject.

Flickr, YouTube, Vimeo, Blogger, Twitter, Delicious, Slideshare... are new social communication environments, Web 2.0 technologies which are data and information sources created by their own users. All of this spread documentation can be conducted to a web site that serves as documentary background, where they can be managed as teaching resources and they would support the Universities Virtual Campuses. These teaching web sites allow different teaching methods and are at the same time a very good resource to facilitate the developing of complex learning and support the creation of teaching communities in a subject or specific area.

Educational Virtual Environments 2.0: Publidocnet

Publidocnet.com is a Virtual Documentation Center for the Preservation of the Documentary Heritage. It was born five years ago and represents a space inside the Internet for the study, investigation, analysis, selection, preservation and diffusion of the Hispanic speaking world of advertising. It consists on one side, on the uploading of news and informative facts in the environment of publicity and public relations, so the students can start to know their profession and the people that are involved in it. On the other side, preserves and uses the advertising campaigns to allow the students and other teachers to have available the publicity printed material, graphics and audiovisual and to be able to use them as a teaching resource.

Technologies for educational web sites

Publidocnet is supported by Joomla!, which is a simple content management system, but at the same time it is very powerful. Joomla!, is an evolution of Mambo 4.5.2.3 combined with security modifications and anti-bugs. It includes characteristics such as: printable versions of the pages, flash news, blogs, forums, polls, calendars, web site research and language internationalization, chat, forums, web mail lists, "wikis", blogs.

Besides it allows the inclusion of an unlimited number of extensions, which is what makes it so powerful. For example, their extensions allows us amongst others to generate dynamic forms, company or organization directories, document manager, multimedia image galleries, data registry tools... It also allows the use of plug-ins that gives us the chance of reproducing our own videos or sound contents with the streaming system.

There are some other CMS (Content Management System) similar to Joomla!, they also are Open Source type such as Mambo, Drupal, WordPress, Alfresco... The big advantage of these CMS is that they are created under GPL (General Public License) license, which makes them free of use.

Documents for teaching

In the **group Documentation**, the web site has a total of 3.552 bibliographic records in **Books** (Publicity 806, Public Relations 108, Marketing 1.154, Corporative Image 11, Documentation 437 and Other books 36), 221 magazines, 13 **articles**, 33 **publicity investigations** and 44 articles about the **Internet and Technology**. At the same time, the **group of News**, has 1.637 news, 22 stories and 10 "Publitalks". The group **Publicity** includes a list of the main 505 Agencies and 108 Publicity Associations worldwide, 124 notes about Designers, 409 information about the Photographic environment and 108 about the Publicity Photographers Association, 110 Festivals, Prices and catalogued Contests, 3 Publicity Museums, and as a tribute to the work done by the publicists, 53 articles and interviews. In the **group of Education**, there are 232 records of the Universities where they teach Library and Information Sciences and Advertising.

Educational methodologies applied in virtual learning environments

At first we decided to use **Joomla! as virtual campus**, with a teaching structure of subjects and some practices which were being done directly. This methodology was use in the subject of publicity documentation, of the Grade on Publicity and Public Relations. In order to provide a better and much bigger help to the students, and in order to give the teacher much better tools, we created the **web site Publidocnet**: where we create inside of it a virtual campus ready to use.

Taking advantage of the already existing resources in Publidocnet, we decide to teach the subject of Publicity Documentation, inside the Grade of Publicity and Public Relations, in our **Virtual Campus of the Complutense University**. It reached 3.000 student accounts in the scholar year 2003-04 (the maximum limit that technology allowed us to have) and about 80 subjects. Three years later there were already 59.265 students. In the scholar year 2010-2011, the data is irrefutable: 81.916 students; 3.922, teachers; 15.337 virtualized spaces through the platform, of which 8.869 are from WebCT; 6.616 from Moodle and 32 from Sakai.

Educational virtual environments as an educational tool

Publidocnet.com is and educational web site under different views. Once created is a reference point for teachers, as a teaching documentary repository. By this mean, it can be used as a support to the teaching educational platforms (Virtual Campus) of the University. But their own creation, maintenance and evolution give the students a very important practice. The students, during their work inside the web site, make real practice, on the Centre for the Conservation of Documentary Heritage, which is for a professional use. Meaning that, they learn in the real world, using an educational methodology that would be duly used in a professional working environment. Lets define the steps of such methodology, that coincide with the one used in the creation of the web site.

Researching information

Before we start researching, we have to set up the working procedures as well as the standards and objectives of the research, including splitting the different tasks. We create an effective researching and information processing methodology that would allow us to distinguish the scientific from the common. We also shape the type of documents to be selected, the subjects and the sources to investigate, inside formal environments (official web sites, institutional web sites...) and no formal environments (Vimeo, Youtube, Sribd...). If necessary they will register to the web sites and nets that

are used for the study. They are also included web sites used and evaluated in past years or that have a great percentage of visitors. The working standards are identified in order to carry out a follow up of information, leaving this as a permanent observatory.

Analysis of information: cataloguing and classification

During this phase they proceed to the analysis of all the recovered information, where they catalogue and classify the documents. In the process of cataloguing we throw away the duplicated information, incomplete or that does not comply with our initially marked standards. The documents are classified based to the criteria that the web site already has and they get reviewed in case that it would be needed to increase the number of categories, groups and descriptions, important to improve the capacity and work of the searching engine.

In the **Documentation section** students practice with magazines of the professional environment, in all five continents. The proposed books for the database are about advertising, public relations, publicity documentation, marketing and others. For example, in the subject of Publicity Documentation, of the Grade in Publicity and Public Relations, one common practice is the reading of books and the publication of a bibliographic record, including their descriptors and documentary summary, besides the image of the cover. By doing this, the students have an excellent bibliography perfectly updated to be used all the time that he remains at the faculty and after graduate.

They get also analyzed as duly valued the formal and no formal web sites of the virtual environments, creating a list for their follow up. In this case, the practice on the subject of Library and Information Sciences is established, which means creating a **section of education** where they insert universities where they can study Library and Information Sciences at the same time as Publicity, that could be of use to the students to complete their studies. In the case of **Advertising**, also with a specific record they search and analyze agencies, associations, designers, photographers, festivals, prizes, contests and publicity museums, being the goal for the students to know who is part of the publicity activity. And furthermore, in the **Education section** the students update the masters, courses, seminars and the working days that are done inside the environment of the Publicity and Public Relations, in order to let the students once they have finished their studies to keep using and look up the web site from Publidocnet, to know where to look for continuing education. The practice ends with a record for each one of the teaching sections.

Inserting information on the Publidocnet and exploitation the site

In this last phase, the already classified information is introduced in the web site very carefully, based on the previously established cataloguing criteria. The goal is that the information is oriented and organized, so the teachers, students and others professionals can easily find it inside the web site.

In Publidocnet are also created **forums for the debate** and inner thinking, with turns on questions and answers, so that the student is not only going forward in the learning after an argument, but also creating a source of knowledge. It has been developed a practice on forums in which once the main subjects have been discussed (chosen from a brainstorming in the classroom) working on them deeply. Previously, the teams whose subjects have been chosen, they search for articles and texts with the teacher, and then shared in the forum area from a starting point and reference for the comments of the debate. The follow up of the forum is done by the teacher and the team that has suggested it. They start from initial questions and once all the students have answered them they start a second round with new questions that have come up from the forum. The debate is a very interesting way of contributing to give information, but also the comments on the news of Publidocnet.

The field work is completed with a **blog** on the readings of the books and articles of the specialty and common subjects. The students are offered the possibility that part of his jobs will be published in the blog where they share also many of their practices. This is a very good way of letting the other students see his jobs and gives him feedback with comments from his classmates.

In the **Services section**, the **Agenda** offers the students the possibility to keep updated on any novelty about the course (timetable changes, exams, and closing data for jobs, seminars, congress, conferences...) the **Polls section** allows the teacher to make a follow up and an evaluation of his classes, both in subject theoretical and practice, through open and/or closed questions.

Publidocnet is a Virtual Learning Environment that provides tools for theoretical and practice; and that in five years has had more than **2.000 students** and has had good results. Each year the contents (news, documents, articles, books, agencies, universities...) are updated, using as well the contribution of forums and blogs, as base of the knowledge itself. The web site gets better as for the

efficiency would be optimum and could be linked to other platforms, being used by teachers and professionals of the environment of publicity and public relations.

Practical applications for education: case study

Nowadays **Publicity Documentation** is an optional subject of six credits, inside the Grade of Publicity and Public Relations. Taking advantage of the resources already existing on Publidocnet, teachers choose to teach this subject inside the Virtual Campus of the Complutense University and using a **Moodle platform**. Besides the contents of the subject each student has multimedia material, to be visualized in the platform and through the links to the video web sites such as Youtube o Vimeo.

Each **lesson** of written notes has one or various supporting articles as well as recommended readings that the students have to read and comment. By this method, the teacher can go forward in his explanations, as the student is previously requested to read each topic, which allows the educator to work with the basic and most important ideas; now it is requested a reflexion on the readings and the ideas that the teacher is giving. This is the way much more dynamic to share the information.

In the **theory classes** the main goals of each subject are exposed and the contents will be developed in detail and clearly for their comprehension and knowledge assimilation. During the **Seminars (or groups of work)** the students study themes of analysis and creation of working teams with the corresponding proposals on searching procedures and information selection, also studied analysis and synthesis of knowledge, proposing specific problems that will be developed individually or by groups. They propose the students a variety of theoretical classes and seminars throughout the **5 didactical units**, which include discipline theoretical models, related to the documentation and publicity, but also the use of the information sources and the publicity photography, as the contribution of documentary elements for the production, making and post production of publicity campaigns.

As for the practical activities, the students should notice facts and themes related to the subject that are suitable to be analyses and discussed, identified to inform and debate on them and give some ideas. These practices will help the students to get used to the observation and critical analysis. Also they are proposed to respond and work in the Virtual Campus, where all the tools in communication and collaboration are used as the wikis. For example, the students are requested to **design a model of a documentary center for a publicity agency**, using the suggested readings during the course, written notes and the ideas in the classroom. There is also the possibility of making **practice to be freely chosen** (operate as reinforcement), similar to the obligatory activities.

The **tutorships** are reinvented and offer support and personalized advice for getting into the given tasks in all the learning activities. The teacher takes these tutorships to develop it preactive and proactive side while teaching in order to achieve the proposed goals. They are binding for the follow up of the subject job to be able to advance developing it.

The **teaching activities out of the program** that may be developed by the same Faculty and/or by other organisms or companies which may have an specific interest for the studied subject (Congress, Day Works, Seminars, Conferences...): they are prepared to encourage the students his interest by acquiring knowledge. These activities have to be chosen in agreement with the teacher.

The **distribution of the activities in credits ETCS** has been the handicap for all new educational methodologies. The subject is divided on one side in **presence activity of the students** 70-75 hours - 50% of the subject- (with different sessions in theory class: 35 h.; Seminar Sessions: 20 h.; Assistance to teaching activities out of the course: 5-10 h. and Tutorships and Evaluation Processes: 10 h.) and y **not presence activity** of the students: 70-75 hours -50%- (preparation practices and seminars: 10 hours; Practical jobs on the subject: 30-35 h. and Study and readings: 30 h.).

The **evaluation** is being done during the complete four months in which the subject is being studied. In order to evaluate the knowledge acquired by the students in each of the group of themes that are all part of the subject, it is valued in a proportional way the assistance and participation of the students in all the presential activities in class (40%), the jobs assigned to the subject (40%) and the results of the objective tests and exams (20%).

With this method, we comply with the goals of the EHEA. Besides, if the teaching jobs are successfully done, the results of the learning will give a bigger scientific and technical knowledge of the subject: the publicity documentation; a command of the documentary techniques; a command on the sources; valuation capacity, use and interpretation of the sources and a command on the educational and technological tools for the use of the documentary information.

Publidocnet: a tool for professionals in the studies of documentation and advertising

Publidocnet, as a documentation center, not only is an online educational tool, working as a repository of educational documents for teachers of the University Complutense of Madrid that can also be used by other education professionals with Internet access. But it is also an environment of real practices for the students of information sciences and communication. As well as a web site that is useful as a meeting point and reference point for professionals of communication and publicity, as for the own students that will evolve during their studies and that are actually their own creators.

Advantages of using web sites to support teaching

For the teachers:

- Saves time and better contents, as far as the preparation of the teaching subjects, thanks to the creation of cooperative environments that develop the creativity, teaching innovation and that encourage the team work for teachers. Comment all the activities so all teachers can use the tool.
- Closing up with the social and professional reality, leaving behind the pure academic environment, generating a better and more real balance between the theory and the practice.
- Apprenticeship of the New Technologies, specially the Internet, that has captivated all the students as well as the professionals environment. Use of information sources in the Internet.
- Developing of other databases for the students, as an alternative of the existing ones.
- Update of the contents of each academic year and arrange all the contents and teaching materials in a language suitable for the students even inside a much more natural media for them.
- Increments the participation of the students, because we are in an accessible and known environment for them, as well as the relations and the communication with the teachers.
- Allows us to go public and diffuse the teachers' investigations in a fastest way to the world and to their students. Prevents them from getting obsoletes or that any other will make a similar and parallel investigation that will take the pride of the world first.

For the students:

- Bigger accessibility to the learning contents and the educational materials, for being inside a media as is the Internet, virtual web sites and Social Nets.
- More attractive contents, for being diffused in natural surrounding for the students and in much more used supports (video, podcast, images...).
- The students feels to be more receptive when being inside his natural surrounding his motivation, participation and the feeling of belonging to the educational system grows. His ideas can be shared through the web site and, they feel that they are facing an innovative education.
- Increase of the sight of the utility of the knowledge that the University is giving.
- Lay on a better efficiency as for the competitiveness with other students.
- Much more global vision of the complete subject. Also of the practices.
- A feeling of organization for being able to have in one same place most of all the actions he has to develop during the semester.
- Improvement of the performance of their practices cause they are not individual anymore, but they are commented by all the other students. It also increases the developing and control of the works done through the phases passed.
- A follow up in his results when observing how the teacher makes comments them and evaluates.

For the educational institutions:

- Bringing together the EHEA criteria and an improvement in its quality and efficiency.
- Increase of the sight with the society and an alignment with the social and economic necessities.
- Developing innovative educational projects that may give them a much bigger educational prestige.

- Acknowledgement by the students of the effort that the institution and teachers are doing for improving their academics.

Conclusions

The common educational web sites are used as resources for the formal teaching web sites of the Universities (Virtual Campuses), improving the teaching resources of the organization to which they belong to. Nevertheless, in the case of Publidocnet, it is also for any education professional or a professional in the related subject all over the world.

The practices that are done with tools as Publidocnet enable to apply new methodologies for the Higher Education, based on the individual effort of each student who is improving based on his capacities and receiving moderating support from his teachers.

In this educational environment, the no formal educational web sites offer the possibility to development the four pillars of the education proposed by the UNESCO: Learning to do, Learning to be, Learning to live together and Learning to know. To these ones, we could add learning to learn and learning to undertake, pillars that fit perfectly in the learning and teaching methodology oriented to the education of the students with a productive self-employment and company culture.

The University in particular, but also all the educational chain ever since the first child courses, is precise that they will become environments I+E (Innovation and Entrepreneurship), for the sane and natural development of the goals that the society is requesting from the Education. The teaching community is the motor of the educational innovation leaning on the possibilities that the technology offers and on the use of the no formal spaces, to ease and motivate the students and make more dynamic the skills that improve the creativity and the entrepreneurship. The most beneficiated ones are the students, that take advantage of a more practical, personalized, participative education and where he is being formed inside the reality of the actual profession.

The University comes each moment closer to the Bolonia, lining up to the goals of the EHEA new educational environment, and to the innovation, efficiency and quality. These institutions are placed at the service of the society, offering a much better look of them and being of utility to the society, to the teachers, to the students and to the companies that uses them. They make more dynamic all online educational surroundings of global use.

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ASPIS: THE SUSTAINABILITY GAME

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Abstract

Nowadays online learning and the use of alternative media and technologies, especially serious games, to increase access to learning as well as to facilitate it are prominently establishing their place as ICT facilitated innovative solutions for lifelong learning. This is even more true for such topics where a visualization of the scenarios and its peculiarities is of extreme importance to underpin understanding as well as where different training scenarios might need a complex cognitive scaffold structure to support learning.

This paper describes the special case of the ASPIS "Auditing the sustainability of public spaces" Life Long Learning program project of the EU that aims at creating learning products for public participation in planning in two ways: first introducing sustainability as a core concept in the participation process, helping learners to assess plans against a list of sustainable space criteria; second by creating an innovative learning tool based on a GBL approach, which allows learners to recognize the "stakeholders" in the evaluated plans, participate in simulated negotiation process, play roles, argue for the best "sustainable" solution. The impact envisaged concerns the wider benefits related to the sustainable development of cities and the improvement of town planning practices as well as democratic governance at local level through public participation in planning. The learning impact also relates to improving the competences of urban design and planning professionals; empowering urban inhabitants to influence the shape and use of their immediate environment; introducing innovative tools and pedagogies in school/university curricula; making learning more attractive and relevant to real life situations.

The ASPIS project aims to work with three distinct learner groups: school pupils, university students, and work-based professionals. It will use a game-based methodology, complemented with other online interactive and communication tools, to encourage active learning through discovery, negotiation and problem-solving. The three different stakeholder groups might imply for the serious game both a use as a tool for self-regulated learning as well as for classroom training. The paper describes how these manifold objectives and constraints have been addressed by the design and development of "The Sustainability Game" and what results have been obtained so far.

Keywords: Game based Learning, Serious Games, sustainability, urban design and planning, lifelong learning

Introduction

"Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs." [1]. This is how the United Nations World Commission on Environment and Development characterized sustainable urban planning in their Brundtland Report from 1987 while the International Institute for Sustainable Development added: "The concept of sustainable development ... helps us understand ourselves and our world. The problems we face are complex and serious — and we can't address them in the same way we created them. But we can address them." [2]. So, which criteria have to be taken into account for this purpose? And how is it possible to implement these theoretical principles in real life?

Recently, this debate about sustainability urban planning has also gained ground in several policy documents of the European Commission as, for example, in the EU Thematic Strategy on the Urban Environment (2006); the Report of the Working Group on "Urban Design for Sustainability" to the European Union Expert Group on the Urban Environment (2004) or the Report of the BioRegional Development Group and the Commission for Architecture and the Built Environment "What makes an Eco-Town" (2008).

Inspired by these European policies and guidelines and based on the fact that town planning and urban design represent fundamental pillars of the sustainable development process, in 2009, the ASPIS - "Auditing Sustainability of Public Spaces" project [3], which is based on the results of the

"PICT - Planning inclusion of clients through technology" project, was initiated in order to contribute to consensus building by raising awareness, promoting learning on a wide range of sustainability issues that refer to open public spaces and, furthermore, by encouraging civic engagement.

The ASPIS project, which involves 7 European countries and 9 organisations, including universities, planning and IT consultancies, research institutes and local authorities, is co-funded by the European Lifelong Learning Programme and will run for 3 years. During this period, the project aims to contribute to European policies and guidelines in 3 ways: firstly by elaborating further the issue of sustainable cities, with special reference to public open spaces, taking into account the views of both architects/planners and users of such spaces; secondly by enhancing learning about sustainability among professionals and citizens; and thirdly by promoting the active involvement of citizens in planning and urban design. This way, it also strives to improve community cohesion, regional governance standards and local democracy.

In order to meet this goal ASPIS does not only address professional architects and planners but also inhabitants of towns and cities, including NGOs that act in the interests of sustainability and democratic governance; policy makers; and the education community, at both secondary and tertiary education levels who will be encouraged to incorporate the tools created in the course of the project into school and university curricula.

Methodology

As it strives to achieve sustainability of the urban environment the ASPIS project combines theory, learning methodologies and tools, action in the community, dissemination and networking initiatives.

Reviewing the European experience and best practice in sustainable urban planning a list of the most important sustainability criteria as, for instance, biodiversity, accessibility, maintenance, public participation, sense of neighbourhood, multiplicity of user, environmental sustainability, safety and design of open space, has been compiled and adapted to local conditions with the objective of creating a framework integrating different views. Based on this framework the Serious Game "The Sustainability Game" is under development, which allows the user to immerse in a virtual 3D environment. It is implemented using the Thinking Worlds platform, a globally unique tool which permits to create highly immersive 3D simulations and games and publish them as either a standalone simulation, a web-delivered simulation or even a mobile simulation for iPad and iPhone for maximizing technical flexibility.

Employing the experiential principles of interactive, game-based learning, ASPIS benefits from the special capacity of serious games to engage their audience and help inspire, educate and train [4] their target user through simulation, negotiation and role-playing while making them reflect about the various aspects that in this case make up sustainability.

Aiming to work with three distinct learner groups: school pupils, university students, and work-based professionals, ASPIS uses a game-based methodology, specially designed for multiple stakeholders, complemented with other online interactive and communication tools, to encourage active learning through discovery, negotiation and problem-solving [5].

The Serious Game

The Sustainability Serious Game has been divided into eight short quests with gradually increasing difficulty, which all form part of the core, overarching narrative. It is a single-player adventure game in which the player assumes the role of Peter, a 23-year-old architecture student, who decides to help his 17-year-old brother Larry in solving his problems. Larry forms part of a group of young skaters who get to know about the local authorities' intention to demolish the "skating wall" in the public park. Seeing their frustration about this plan, Peter seeks the help of his professor McNutty who challenges him to get involved in the redesign of the public park and offers to guide him through a series of short quests leading to the final goal, which consist in pitching the idea to the City Council.

Each of the eight quests, which is presented to the player by professor McNutty in the form of an email screen-shot addressed to Peter, offers the user the possibility to move around freely interacting with different persons and objects in order to render the park functional, aesthetically pleasing and more easily accessible for elder guests, children and people with disabilities. For this purpose he has to understand the needs of multiple users and identify park user groups, form a public committee, identify and collect visual evidence of park problems, launch voluntary maintenance schemes, recruit public support, identify and resolve conflicts among park user needs, select suitable park design elements based on costs, user needs and sustainability, and, finally, pitch his proposal to the city council.

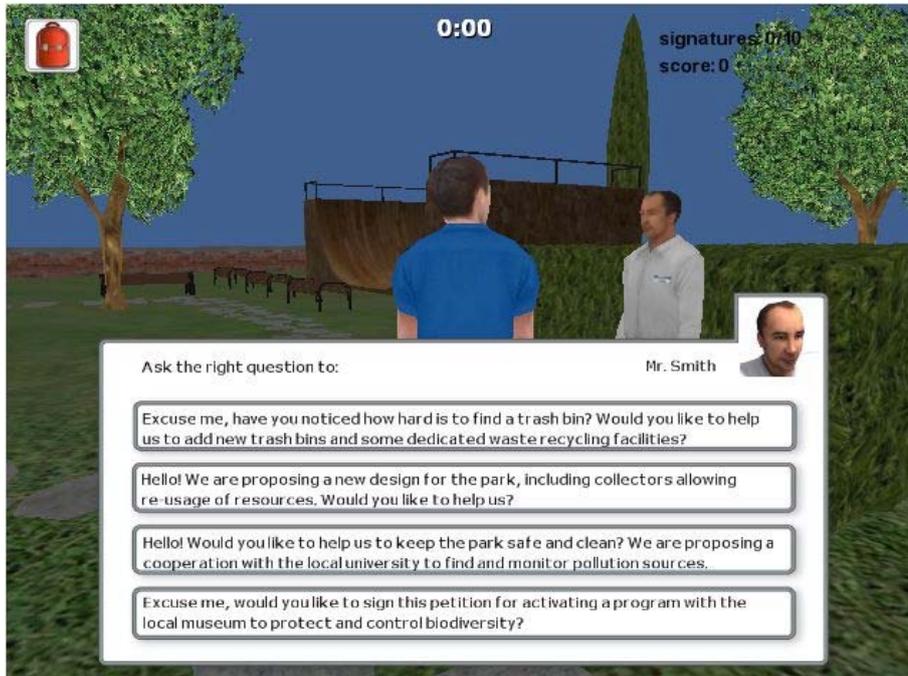


Figure 1: Screenshot of the fifth quest which shows the player interacting with a park user

The game concludes with Larry, Peter and Professor McNutty enjoying a quiet dinner to celebrate the approval of the public park redesign. Larry is thrilled with the decision to keep the skating wall intact and talks about his plans for the skating contest that he and his friends are planning for the following year. He thanks Peter and the Prof for solving his problem and congratulates them on the bigger issues around sustainable urban planning that they were able to resolve. Peter thanks Professor McNutty for his expert guidance without which none of this would have been possible and expresses his gratitude for all the things he has learned during the process. All three toast to their victory and look forward to the grand opening of the redesigned public park.



Figure 2: Screenshot of the eighth quest; the player has to choose the most suitable park design elements in reference to the given criteria

Conclusions

Complemented with other interactive communication/internet-based tools, web 2.0, podcasts, an interactive forum and online discussion groups, the ASPIS Serious Game offers a unique possibility to experience the importance of citizen's participation concerning sustainability issues of public spaces both vividly and in step with actual practice. Moreover, the interactivity of the tool renders "learning by doing" possible and raises the interest of the various target groups.

These are the reasons why the Sustainability Serious Game, undoubtedly, is essential for encouraging critical thinking, establishing a common understanding of the sustainability concept and the sustainability criteria and for making people aware of what is at stake when public open spaces are designed.

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USING COMPUTER IN TEACHING PRONUNCIATION

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Abstract

Learning a target language requires learning all four skills of that language. In the case of English, a successful learner is the one who can speak, listen, read and write English well and could interact with native speakers without any problem. Thus, teachers have come to this result that relying just on traditional ways cannot help their students to speak English well. Some attempts have been made to use Computer-Assisted Language Learning (CALL) programs for this purpose. CALL can provide language learners authentic and native – like environment to learn English. It also allows students to self-access and self-monitor their performance. The study aimed to explore the effectiveness of computer software (Praat) in helping students to acquire stress and intonation of English. Forty participants including male and female high school students, ranging from 18 to 35 years old, were assigned into two homogenous groups according to their scores. Then both groups were given a pre-test. During the treatment period the experimental group received instruction through Praat software while the control group dealt with some placebo. Finally, both groups sat for post-test at the end of treatment. An Independent Samples t-test analysis was run to analyze data. Findings revealed that the difference between two groups was significant in terms of learning prosodic features. The results also showed that experimental group who practiced stress and intonation through Praat outperformed the control group ($p < .05$).

Keywords: CALL, Praat, stress, intonation

Introduction

Computers, accompanying software packages can be used in a number of ways to assist language learning process. The computer environment is highly motivating and less threatening psychologically. Computer-Assisted Language Learning (CALL) is a form of computer-based learning which carries two important features: bidirectional learning and individualized learning. While it could be a teaching method enhancing English as a foreign language (EFL). The focus of CALL is both learning and teaching. It is student-centred accelerated learning ([1], pp. 195-218). With respect to EFL learning, CALL defined as " the search for and study of applications of computers in language teaching and learning [2]. It offers an unrivalled range of possibilities to provide learning experiences that are impossible without a computer.

The major application of CALL in the mechanical dimension is in pronunciation training; new multimedia products incorporate extensive texts, graphics, and animation, audio and digitised audio or video clips. With some software, CALL can produce relatively natural speech from individual phonemes stored as digital codes that are strung together as the user types the keyboard [3]. In relation to the articulation of sounds and words in the target language, which is quite challenging for beginners, some types of softwares not only offer diagrams that translate sound into graphic representation, but also provide video clips or animation of the speaker's mouth in motion during the pronunciation of words, which visualizes the articulation. This is impossible without the aid of computer. With these visual aids, the teaching of pronunciation is easier. Learners can familiarise themselves with the target sounds and discriminate like sounds ([4], p. 127). According to [5], pronunciation assistance by computer falls into three general approaches: visual feedback systems provide a visual representation of student utterance. Acoustic template-based systems match the student's speech against a template. Finally, model-based systems evaluate student speech using a model of student mispronunciation constructed from multiple native speakers or from linguistic knowledge such as common phonetic errors.

To speak well and have an acceptable pronunciation, learners should learn the phonology of target language. One important aspect in phonology is the prosody of target language. Prosody generally refers to the organisation of spoken utterances; however, the term has been defined in many ways in

the literature. One definition of prosody is based on the role of prosody in the linguistic structure, i.e., it defines higher-level constituents such as utterances, into national phrases, prosodic words and so on. Prosodic features (i.e., in the present study stress and intonation) play an important role in human speech communication. We are able to infer a speaker's gender, age and emotion from his/ her voice, regardless of what is said [6]. Meanwhile, the same sequence of words can convey very different meanings with variations in intonation.

Therefore, we can see the importance of prosody to the naturalness and intelligibility of speech. Regarding the importance of these features teachers and programmers have tried to use computer softwares to teach to language learners. One of these softwares is called **Praat**, Which can be used to teach aspects of prosody such as stress and intonation. Using technology in teaching pronunciation can be useful and effective in language classrooms. Therefore, regarding the great advantages of CALL to have an unlimited capacity and immediate feedback, language learning would be simpler and feasible for educators. The varieties of computer software have designed to help the teacher and learners to facilitate the process of learning and teaching stress and intonation.

Research Questions

The present study focuses on two important features: stress and intonation and examines the best way of teaching them through CALL approaches. Therefore, the following research questions could be formulated as follows:

- 1) To what extent does Praat software affect teaching stress and intonation among Iranian EFL learners?
- 2) Is there any significant difference between the learners using CALL and Non-CALL approaches learn stress and intonation through Praat software?

The present study intends to investigate the efficiency of each method in teaching prosodic features of English including stress and intonation. Therefore, other prosodic features have delimited to narrow down the scope of this study.

Experimental background

Depending on the program, computer can contribute to the learning of many aspects of language and culture to the learners of different levels [7]. Regarding the importance of having a good pronunciation and accent for language learners, researchers and teachers have started to use this technology to teach phonology of target language to their students. There has been a movement toward using computer technology in order to teach oral skills and help students to control their proficiency and pronunciation [8]. So, many efforts have been made to examine the effectiveness and the amount of feedback of computer in teaching pronunciation and oral skills of target language. Researchers begun to move from a focus on segments or individual phonemes to the suprasegmental or prosody like stress, intonation and pause. These factors influence a native speaker's judgement of second or foreign language learners' accent [9].

In a study by [10] investigated such a tool in the form of CALL with visual feedback. The study was divided into two experiments. Experiment one focused on both quantitative and qualitative aspects of acquisition of French prosody by native speakers (NSs) of American English (AE) using Computer-Assisted Training that permits visual display of pitch contours in real time. Through, using a pre-test post-test design, the researcher provided native English-speaking learners of French with three weeks of training focused on prosody using a real time computerized pitch display. Multiple exemplars produced by NSs of French and stored on hard disk provided training Feedback. Learner's recorded pre-post test productions were presented to NSs for evaluation in two conditions: filtered (unintelligible segmental information) and unfiltered Ratings using seven point scale for the prosody and segmental accuracy of unfiltered. Samples revealed significant improvement in prosody with generalization to segmental production and novel sentences. Comparison of prosody rating for filtered and unfiltered samples revealed some segmental influence on the pre-test ratings of prosody. In experiment two, involving a memory recall task using filtered stimuli of reduced intelligibility, learners identified the exact lexical content of on average of 80% of the training sentences based on prosodic cues consistent with exemplar-based learning models. Questionnaire responses indicated a greater awareness of the various aspects of speech and increased confidence in producing another language.

In another study done by [11], she has done an empirical assessment of students. She investigated whether unlimited access to a speech-recognition based language learning program would improve the general standard of pronunciation of a group of middle-aged immigrants professionals studying

English in Sweden for this study a product known as talk to me by French company Aura log was chosen for testing. It was chosen because they judged it to apply pedagogical goals within the constraints of existing CALL technology the core of the software consist of six dialogue sequence, where the program asks a question to which the user responds by uttering one of three answers. Eleven students were given a copy of the program Talk to me as a supplement to a 200- hour course in technical English and were encouraged to practice on their home computers. Their development in spoken English was compared with a control group fifteen students who did not use the program. The program was evaluated in this paper according to [12] six criteria for CALL assessment. Since objective human ratings of pronunciation are costly and can be unreliable, our students were pre-and post- test with the automatic phone pass SET test from ordinate corp. Results indicated that practice with the program was beneficial to those students who began the course with a strong foreign accent but was of limited value for students who began the course with better pronunciation.

There is another study which was done by the help Praat software it was done by [13]. The study investigated relative weights of individual prosodic features for listeners judgements on second language (L2) accent using Praat computer software, five minutes of continuous in-class lectures from eight international teaching assistants (ITAs) were acoustically analysed for measures of speech rate, pauses, stress and pitch range. This study sought to specify the relative weights of individual prosodic factors to listeners' accent judgement on NNSs speech. Accentedness refers to as the extent to which as L2 learners' speech is perceived to differ from native speaker norms. The speech analysis utilized eight ITAs' instructional presentations which described a concept from each presenter's major course of study. Three recorded lectures who were native speakers of North American English provided a base line of standard NNS performances for acoustic analysis. All measures were assessed using a combination of auditory and instructional analysis. Acoustic keys were measured through spectrograms, pitch contours and intensity shown in the Praat. The result revealed that articulation rate, phonetician, time ratio, mean length of pauses space and pitch range were highly correlated ($r = .70$ and above). Overall pitch range showed a strong and negative effect on listeners judgement of NNSs, accent ($B = -.47$). It was found a positive relationship between word stress and accented ratings.

We can refer to another study which was done by [14], this study refers to the advantages of Praat to teach segmental and supra-segmental pronunciation. Such as: vowels and diphthongs. He says some features like vowel length differences before voiced and voiceless stop or voice onset time or intonation and stress can be shown and measure by this software. After being trained by teacher on the use of Praat, students are able to record and analyse their own pronunciation. Students first record speech by selecting Record mono sound (or stereo) from the menu of Praat objects window. After recording and saving it to the Praat objects window (by clicking on save to list in the sound Recorder window that pops up), the acoustic signal maybe observed by clicking on the Edit button (visible when an object exists in the Praat objects window). The experiment in this study was done by the help of 14 students. After asking them to record one sentence, he had them measure the duration of vowels and the prosodic features and then comparing it with one sample from a native speaker of English. For example regarding schwa sound he found that majority- of students have a schwa of duration 81-100 ms, far too long. Results of pitch difference between one and the "u" syllables of word computer have shown that all students falling on the left of the red line had a higher pitch on the first syllable than the second syllable.

Yoon [6] has done a research in this field. Based on his study, one of the most critical tasks in the acquisition of a foreign language is the acquisition of the prosodic features of language. In traditional classroom environment, foreign or second language teachers explicitly teach the prosodic features of target language. Students learn by listening to or watching and attempting to imitate their teachers in such cases, the feedback students may receive when they make mistake is limited. Students are given some instructions, making them repeat the target utterance. But teacher cannot show the intonation, intensity of target utterance chalkboard to help students to get the point. But in self-study environment with computer software, students get less feedback but they receive visual feedback. Some software, records what learner produce following a native speaker's utterance, displays the features of speech along with a valuable feedback to students. This kind of feedback is more optimal of this purpose. He introduced a technique for cloning the prosodic features of a native speaker's utterance on to the same sentence spoken by a non-native speaker. Three acoustic aspects of predict features were examined: the fundamental frequency (F) contour, duration, and the intensity. The frequency and duration of the native speaker utterance were imposed on non-native speakers utterance using PSOLA (pitch-synchronous overlap-add algorithm) implemented in Praat a male Korean speaker was asked to read the English question" what did you say before that? The speech segments of non- native version were aligned with those of the native version. This alignment was

followed by the stretching or shrinking of the non-native segments in conformity with native ones. Using PSOLA algorithm implemented.

Other features like frequency and intensity of native version was imposed on non-native version. In Praat, this was done by the mathematically by neutralizing the intensity contour of the non-native version and importing the intensity of native version. The result showed that differences in segmental quality were observed, for example, in the segments. Or the native speaker's durations was relatively flat, non-native was different. Or intensity in original native utterance was higher than that of non-native version.

Some studies have been done to examine the effectiveness of the CALL on the pronunciation. We can mention the study done by [15]. This study tried to prove the potential feedback and effectiveness of using this program to teach aspects of pronunciation like stress, pause, intonation and comprehensibility.

This study was intended to empirically evaluate a self-directed, computer-assisted technique that uses oral readings to improve student's perception and production of pausing word stress, and intonation. A 13-week experimental study was performed with 73 ESL learners divided in to control and treatment groups. The treatment group was exposed to 11 weeks of self-directed Computer-Assisted practice using Cued pronunciation Readings (CPRS). In the pre-test/ post test design, speech perception and production samples were collected at Time one (week one of the study) and time two (week13). Total time was 20 minutes and data collection consisted of a sequence of seven computerized tasks: five spontaneous speech tasks, one perception task and one controlled production task. Researchers analysed the treatments effect on the learner's perception and production of the key suprasegmental features (pausing, word stress and sentence- intonation) and level of comprehensibility. Results revealed that treatment group produced fewer incorrect errors in terms of the above factors, and their ability has significantly improved.

Methodology

Subjects

The subjects of this study were 40 Iranian EFL learners at intermediate proficiency level (males and females, with the age ranging from 20 to 26 years old) major in teaching English as a foreign language (TEFL) at BA level of Payam Noor University in Ahvaz, Iran. In order to classify the learners and ensure the student's linguistic homogeneity, on the one hand and to access their general proficiency on the other hand. Two criteria were used for selecting the subjects. The first one, as stated earlier, was that they were all students at the BA level (fifth semester, major in Teaching English as a Foreign Language (TEFL) and had passed basic courses of English and phonology. The second one was a 40-item paper-based proficiency test based on Barron's [16], based on which 80 learners were given the proficiency test and the learners whose scores fell one standard deviation below and above the mean were selected as the subjects of the study. Therefore, from among a population of 80, 40 learners at the intermediate proficiency level were randomly selected and divided into two groups of experimental and control.

Materials

A proficiency test based on TOEFL [16] was administered to the participants in both groups to determine how well they were uniform in terms of language proficiency before the instruction had begun. Besides, a pre-test and post-test regarding stress and intonation were given to the two groups of control and experimental. As a matter of fact the pre-test ($r=0.537$) was administered in order to estimate how much they know about the issue furthermore, a post-test($r=0.574$) was administered in order to see to what extent did Praat software affect teaching stress and intonation among Iranian EFL learners. The scores of two exams were calculated to be out of 20 (Appendix B).the reliability coefficient of the proficiency-test in this research was calculated by Kudar-Richarson formula (KR-21).The reliability coefficient for the proficiency-test was 0.76. Moreover, as the research apparatus, Praat software was utilized for the experimental group. It should be mentioned that during the course of instruction the students were taught how to work with this software.

Procedure

After the administration of the pre-test, the learners' scores were computed ranging from 15 to 40 and the mean score was computed to be 25. The students whose scores were one standard deviation above the mean were selected as the intermediate learners and participants of the study.

As mentioned earlier, among 80 English students at BA level (fifth semester), 40 students were chosen through a proficiency test based on TOEFL. The participants were randomly divided into two control and experimental groups. Each group was given an exam about stress and intonation to determine their knowledge of the issue before the research. Then, they were taught for 10 sessions. Control group was taught stress and intonation in traditional way with the help of phonology books like [17], on the other hand, the experimental group had a review of patterns of stress and intonation and then practiced the issue through Praat software in a computerized environment. During each session, the teacher had initially a discussion about the rule and then started to work with computer. Finally, both groups were assessed on a post-test based on what they had learned. Data were analyzed through Independent Samples t-test to examine the means of both experimental and control groups.

Statistics (reliability)		Pearson Correlation Coefficients	
Group test	Experimental group	Control group	
Pre-test	0.621	0.614	
Post-test	0.574	0.537	

Table 1. Reliability Coefficients of pre-post-tests

A Pearson Product Correlation was manipulated to establish reliability through computing the correlation between the scores of two groups. The computed Pearson Correlation (r) was 0.574 in the CALL group and 0.537 in the Non-CALL group. It shows that there was a significant relationship between the scores.

Results

Descriptive statistics including minimum, maximum, mean and the standard deviation of experimental and control groups were respectively computed as it is indicated in Table 2.

Tests	treat	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	Control	20	12.7500	2.95359	.66044
	experimental	20	13.2500	3.16020	.70664
Post-test	Control	20	14.9500	2.11449	.47281
	experimental	20	17.4500	1.98614	.44411

Table 2. Descriptive statistics of the two groups

The control group students' pre test scores, ranged from eight to 19. Therefore, eight is the minimum score and 19 was the maximum. On the other hand, this score for the experimental group is ranged from nine to 20. In other words, nine is the minimum number but 20 is the maximum, the mean of each group is also calculated, the mean of control group is 12.75 and the mean of experimental group is 13.25. The results of the post-test show that after the instruction the scores had been changed as from 12 to 20 and in the experimental group are changed as from 14 to 20. Additionally, the mean scores of the post-test in both the control and experimental groups are calculated 14.75 and 17.45, respectively. Standard deviation and variance of each group for pre-test and post-test are also shown to compare both groups' means. Accordingly, the variance of pre-test scores of the control and the experimental groups are calculated to be 8.724 and 9.987, respectively. But after giving them instruction the results had changed. That is, the variance of control group on the post-test is 4.471 and that of the experimental group is 3.945.

Results of Independent Samples T-test Analysis

Since descriptive statistics could not offer the researcher valid information to reject or sustain the null hypothesis, an Independent Samples T-test was run to see whether the observed difference between the groups was significant or not.

Variables	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pre-test Equal variances assumed	.171	.681	-.517	38	.608	-.500	.963	-2.458	1.458
Post-test Equal variances assumed	.013	.911	-3.854	38	.000	-2.500	.648	-3.813	-1.186

Table 3. Independent Samples t-test of pre-post tests analysis

Table 3 shows that t -observed value was ($t_o = -.517$) which was less than the t -critical ($t_c = 2.00$) at the pre-test. Thus the difference between the experimental and control groups was not significant ($p < .05$). The t -observed from post-test was 3.854 which was greater than the t -critical was 2.000 at the ($df = 38$) in other words, there was a difference between a pre-test and post-test, so it could be inferred that the null hypothesis was rejected at significant level ($p < 0.05$). To substantiate the research question, an Independent Samples t -test was conducted and revealed that there was a significant difference between the scores of students the mean of score in the experimental group was higher than control group as t -observed calculated as $t = 3.854$ at the ($df = 38$), Therefore, it is possible to argue that there is a significant difference between traditional teaching and modern teaching and modern teaching.

Discussion

The research questions will be brought up here and based on the results; the main issue will be discussed. To answer research questions that the present study has concentrated on, the test results of each group will be statistically and separately discussed as follows:

Question 1: To what extent does Praat software affect teaching stress and intonation among Iranian EFL learners?

Putting aside the pre-test which was administered at the beginning of instruction for the purpose of indicating their proficiency levels, the post-test was administered to check the participants' information after they finished the instruction. This was a test asking students about rules of stress and intonation. The results showed that the observed t (-3.854) was greater than the critical t ($t_c = 2.00$) Therefore, the first proposed null hypothesis concerned with the difference between pre-test and post-test was

rejected at the significance level of ($p < 0.05$) with the $df = 38$ so the members of experimental group who learned and practiced prosodic features with computer (Praat) were more successful.

There is a significant difference between the performances of control group and Experimental group. Teaching prosodic features (stress and intonation) in computerized environment and allow them to practice what they have learned with computer, can help them to acquire these features well. Consequently it affects their pronunciation and accent. The null hypothesis of this study was that computer software (Praat) does not affect learning prosodic features of English.

To elaborate more on this difference between scores, it should be said that learners in experimental group, first had a review of the patterns of stress and intonation of English, then Praat software was presented in the class. They installed this program on their computers and learned to work with it. They studied prosodic features again and then practiced these features by Praat. They were asked to record their own voice and see the features by Praat and then compare it with a native like speech that its features that had been shown in Praat. So the procedure of instructing to the experimental group was in such a way that each session, initially the learners recorded their own voice and checked the features by Praat and then compared it with a native like speech which features had been shown in Praat. Besides, they had a review of lesson regarding stress and intonation, and then started to practice and do some exercise with Praat. This method of teaching was very interesting for students, both teacher and students cooperated in the class. Students worked together and had cooperation to exchange information and do the exercises. The atmosphere of class in which CALL approaches were used, was motivating and less threatening. The students enhanced their pronunciation concerned with using stress and intonation properly.

Thus, unlike traditional classes that students have to seat and listen to teacher's explanations and they memorize these explanations to pass the exam the advantage of modern class is that both teacher and students are involved in learning process. Students learn and teacher support them but traditional classes are boring and frustrating in advance countries, teacher prefer to teach with this method because both teacher and learner enjoy the class and student is not afraid of being asked. They had found that teaching with games and software was more practical and motivating. The aim in modern classes is learning but in traditional classes just memorizing some rules to pass the exam and after a while once students are asked something about the issue, they remember nothing. So to answer the questions of the study, the results of two groups after instruction show that the experimental group has been successful in this program.

Question 2: Is there any significant difference between the learners using CALL and Non-CALL approaches to learn stress and intonation through Praat software?

The results of this study are in line with the outcomes of some of the studies having been done in the domain of teaching prosodic features through CALL system. Hardison [18], for instance, emphasized the importance of using CALL on teaching prosodic features in his study and finally came to the point that computerized learning of these features was more effective and in comparison to the students in control group, students who learned these patterns in the experimental group were more successful in communication and interaction with native speakers of English.

Teaching prosody in a real and computerized environment is more useful for learners, such class is student-centered and students have more opportunities to practice these features which may, in turn, promote optimal performance. The outcomes of this research are supported by [19], who focused on the role of CALL in learning L2.

Wilson's [14] conclusion also seems to be supportive of the results of the present study. Wilson has implemented Praat on segmental and supra-segmental features in general and on stress and intonation in particular. He concluded that using this software in the class provides feedback for learning. It enables students to enter their Praat measurements and allowing teacher to pinpoint students' problems efficiently.

Neri [20] has also come to the same result in her study. It was the speculative idea that using computer technology is better than the traditional methods of teaching prosodic features. Her findings allowed her to come to the conclusion that compared to that of the traditional pronunciation classes; the feedback in computer-centered classes is much higher. She came to this results in traditions systems the speech produced by learners evaluated just by teacher and it will be up to learner to determine whether and how their utterances different software, learners can have direct access to acceptable pronunciation, check errors and see the features of their utterances the feedback and motivation in this kind of teaching is very high and learning will be enjoyable for students.

Hubbard and Levy [21], also has done some studies which prove the findings of the present study. He claims that the advantages of using call program to teach aspects of pronunciation, he believed the call environment creates situations that stimulate interest, allows communication, enhances reactivity, foster a sense of personal work, facilitate collaboration among students working together, permits learning experiences for all students and strengthen communication skills.

Additionally, [6] and [22] in their articles had done a comparison between teaching pronunciation through traditional system and computer. They explained that traditional classes are time-consuming and student and teachers both spend their time on reviewing the patterns, there is no exchange of information but in modern classes the atmosphere of class is not threatening and student are more motivated to take part in activities. All these studies confirm the results of the current study that using CALL program especially software like Praat has a noticeable effect on learning aspects of pronunciation of second or foreign language. The outcomes of this study is in conformity with this point, it was proven that compared to students in traditional classes, students in computerized environment appeared to be more active, less anxious, and enjoy learning. During this study students were asked to install Praat on their computers at home, practicing prosody outside the class. They started to work with software to be aware of the functions of prosodic features in utterances. They were asked to record their speech and compare it with a native like speech through Praat and find the differences between them. Students had cooperation with each other in class so learning was enjoyable and interesting for them unlike traditional approaches that they had to sit in class, listen to the teacher and then memorize some rules for final exam.

Conclusion

The present study investigated the effects of CALL approaches to teach prosodic features through (Praat) in teaching stress and intonation among Iranian EFL learners. In other words, the focus of this study was put on using Praat software to learn stress and intonation of English in class. Therefore, forty TOEFL university students were selected and assigned into two groups of control and experimental, the control group was taught through a procedure rendered by some phonology books like [17] in the traditional way, on the other hand, the experimental group that was taught by means of Praat software. Findings revealed that the experimental group who were taught by modern technology was more successful at the end of career. Mean differences and the *t*-test analysis indicated that there was significant difference between two groups. This study indicated that using Praat computer software can help students to acquire aspects of English pronunciation. Therefore, based on the above arguments it is possible to claim that students and teachers both can benefit much from CALL approaches in language classes and using computer software like Praat might facilitate learning process.

Pedagogical Implications of the Study for Language Teachers

Learning prosody of second language is important, because it can help learners to communicate with native speakers and better comprehension while hearing a native like speech. In this regard, using CALL program for educational purposes has been considered important and necessary by teachers. They should use the best materials and facilities to teach skills of foreign language. CALL might be a rarely to solve the inherent problems, such as lack of pronunciation exercises.

CALL system offers an unrivalled range of possibilities to provide learning expertnesses that are impossible without a computer. One of the major applications of CALL is in pronunciation training. With some software, Computers can produce relatively natural speech from individual phonemes stored as digital codes that are strung together. In relation to articulation of sounds and words in the target language which is quite challenging for beginners, some types of software can offer diagrams that translate sound into graphic representation and also provide feedback during pronunciation of words or sounds, which visualize the articulation. With these visual aids, the teaching of pronunciation is easier. Visual feedback systems provide a visual representation of student utterance. All these technologies are used more in CALL programs.

As introduced in the current study, a very good example of this application is Praat software. This software has been designed in order to deal with the problem of improving students' performance both in the perception and production of prosodic aspects of spoken language. The program is able to offer visual aids and phonetic representation of utterances one of the advantages of this software is that it shows the specification of a produced utterance or any speech which has been saved in computer. We know this fact that students are more appropriate when practice in front of their computers. So, it can reduce the fear and anxiety of learning process in class. It also helps the teacher and students to work together and increase collaboration in classroom.

It has frequently been seen in Iranian educational system ranging from school to university, that unfortunately most of the students cannot speak English with a native-like accent, so teachers in schools and English institutes should find some to overcome this problem. Teaching English phonology through computer software or games can help students to learn these items effectively. As it could be seen in this study and some other works, using this kind of software can be so efficient in learning and teaching of optimal pronunciation. Relying just on traditional ways to teach English pronunciation could not give an acceptable result, but CALL environment provides opportunities to practice more and more. The software program appears to be a virtual teacher, a teacher's helper, a guide, and instrument, a teaching and learning tool which can enhance learning and increase comprehensible input. Teaching with computers can be exciting and make students more active and curious. It seems that traditional approaches are limited and less effective for dealing with different aspects of language teaching in comparison to CALL environment. Thus, language teachers should integrate this technology in to their classes to help their students to learn well. This way can also help teacher to save his/her energy and time and use it for other critical issues in class. Nowadays, most of students have computer at home so teacher can give them some tasks to do out of the class for extensive exercises.

Recommendations for Further Research

This study presents some recommendations for further research which were not focused but can be considered as starting point for further studies. This study was conducted in the university but it can be done for other levels like high schools. It can also be conducted not only for English students but also for students of other fields. Because we know that each field has its own software and programs that students of that major should be familiarized with them to develop their proficiency. As pronunciation is considered to be as a subcategory of speaking skill, CALL approaches can be used to teach speaking to our learners in an effective way. There are many kinds of games and programs that have been designed to help learners for learning. Praat software was selected to teach in this study, there are other programs in this field. Researchers and teachers can search on the Internet, find them, and test their efficiency in classes. There are many studies in the field of teaching that can be done by Praat for instance, some research should be done to check the role of emotions in changing intonation patterns of speech, or even realizing the kind of personality by changing prosodic features via computer software.

The results of this study provide empirical evidence supporting other researcher's ([17]; [23]) claims that computer technology can help second language learners more accurately perceive and produce prosodic features. However, it suggests that further work is needed to explore the effects that CALL approaches can have on language learners' perception and production of specific supra- segmental features.

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MAKING 'SPACE' FOR MULTIMODAL WAYS OF LEARNING

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Abstract

Today the Swedish society includes technical artefacts and during the last decade the number of computers has also increased in Swedish schools. Teachers are more and more using computers in daily teaching even in primary schools but still there are quite big differences. In order to develop more knowledge about new digital technology as a natural part of the pedagogical work there has to be a special interest in how teachers and students use ICT in teaching and learning interactions. Introducing new technology to a new place tends to change the social organization and also the conditions for interaction. How students handle the representations of different modes within a school context where digital technology is a part of the classroom education is exemplified in this paper. The research findings come from an innovative classroom setting where nine-year-old students are working in groups using mediating technological tools for learning. The analysis of the empirical material focus on student action and talk within a school discourse where the goal is to fulfil a pedagogical and technological classroom task; to create commercial movies in groups using a computer software program. The content in the commercial movies starts out from a project work: 'The Space' that the students have been working with during ten weeks. The instance analysed here is from a socio-cultural approach to learning where the focus is on the interactive, institutional and the context features of the practice. The findings shows that according to the classroom task students are using the available recourses in different ways in collaboration but there are also significant features which impact on student learning

Keywords: digital technology, classroom context, student interaction, multimodality, sociocultural theory

Introduction

When new digital technology enters classroom teaching there is a special interest in how teachers and students use ICT (Information and Communication Technology) in teaching and learning interactions, which is the overall focus of my research study. Today the Swedish society obviously includes technical artefacts and during the last decade the number of computers has increased in Swedish schools. Teachers are more and more using computers in daily teaching even in primary schools but still there are quite big differences. In schools financed by the local government there are in general six pupils by one computer [1].

History shows that transformation and development in schools takes time. Wells [2] means that during this development the learning of individuals is situated in the cultural practices and norms of a relevant community. These communities change over time as members are taking actions to change the social knowledge, norms, and practises. Jewitt [3] claims that introducing new technologies to a new place tends to change the social organisation and interaction and also the conditions of interaction. New forms of representation and communication are made potentially available. Therefore it is, as I see it, high priority to investigate how technological resources shape student interaction within the classroom discourse and how students handle the representations of different modes within a school context. These questions are on trial in this paper and the results come from the empirical material in my research study. To begin with I will introduce the theoretical perspective of the study.

Socio-cultural approach to learning

This study is based on a socio-cultural perspective where the notion of tool and artefact has a special impact [4]. Artefacts are intellectual or physical resources, which we use when we are active trying to understand our environment and they are constantly developed in various social activities and alter the limits of our abilities and influence our actions [5].

A central concept of a socially mediated, individual learning within socio-cultural perspective, is the proximal zone of development [6]. It is the distance between what a learner can do alone and without assistance on one hand, and what he or she can accomplish with the assistance of adult leadership, in collaboration with more capable peers or with the help of scaffolding [4]. The individual, the artefacts

and the socio-cultural practise interact with each other. What and how the individuals learn depends on the interaction between the individuals and the social practise and the opportunities afforded [6].

In a socio-cultural perspective learning can be seen as a development that is connected to the situation and the setting. In this meaning every context has its own implication for learning and how the language is used is closely connected to the context. Linell [7] points out that language is socially structured and socially distributed. All language use has social and cultural dimensions and the essentiality of all utterances are always contextualized and understood by going beyond language. The actions studied here are taking place in a discursive school context, where discourse means; situated verbal actions closely connected to the context.

In what manners we handle different modes of representations, e.g. a visual representation must be understood as an historical act [8]. Culturally adopted modes of representations have emerged over time in the context of various human practises. For individuals rules and conventions have to be learned through a process of socialisation in order to perform certain actions and to see certain things, which becomes highly relevant for a study of learning in an educational setting.

Activity theory

To understand how people act, think and learn on their environment Activity theory (AT) was developed out of Vygotsky's cultural-historical approach to learning in the late 1930s by Leontév [9]. Engeström [10] has later on developed Vygotsky's basic mediational triangle, subject – object-mediational tools, to represent more fully the essential social relations that need to be accounted for to understand learning, as rules, community and division of labour [11]. AT looks beyond the individual learner to understand the social and material relations that affect complex human learning and people's interactions with others as mediated by tools.

In this study AT is used as an analytic tool, which focuses on groups of students who share common object and motive over time and the tools they use together to act on. The activity system is here a help to understand the research questions. The researcher defines the activity system based on the purpose of the research study to focus the theoretical lens AT provides [11]. In this study the interest lies on student interaction seen from a perspective of the socio-cultural genesis and the situational micro genesis, which is a central idea in Vygotskian theory [7].

Classroom work as an activity system

During ten weeks I have been studying the creative work of nine-year-old children when they are conducting a theme: 'The Space'. They have been divided into seven groups of three to four children where each group is responsible for one of the planets in the solar system. From that starting point during these weeks the students have been working with different classroom tasks such as; writing stories in groups, done research of a scientist, searching for and writing down facts about a planet, creating a planet in *papier-mâché* (a special technique of paper and glue) and creating commercial movies.

During this contextual task the object is to make a commercial movie and advertise a planet. Each student has been doing some previous research about the planet, which they have been working on in other contexts. During the work the nine-year old students in this study share one computer in each group. One of the students is typing and the others sit beside discussing and making suggestions for text, images, sound, special effects and movements. Jewitt [3] points out that different modes make resources for meaning making available, which impact on what is included or excluded. In my view the interest of the software program lies on how different modes impact on student interaction and learning. The company behind the software used here, *IMovie*, and their ideas are not being addressed in this study. This software requires new digital technology but the task could have been done in another way in another computer software program with a different design e.g. Windows Moviemaker, which possibly could make other affordances available.

Analysis of the empirical setting

The analysis is based on transcribed video material from six student groups. In the analysis some excerpts have been chosen to exemplify the central features.

The task

The teacher introduced the main ideas of the task and the teaching organization but she left a free space for the students to create their own working process. The instruction concerning the technology was that they should use photos in *IMovie* to create videos and regarding the content they were

supposed to use both knowledge and imagination. The students got an instruction by the teacher according how to use the computer software and they were shown how to drag- and drop images from the hardware into the program and where to write the texts. Other modes such as; sound, special effects, image and information search on the Internet were not introduced by the teacher. During the introduction there were very few questions from the students concerning how to handle the technology, which the teacher expressed was 'surprising'. During the work the six different groups handled the technology in various ways but all of the groups in the study manage to create videos in IMovie without any technological help from the teacher during the working process because of the knowledge of one student or more in the groups. The empirical material shows that the one student starts out taking control of the computer by having access to the keyboard. This student had skills to use the program with no difficulties. From an activity perspective this is a part of the division of labour where participants constitutes their roles in a group. In some groups they shifted user of the keyboard or the mouse during the process but in other one or two students had control over the technical part of the task with more or less support from other group members.

During the process all the students were generally very active discussing how to solve problems neither it was technological or information issues. The excerpt below will illuminate student interaction and how they help, scaffold, each other during the process, the creation of the movie.

Excerpt 1

- 1 Anna: what did I do now?
- 2 Ella: it is marked click there now ... but just click there now ((Ella is pointing at the screen))
- 3 Ella: but it is marked click there now ... it is marked click there now
- 4 Ella: ... you have to do like this you have to be a little ...
- 5 Ella: hard handed ((She takes over the access to the keyboard))

In this group they have shifted the roles and Anna, a less experienced student, has access to the keyboard. She tries to drag and drop images but fails, which is shown in line 1. Ella, the more experienced student, supports her repeatedly by saying that the image already is marked and Anna just have to click on it to drag it to the right square. During these lines Ella is constantly pointing at the screen to intensify her message. In line five she helps her by pressing the keys a little bit harder than Anna did.

The utterances made here in action with the computer are closely connected to the context and the affordances of the modes in the computer software. This is another way of talking and acting compared to non-technological tools. The visualised, mediated tool, the screen, which the empirical material evidences, could include everyone in the group. They frequently point at the screen in order to help each other with the task. They scaffold and learn from each other from all the modes present on the screen. Jewitt [3] means that what is displayed on the screen connects with what goes around the screen, which is very obvious in this data material.

Representations of different modes

All student groups used modes such as; image, text, sound and special effects although the teacher had not specifically instructed them to do so. During the work the students used the affordances of different modes in order to create their commercial movie. To fulfil the process students in all six groups interacted by talking and negotiating about what kind of image, text and sound they should choose. By using the screen as a mediating source available to all the students in the group they could talk and act at the same time by pointing and exposing their meanings. In the excerpt below the students have chosen an image to represent a part of the planet Mercury. They are discussing what adjective they should use to describe the image, which illustrates an iceberg.

Excerpt 2

- 1 Alicia: or an ice bath I think we write that ((Alicia starts writing 'ice bath'))
- 2 Patrick: yeh
- 3 Linda: a cold ice bath
- 4 Linda: we have to write something here about the bath
- 5 Linda: or a nice ice bath

6 Linda: or a cooled ... a cooled

7 Linda: or a relax...

8 Alicia: relaxing

9 Linda: yeh relaxing

10 Alicia: relaxing

In this excerpt Alicia has control over the keyboard and she starts writing 'ice bath' when Linda suggests that they have to write something more about the ice bath. Linda then gives some ideas like 'cold, nice, cooled and finally the adjective 'relaxing, which she does not finish to pronounce when Alicia fills in. In this case Linda has a motive to describing the 'ice bath' more clearly and she watches very carefully what Alicia is writing and then she tells the group her proposals. The other members, Alicia and Patrick do not reject her ideas and they agree on using relaxing as an appropriate adjective.

As this group continue working they chose images, sounds and special effects as well. They discussed and negotiated about the content of different modes and in what way they should use them. Most of the groups had more or less discussions and agreements regarding the technology and the content. But there are differences in what way the groups used the affordances of different modes. In this group they focused on developing the compatibility of image and text and further on how to adjust the clips so they could fit into each other. In other groups they laid more effort on choosing the proper image, finding out more information about the planet, trying to place sound or special effects into the movie. The different modes make affordances available, which are used by the actors, the students, in different ways depending on the process and the creativity of the group members. The affordances, both possibilities and limitations, of different modes and in the way they are used by students in relation to capability in the groups, impact on student development of different competences when making a commercial movie. But there is not a one-way mediation from the different modes afforded by the technology; the students meaning making and interpretation of these available modes also shape the content, which excerpt 2 illustrates. They have their own preferences of how to create the content of the commercial movie.

Discussion and conclusions

Findings in this study shows examples of how technological resources shape student interaction within the classroom discourse and how the students handle the representations of different modes within a school context. The task is performed in a school context where certain rules, norms and values from an AT perspective must be taken into account. This task would not have been possible to do without some sort of technical artefact and the use of different artefacts leads to different ways of thinking [6]. In this case the organization of the task in this innovative classroom makes space for multimodal ways of learning.

What can be pointed out as a finding from the process of creating 'Space Commercials' is that the collaboration between the students, the mediated tools and the object comes out in actively group discussions, where they were interacting and trying to help each other. According to Higgins [12] when students work collaboratively in small groups, ICT can be used effectively to support talk and improve discussion.

During the working process there are variations in the groups even though they had the same instruction. An explanation is that the teacher leaves an open space to the students in the way she is introducing the learning object, to create a commercial movie and the instructions for it. In the process of making the movie the students have freedom to shape their own group process, and learning path, which is found in the empirical material. Some groups spend more time interacting on how to handle the technology and other on searching for images and information depending on their intensions and how well they handle different features. But when it comes to the final product, the space commercial, there are many similarities in the outcome. Students in this study arrange the modes of representations in similar ways which is a part of our social –cultural heritage and also the acceptance for certain interpretative rules for what counts as a relevant representation in the context of a particular practice [8].

During the process they all handled the technology very well without any detailed instructions from the teacher. They scaffold each other and discussed how to handle their shared motives, the problems that they have to solve. As seen from the empirical material the division of labour, different roles, change when it comes to the use of new digital technology. Pupils learn from each other and the teacher is not necessarily the most competent participant in the classroom community. In the groups

there are also different roles depending on how experienced the group members were. Findings in this material show that the most experienced student of handling the technology started out the work but then in some groups gave access to the keyboard to less experienced members. In the excerpt 1 there is an example of how a more experienced student tries to help Anna, a less competent group member, when she did not manage to drag and drop images.

According to Vygotsky's idea about the zone of the proximal development, there is a distance what a learner can do alone and what he or she can accomplish in collaboration with more capable peers [4]. It is only possible to make changes if one has access to the keyboard. A study from Greiffenhagen and Watson [13] points out a conclusion about the limitations of possible actions when only one participant has the access to the mouse or the keyboard. They also points out a normative division of labour where typically one pupil has the control of the mouse in one phase of the task. It conforms to the findings in this study but it is also significant that in most groups the students were active by talking and pointing at the screen, although they did not have the control of the computer.

When collaborating a commercial movie the screen is an important mediating source for different modes such as; images, sounds and texts during the process. The students can support each other as scaffolds for learning by sharing the same view as they discuss the content during the process. As Jewitt [3] means there are different semiotic recourses for meaning making available within these new technical tools for learning.

The empirical material signifies that they work collectively, talk, act and point at the screen in order to solve the task and help each other. The discussion involves words and sentences closely connected to multimodal recourses. Language as a source for learning is here socially structured and distributed [7]. In this meaning every context has its own implication for learning and how the language is used is closed connected to the context. Expressions like: 'Click there', 'it is marked ' are context bound language closely connected to different modes and shaped by the students during their work. But also the discussion of the adjectives (excerpt 2) shows that situated verbal actions are very closely connected to the context.

Compared to teaching with non-technological tools, new digital technology opens up for a broader view of literacy as multimodal design, taking into account that language in a globalised society is more than reading and writing skills. Multimodality implies an approach that includes many modes involved in technology-mediated learning. Jewitt [3] means that all modes contribute to learning in a multimodal perspective. As we can see the affordances of these modes, both possibilities and limitations, and in the way students in relation to collaboration in groups use them the findings show impact on student learning during the process of making a commercial movie.

According to Kaptelinin and Nardi [14], there is a common understanding that affordances are the possibilities for action provided by the environment and for those they exist in relation to the capability of an actor. In this innovative classroom the task and student collaboration made it possible to use the affordances of different modes in order to create 'space commercials'.

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INCREASING AFFORDABILITY AND ACCESSIBILITY FOR INCLUSIVE LEARNING THROUGH THIRD GENERATION (3G) WIRELESS TECHNOLOGIES

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Abstract

In the recent past, significant advancements are witnessed in the field of wireless technologies. It enabled the users of internet to download the multimedia content at a speed of more than 2 Mbps (mega bits per second), at a very affordable cost. At the same time, emerging trends like "cloud computing" in information technology made it most attractive to use otherwise expensive software platforms for ICT (Information and Communications Technologies). The combined power of all these technologies will provide seamless scalability and reliability of Educational applications, thus overcoming the constraints for Life Long Learning (LLL).

The First Generation (1G) of wireless technologies, mainly, catered for the needs of voice services where as the Second Generation (2 G) started with digital content transportation but at low speeds. General Packet Radio Switching (G.P.R.S) and Enhanced Data Rates Evolution (E.D.G.E) made it possible to run any educational application at speeds of 128 Kbps (KiloBitsPerSecond) and 384 Kbps, respectively. It is the third generation (3 G) that made it possible to run the applications at incredible high bit rates at an affordable cost.

An attempt is made in this paper to discuss various technological approaches that how to use ICT in order to respond to the diversity of learners whose birth right is to have a quality education that meets basic learning needs and enriches lives. The ultimate goal of inclusive quality education is to end all forms of discrimination and foster social cohesion. Various technological evolutions, in a variety of fields should make the inclusive learning a happy experience for the vulnerable and marginalized groups.

Keywords: I.C.T (Information and Communications Technologies), L.L.L (Life Long Learning), G.P.R.S (General Packet Radio Switching), E.D.G.E (Enhanced Data Rates Evolution), Wireless Technologies.

Introduction

WiMAX (**World Wide Interoperability for Microwave Access**) is the next generation wireless technology which delivers data, video, voice and multi-media at a very low cost. It is designed to enable pervasive, high speed internet access to the widest array of devices including Notebook PCs, Handsets, Smart phones and consumer electronic devices such as gaming devices, cameras, camcorders, music players etc. Being the first all IP (Internet Protocol) network, it is going to be the best choice for mobile Internet solutions.

WiMAX is the natural choice at places where it is not feasible to use DSL (Digital Subscriber Line) or Cable Internet. A typical example is a **remote location where it is not economically feasible** to have DSL or Cable Internet. Compared to other technologies, WiMAX is more reliable due to its wireless nature of communication between the user and the base station. This particular feature is very useful in developing countries like INDIA where the reliability and quality of land-line infrastructure is often poor.

There are many instances, worldwide, where WiMAX technology came handy to assist the effected people in need, during Tsunamis and Hurricanes. The entire communication infrastructure at ACEH in INDONESIA was totally crippled because of a Tsunami in December 2004. The situation was so pathetic that the survivors were in a grip of fear without any food, water and medical assistance. Also, they were unable to communicate with people outside the disaster area and vice versa. At this stage, the Government of Indonesia triggered WiMAX into operation to effectively cope up with the situation by providing broadband access that helped to regenerate communications to and from ACEH. In another instance, WiMAX was used by INTEL to assist the FCC and FEMA, in their communications efforts in the area that was affected by Hurricane Katrina in U.S.A.

Various strengths of WiMAX technology could be harnessed for the benefit of Humanitarian Relief as well as for the Enrichment of the life-style of the unprivileged, marginalized, down trodden and remote people who are deprived of Learning and Life Long Learning.

The economic development of a community or society or an individual, mainly depends upon how best one can take advantage of the available technology. The astonishing developments in Information and communication technologies giving such wonderful opportunities to boost ones own economic conditions, especially to the poor through Life Long Learning(L.L.L).

Majority of the population in ALASKA live in subsistence life-style. For bringing transformation in their economic and social condition ICT along with WiMAX technology is adopted by using Polycom Video over INTERNET protocol [1]. The Polycom units work on real-time. To bring communications between sites, instructors and individuals along with various content resources use a visualiser to broadcast printed media and detailed analyses of exhibits. A smart board and smart board symposium are used to provide more interactive methods for information exchange. Emergency group services, Community health organization services, Community development services etc are made available to these unprivileged, remote people of ALASKA.

The third generation (3G) of wireless technologies, totally revamped the situation with its amazing power of speed, to handle the digital signals with high bit rates of the order of 2Mbp/s (Mega bits per second). This particular attribute/quality of the 3G wireless system enabled the users to make it as a natural choice for a variety of web-based applications to run with the concept of "any where, any time" of information flow.

In the recent past, there is a striking improvement in the wireless communication technologies making the users to have an affordable and reliable access to the INTERNET. Gone are the days, where the people are office- centric because of the nature of "fixed- wired network". The combined power of the wireless technologies and web applications like web 2.0, cloud computing and powerful protocols for reliable transportation of digital information set to transform the life-styles of the down trodden. Lot of research is going on, in the area of wireless technologies for transporting maximum amount of digital information in less time by using minimum amount of both power and spectrum. Bluetooth, Zigbee, G.S.M, C.D.M.A, WiMAX etc are some of the areas where the advancement is witnessed in multi-fold.

WiMAX: a boon to unprivileged, marginalized and remote people

WiMAX technology provides up to 70 Mbp/s (Mega Bits per Second) symmetric broadband speeds without the need of any cable. It is a technology based on IEEE envisaged standards enabling the delivery of last mile wireless broadband access as an alternative to conventional DSL (Digital Subscriber Line) and Cable Internet technologies.

WiMAX can provide Broadband Wireless Access (BWA) up to 50 K.M for fixed stations and a maximum of 15 K.M.s for mobile stations. In contrast, the Wi-Fi technology is limited to only 30 to 100 Meters. WiMAX operates on both licensed and non-licensed frequencies, providing a regulated environment and viable economic model for wireless carriers.

The bandwidth and range of WiMAX make it suitable for a variety of potential applications. Connecting Wi-Fi hot spots to the Internet, providing a wireless alternative to Cable and DSL for "last mile" broadband access, providing Data and Telecommunication services, providing portable connectivity are few examples of applications of WiMAX.

As narrowband voice communication system reaches the rural areas, the need for broadband Internet connectivity is the wanting requirement in villages with the transformation ability to leap forward and fuel economic growth. Such a growth is highly essential since millions of people live in these remote areas in a relatively deprived situation. Most of the people in these areas have seen very little benefits to them arising out of the recent worldwide economic growth. At the same time the reach of televisions in rural areas has enabled them to see the transformation that is taking place in various parts of the world. The urgent attention to rural growth is absolutely essential simply because a large number of people continue to live in inaccessible, remote and unprivileged areas. Such large number of people cannot be left behind. It is clear that transformation from narrowband to broadband depends on the penetration of Internet to the "last mile". Rural areas therefore need the broadband connections at the earliest. For narrowband users, the connectivity, speed, email service and customer support and service are significantly important whereas for broadband users speed, customer support and service are the two significant important factors to be kept in mind.

Why WiMAX?

WiMAX is a possible replacement candidate for cellular phone technologies such as GSM and CDMA. It can also be used as a layover to increase the efficiency and capacity. "Backhaul" for cellular networks is typically provided via Satellite or OFC (Optical Fiber Cable). Both developed and developing countries are considering WiMAX as a wireless "backhaul" technology for 2G, 3G and 4G networks because of its easy way of deployment.

Given the limited wired infrastructure in some developing countries, the cost to install a WiMAX station in conjunction with an existing cellular tower or even as a solitary hub are likely to be small in comparison to developing a "Wired" solution. Areas of low population density and flat terrain are more suited to WiMAX and its range. For those countries that have skipped "Wired" infrastructure as a result of prohibitive costs and unsympathetic geography, WiMAX can enhance wireless infrastructure in an inexpensive, decentralized, deployment-friendly and effective manner. Being an Internet-oriented system, WiMAX has been designed from the ground up to support strong Q.O.S (Quality of Service) and Security. That is why WiMAX is sometimes viewed as the technology that will make the current cellular networks obsolete. Once fully deployed, it will simply provide the roaming global Internet access that will bring VoIP (Voice over Internet Protocol) to the same corners of the earth that cellular towers have covered today and could spread that coverage even farther.

The topology of WiMAX is a very simpler and flatter one. Because it has been designed as a Data Network from the ground up, it has a much simpler network topology than cellular networks that have had to add extra layers to enable their technology to handle Data. WiMAX takes less equipment and less time to set up than traditional cellular infrastructure or wide-scale Wi-Fi.

As the architecture of WiMAX is very simpler, it takes lower Capital Expenditure (CAPEX) and lower Operating Expenditure (OPEX) to maintain them. Naturally, this can result in lower service costs for end users. The scaling for lower traffic may be slow but it quickly scales higher to meet large growth on demand.

Chip set makers like INTEL and SEQUENS have always thought of WiMAX as a mass market technology and so have architected WiMAX chip solutions aimed at large production and low cost. This has resulted in inexpensive network interface devices such as WiMAX Modems and P.C Cards, but more important, making it easier for computer and consumer electronics makers to soon embed WiMAX chips into a lot of different kinds of devices. Cellular technologies such as HSPA (High Speed Packet Access) simply will not be able to match that scale for one simple reason that SIM (Subscriber Identity Module) cards which connect the users to the cellular network are more expensive than WiMAX chips. It is not that easy to deploy and manage these SIM cards. In the place of SIM cards, WiMAX uses software encryption modules that are much more configurable, flexible and scalable.[2]

While 3G cellular advocates and demonstrates HSPA bandwidth speeds that are equivalent to WiMAX, which does not necessarily mean that the performance is the same. Because WiMAX is basically IP-based at the core and has a much simpler topology, it should have better spectral efficiency and lower latency than cellular networks. Spectral efficiency is a measure of the amount Data that can be transmitted over a certain amount of bandwidth. In essence, "Efficiency" is the true performance of a network for which WiMAX is the winner.

During the recent International game meet organized by Singapore, CLOUD COMPUTING and WiMAX were used to cut short the expenditure, drastically. Cloud computing is an area of computing where IT scalable capacity is provided in the form of services delivered via INTERNET. The users can use cloud computing depending on the type of service may be it is an Infrastructure service or Platform service or Software service.

Conclusion

Now a days, students at colleges use tools derived from ICT (like Blogs, Wikis and Micro-blogs) to pass on their knowledge in an electronic form. Such information flow will not only promote quality but also creativity. The quality of a student is naturally enhanced when they discover that it will be viewed not only by their professor but also by their class-mates and potentially by the whole world. WiMAX came as a natural choice for uploading the multi-media content at a nominal cost and high speed.

Rapid advancements in Wireless Technologies made it possible to bring a noticeable change in the economic and social conditions of the remote, unprivileged, marginalized sections of the society through various types of learning. Lot of research is going on in both Information and Communication Technologies for opening new horizons in the economics of the poor. Deep penetration of

technologies like WiMAX will not only help for ensuring timely Humanitarian Relief to the effected but also aid to change the Life-style of the poor.

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Chapter 9

Pedagogical innovation (Workshop 6)

EXISTING AND FUTURE ROLES OF NEW MEDIA IN PROFESSIONAL TRAINING

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Abstract

New technologies give us new setting and opportunities for the future society, which is often viewed not only as a 'knowledge society' but also as a 'participatory society'. It means that knowledge, even informal knowledge, is acquired through "participatory technologies", such as mobile devices and Web 2.0 tools which allow for development of social relationships and communities.

The usage of 'participatory technologies' is also the main feature of innovative e-learning practices which differ from traditional learning in classes in integrating collaborative, cognitive and emotional components with contextualising and individualizing learning content in order to facilitate personal learning strategies.

The purpose of my presentation consist in depicting selected innovative e-learning practices identified in the framework of E-ruralnet project. On the basis of empirical surveys conducted in hundreds of European e-learning providers, I will present some of 'best practice examples' of innovative e-learning. Taking it as a starting point I will try to recognize some existing and future roles of new media and technologies in professional training of adult learners.

Nowadays the Internet and mobile electronic devices constitute an important part of our everyday life, in particular of communication practices. Contacts established via the new media, virtualised and represented by avatars, are routine and natural; therefore, the choice of a partner in communication is not limited to the immediate environment. Thanks to electronic media and information highways, we are able to communicate with anyone who is connected to the Internet; in this way our idea of space is reconceptualised. Originating in the industrialised society, the traditional understanding of space is outdated, since it can no longer be confined to its physical properties and to a particular place. In the times of the Internet and new media, this traditional model of defining space is substituted with a space of communication, aptly named "a space of flows" by a contemporary theoretician of social transformations Manuel Castells. We can observe the results of this change and experience being in a space that is not a particular place but an unlimited, open, referential and inclusive virtual universe, wherein "people locate their information, knowledge, culture, emotion resources and use those created by others" (Krzysztofek 2010: 100). At the same time, the humankind has a chance for a democratic redistribution of knowledge and information via the computers connected by the worldwide net, creating the space of flows. According to a Polish new media scholar Kazimierz Krzysztofek: "the technology that we already have makes almost all of human knowledge accessible to anyone in such a way that it is accessible wherever and whenever" (2010: 100).

Moreover, new technologies allow us to use the knowledge they make accessible as prosumers⁹⁷, which, in turn, develops social networking and undermines the division into the real and the virtual. More and more people, especially in the technologically advanced parts of the world, live in "augmented reality", a fusion and a synergistic link between the material (physical) and the symbolic (virtual) world. This tendency is further emphasised by a spectacular popularity of the Internet in the form of a collaborative worldwide web (Web 2.0). There are also attempts at creating a new semantic web (Web 3.0); although criticised, it is often praised as a probable direction of web development in the age of information overload.

⁹⁷ Prosumer is a term developed by Alvin Toffler, the American sociologist and futurologist, to denote the conflation of the consumer and the producer roles.

The boom in electronics, computers, the Internet and information culture has an influence on our educational practice, which was predicted as early as 1970 by Alvin Toffler. In *Future Shock*, he wrote that “we can assume that in thirty-years time the United States of America and few other countries of Western Europe will reject the pedagogy based on the mass production model and will enter a stage of diversification, owing to a liberatory potential of new machines. The society is moving away from standardisation not only in the domain of production, but also in the domain of education” (Toffler 2007: 235). From our point of view, he was mistaken in taking for granted that only the USA and some European countries will be interested in ICT learning, failing to mention other countries and continents. Wide interest in ICT learning can be illustrated by the 7th conference “E-learning Africa”, an international event devoted to the role of information and communication technologies (ICT) for development as well as ICT in education and professional development.

By announcing the liberation of education from the burden of discipline, centralisation, collectivism and authoritarianism, that is “long hours of sitting in a closed classroom” (see 2007: 235), Toffler asked an important question that has not yet been sufficiently answered. He wrote that “the basic organizational structure of modern schools is reminiscent of a factory. For generations, we have not given consideration to the belief that the best educational system is irrevocably connected with school. If the new education system is supposed to imitate the society of tomorrow, should learning take place at school?” (Toffler 2007: 350) Any innovative approach to education defies such assumptions. Even if the role of school is not challenged, educational innovators are of the opinion that in the contemporary world there is “no closed repertoire of institutional solutions that can be accessed in response to structural problems in a society or with social systems” (Hausner 2010: 8), where the traditionally understood school is only a part of a social education system. This view has far-reaching consequences for the organisation of lifelong learning and, in particular, professional development. This constant revision has long ceased to be a recommendation and became a necessary requirement in the complicated, chimeric and continuously self-restructuring contemporary world.

The number of professionals following a well-defined and stable career path steadily decreases. We are often forced to comply with the logic of job market, favouring so-called “portfolio workers”, that is professionals who move from one task or project to another; they create a web of experiences, contracts and skills (Barney 2008: 117-118). Typically, they have a good knowledge of new information communication technologies and are able to acquire information from electronic resources and communicate instantaneously. In other words, they need new civilisational competences, a basic requirement for workers living in the space of flows.

The shifts in career patterns require a new lifelong learning and professional education system, a system that will encourage delegating and bearing responsibility for one’s career. The new media are its integral part as they promote mobility, understood as the ability to gain knowledge from any field, anywhere and at any time.

Those features are constitutive for modern innovative e-learning; nevertheless, they also include interaction, cooperation, contextualisation and individualisation. The first two terms on this list are justified by the fact that “according to recent estimates, there is more content created via social networks than there is by institutional, public, private and professional internet users (Krzysztofek 2010: 104). The creators of innovative education models, such as e-learning, are not indifferent to such changes. From the point of view of e-learning practice, learning is not a simple act of knowledge acquisition but an integral part of our lives, supporting multi-faceted self-realisation. A learner, particularly an adult learner, is not an empty cup for a teacher to pour knowledge into but an active subject, a participant and a creator in the learning process. Learners are able to organise their learning in line with their needs and preferred learning strategies, including horizontal relations with others in the learning group.

This model of education allows for achieving competences required for survival on the job market, incorporating, apart from specialised knowledge, so-called soft skills. These include communication, decision making, risk assessment, task delegation and group work.

One inspiring example of using ICT in distance learning for professional development is a 3-D simulator of training in occupational risk prevention in the aggregate manufacturing sector and in the field of concrete production⁹⁸ that can be found in the e-ruralnet e-learning research base. The training is based on a 3D simulator (game based training) that introduces the student, as a character, to an aggregate or concrete factory. The objective of the training is development of skills in the field of

⁹⁸ Library of best practice examples e-ruralnet, <http://www.prismanet.gr/eruralnet/en/library.php>, DOA 28.11.2011

occupational risk prevention, thus decreasing the accident frequency in these work places. The student has to solve a range of problems and situations, each of these offers learning in different content related to occupational risk prevention and has to complete evaluations across 3 levels related to different workplaces in the factory in order to satisfactorily complete the course. The simulator was designed to enable access by those people who do not have a high Information and Communication Technologies (ITC) knowledge. It doesn't require internet access; the game can be delivered in a CD or USB. These products were distributed free of charge, thus providing access to all people who were interested.

Yet another interesting example of adult e-learning in professional development is a consulting platform for future German businessmen, known as „Start-up workshop Germany”, an “Information, Qualification and Consulting platform” for the founders of new businesses and young entrepreneurs⁹⁹. The “Start-up workshop Germany” was created in 2006 through a project implemented in cooperation with the Chamber of Industry and Trade in Hamburg and co-financed by the European Social Fund (ESF). Since 2009, this start-up workshop has been extended throughout Germany on a step-by-step basis. The project mainly addresses new entrepreneur start-ups but the portal is freely available for everyone.

The aim is to support business start-ups planning and implementing their start-up idea and young entrepreneurs during the period following the business start with an online-based knowledge management system. A set of business management tools, appropriate to the user group, is created and supported by a range of free services, including information, consultancy and other support tools, and provided through the internet-based platform. The service focuses on knowledge transfer related to successful business plan elaboration for the founders of new businesses, based on a blended-learning concept which is characterized by internet-based e-learning, optionally accompanied by online tutoring and complemented by personal consultancy. Since the target group is large and heterogeneous, the related learning units are more tailored to the general public. The e-learning course comprises of 13 learning units and delivers start-up training at a basic level focusing on the 20 most important questions related to this topic including business management and legal skills. Prior to or parallel to this, guidelines are provided to the participants. Personal advisors or online tutors are at their disposal for individual and more specific questions. They are the start-up advisors of the Chambers that answer immediately to the participants' questions or forward specific questions to competent third institutions, if appropriate.

Users may make use of interfaces to form servers and additional software tools, such as “Miniplan”, a financial planning tool related to business plan elaboration. The system has been designed to be particularly user-friendly – and only requires a familiarity with using browsers and the Internet to be able to work with it. For the time being, a distinction between a Germany-wide and a regional platform has to be drawn. The Germany-wide platform provides only a basic solution with reduced features, while the regional platform, currently supported by 25 Chambers of Industry and Commerce and Chambers of Trade from 23 German regions is characterised by additional online tutoring provided at the regional level. Participants are allocated to a personal tutor who will support them online throughout the entire process via email or telephone. In addition, the “regional” web portal has been filled with regional content. Innovative elements are a combination of e-learning and business start-up advisory services plus handling and implementation which are mainly oriented to the business starter's and user's needs. It aims to stimulate a learning process which is not a shelf-learning but a problem-oriented learning one, thus, motivating the user to continue. Due to the modular structure of the single learning units, users can select those topics which are relevant for their needs. In the event that a problem might occur during the business plan elaboration, users can select e-learning units directly related to this problem, i.e. start a “learning on the problem” process. This will stimulate them to use again the e-learning units and, thus, to work on their business plan steadily. Therefore, the learner is not obliged to work through all learning units to reach his/her aim. They can elaborate the business plan with the help of a business planning tool and thus acquire the necessary know-how via the e-learning units. All activities in the system are initiated by the user, who has the data sovereignty, they are thus able to decide who gets access to which parts of their data since these may be sensitive and confidential areas.

Another interesting example of using ICT for learning is lmr@web learning community¹⁰⁰. This example is taken from Italy and illustrates how generate learning and knowledge while motivated in sharing interests, knowledge and capabilities and in problem solving. The innovative aspects of

⁹⁹ Library of best practice examples e-ruralnet, <http://www.prismanet.gr/eruralnet/en/library.php>, DOA 28.10.2011

¹⁰⁰ Library of best practice examples e-ruralnet, <http://www.prismanet.gr/eruralnet/en/library.php>, DOA 28.11.2011

Imr@web learning community is the creation of a community of local entrepreneurs, farmers, local authorities and organizations thanks to their will to share, communicate and interact.

By looking at contemporary civilisational transformations, briefly described in the previous parts of my speech and followed by a best practice example of e-learning use for adult learners, I wish to create a preliminary definition of existing and future roles of new media in professional development.

It is well-worth noting that authors of educational solutions based on new media give attention to the social dimension of learning, even while teaching technical skills.

E-learning, in its contemporary and innovative incarnation, supports constructivist-cognitivist and not behavioral methods. It is not only a tool for developing hard, testable skills, but also intuitive learning, emotional intelligence and imagination. It is a psychological training by maximal approximation of students' cognitive processes to a real life situation. Through the use of game and simulations, students are able to understand their choices and reactions in different situations, both on the emotional and the intellectual level. It is aimed to challenge stereotypes and personal limitations in order to develop soft skills that are simply easier to transfer than the traditional competences; thus, preparing the adult students for a continually changing work environment.

In conclusion, new information technologies in professional development of adult learners are employed to encourage their use of among adults who grew up in industrial societies and need to learn about the logic, tools and techniques of functioning in networked societies, structured by the space of flows.

In the future new media in professional development will perform other additional functions. First of all, they will integrate work and study time, and their use in multifunctional courses, developing both soft and hard skills, will result in integrating e-learning solutions in a continuous process of requalification. It is probable that along with the development of cheap e-learning platforms, offering tools for study, communication and work, new information communication technologies will cease to be complementary in the learning process and will become "devices", capable of organizing tasks and evaluating employees in a given company.

The predicted changes are connected with the emphasis e-learning services providers place on economizing proposed solutions and increasing their availability, with regard to price and skills required to use them. The use of technologies is becoming increasingly intuitive and many courses are designed to be accessible for computer beginners, which is illustrated by the examples quoted from the e-ruralnet library of innovative practices. This also indicates that e-learning services providers are potentially interested in other customers than large and wealthy companies and their well-educated, computer-literate employees. It seems that e-learning courses for professional development will also be designed with other customers in mind (e.g. small and medium enterprises), while new media will be incorporated into marketing trading mechanisms, leading to the inversion of the consumer and the provider roles. Before the customers had to acquire the necessary skills to use new technologies and discover their advantages themselves. In the new marketing model, the providers will persuade the indecisive ones to open up new perspectives by means of new technologies and will design their products with regard to needs research and potential use among sceptics.

Therefore, it can be said that it is probable to have an increase in free solutions and intersector undertakings (like a start-up workshop in Germany or Imr@web learning community), and e-learning itself will be oriented towards institutionalization and authorization. It will increase the recognizability of distance learning certificates and the popularity of the idea that will be developed towards new methods, customers, course targets and internet education projects (like the Imr@web learning community). The projects will develop learning through networks and finding Internet resources, while also giving attention to new media as tools for selection, search and use of relevant information in line with individual views and needs.

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PROFICIENCY IN ENGLISH L2 AND CULTURAL KNOWLEDGE: SOME REFLECTIONS ON THE USE OF A WORKSPACE TO IMPROVE MOTIVATION AND COMPETENCE IN ADULT LEARNERS

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Abstract

This contribution will describe the results of the two-year European project *Literalia*. *LITERALIA (Learning In Tandem to Encourage Reciprocal Autonomous Learning In Adults)*, was born within the European Union's Grundtvig initiative to promote adult lifelong learning in Europe. It involved four institutions of four European countries and consisted in the creation of a workspace and a chat room where the learners of the different countries involved could virtually meet and communicate, improving their linguistic and cultural competence in a foreign language. Transnational meetings, where tandem partners could meet and talk face-to-face, were also planned and were of fundamental importance for the success of the project. The project offers an insight on interpersonal cooperation as a mean both to improve the competence in an L2, by using media and strategies which diminish stress and embarrassment and favor the use of a contextualised language, and to avoid the exclusion from education due to distance and social disadvantage.

Keywords: Computer-Mediated Communication, Language Learning, Lifelong Learning, Motivation, Tandem Learning

Introduction

It's a long time since the European Council has stressed the importance of lifelong learning for personal development. Lifelong learning is seen as a medium to increase the possibility of employment, to improve the quality of life and to favour the integration of citizens within the European community. However, either the distance from education centres or the economic disadvantage of some rural areas are formidable obstacles to access learning experience. Nonetheless, the disadvantage of living in such areas can be overcome by the use of multimedia computing and the internet, which have become great support in every didactic activity.

This paper deals with second language (L2) learning in multimedia environment and describes a project where the majority of didactic activities are performed through the internet. More specifically, it concerns virtual tandem learning in Europe as a way to improve proficiency in English and develop the learner's intercultural knowledge.

The internet and its various facilities allow the language learners to experience authentic language and take advantage of numerous communication opportunities [1, 2], even in absence of face-to-face interaction.

Since their introduction, multimedia have been used in language laboratories in agreement with the current methodology of language teaching [3], from the audio-lingual method and the drill-and-practice of the 60s, to the communicative CALL (Computer-Assisted Language Learning) of the 70s, to the more recent CMC (Computer-Mediated Communication). These approaches to language learning have slowly favoured the passage from the explicit teaching of grammar to the development of communication practices. The most recent didactic methods, in fact, mainly focus on the oral performance, whose enhancement requires authentic language and tools apt to improve the quality of oral skills, such as paced reading, text reconstruction and language games. All of these activities, which have the objective to encourage the learners to use the L2, have been further developed with the advent of the Internet. The possibilities offered by the net have favoured the creation of more authentic learning settings that combine speaking and seeing images and people in real time, like in the real world. By virtue of the numerous facilities of the internet, such as video, graphics, animation, platforms for chatting, forums, and blogs, reading, writing, speaking and listening can be practiced simultaneously. With such an approach, students assume a greater control over their learning process and decide autonomously their pace, their own individual path, the content and the amount of time to devote to language learning [3].

One of the greatest advantages of on-line communication is that it can be engaged with either one or more native speakers or other learners of the same L2. Thus, the speaking activity has the features of real interaction where the speakers can develop their preferred topics. This results in conversation settings which are better than all oral practice simulations ever conceived by the different teaching methodologies. With the CMC, in fact, learners can develop their ability to communicate and to solve problems related both to the language use and to the negotiation of meaning [4]. However, one of the greatest disadvantages may be that, sometimes, the absence of reliable facilities for audio and video conferences causes the development of the written more than the oral mode, which thus assumes a central role in language training [5]. Nonetheless, due to the proximity of the language used in mail, blogs and forums to the oral informal language [6; 5], these written texts can still be considered a valuable tool to prepare learners for a natural and spontaneous interaction in L2.

The need to develop communicative skills in adult learners gave the idea for Litalia, a project in which the well-known tandem partnership practice was adapted to be performed on-line within a net of European institutions.

This paper, then, will describe the project and emphasise its importance as a means to teach languages to adult students, highlighting how the activities proposed were able to promote the development of competence in L2 by encouraging independent learning and, consequently, motivating the learners.

The Litalia Project

Litalia was one of the Grundtvig projects of the European Council concerning adult lifelong education. The beginning of the project dated back to September 2004, when the Volkshochschule Ostkreis Hannover, the Bildungszentrum Wolfsburg GmbH in Germany and the Department of Languages at the Open University in the United Kingdom started a cooperation in the field of tandem learning. Two years later, in 2006, the project was extended to Italian and Polish partners. In Italy, the partner school which participated in the project was the Centro Territoriale Permanente per l'Educazione degli Adulti of Pontedera-Pisa, and, in Poland, the Wyższa Szkoła Bankowości i Finansów w Bielsku-Białej.

The four institutions' representatives met to make an agreement on the aims and objectives of the partnership and to design an activity plan for the two-year duration of the project, which started in 2006.

The principal aim of the project was to promote the learning of non-native languages among adults, either post-graduate students or workers and retired people. With this objective in mind, the partner institutions cooperated in promoting the creation of an international community of language learners which, in absence of face-to-face contacts, could communicate on-line in tandem-partnerships. This form of cooperation has always been considered a good medium to improve language competence, because it enables learners to gain the most useful strategies for independent learning by performing a pleasant activity [7, 8]. In Litalia project, tandem-partnership enhanced the interpersonal dimension, and helped mature learners to gain confidence in themselves by widening their knowledge of cultural differences in Europe and by entering new friendships across borders. The partners were encouraged to cooperate with native speakers of the target language by exchanging e-mails and using the chat-line. These tools helped them to develop linguistic abilities and, at the same time, their intercultural knowledge, without the stress of formal frontal lessons in classroom, where there is a higher level of anxiety caused by the fear of being judged and evaluated by the teacher. Adult learners, in fact, are thought to be psychologically vulnerable whenever they have to take the risk of using a new language [9, 10]. For this reason, the participation in a programme where they could experience a friendly and supportive atmosphere was fundamental and extremely effective.

The Litalia website worked on a Moodle platform. Moodle is apt to organise on-line courses and all forms of on-line communication, offers various interaction possibilities and, thanks to its modularity, opens new avenues for development. It allows the creation and organisation of on-line courses and lessons and offers instruments for the community, such as forums, blogs, wikis, and chatrooms. It also supports multilingual texts and numerous graphic designs, resulting in an extremely ductile instrument for the teacher and the learner.

The language learners who had enrolled in the four schools were asked to sign a contract to commit themselves to exchanging at least four e-mails a month with the foreign tandem partners for a three-month period. The contract allowed them to use all the tools for synchronous and asynchronous communication available in the Litalia workspace. By signing the contract, the participants also

gained access to the school laboratory and to free tutorial assistance. The main activity to practice synchronous communication was the chat line, by which the learners could simulate a real communicative context interacting with one another in real time. In fact, the chat sessions allowed the tandem partners to practice their L2 in a faster mode than email exchanges and to simulate face-to-face contacts with a quick, fluent and continuous conversation. Actually, the interaction by means of the chat does not give space for revising the texts being the reaction-time to messages limited. On the contrary, e-mails, being a form of asynchronous communication, give the learners enough time to reflect on the grammatical accuracy and to structure the content.

The learners had the possibility to experience these two modalities and exchanged messages on various topics, according to their proficiency level and interests. The texts ranged from the most elementary, such as "introduce yourself", to the most advanced ones, which concerned the politics, the jobs, the health system and the literature of the learners' countries.

In addition, there were four forums to be used by organisers and learners to hold discussions, to post texts on various topics, to attach pictures, files, either in word or pdf format [11, 5]. Actually, only two of the forums were used: the *social* and the *learners'* forum. The former was only used once for an inquiry about a face-to-face meeting, while the latter became the unique place for discussions over the duration of the project [5]. The students were initially given materials, designed to explore cross-cultural issues as a motivator for communication. The materials were thought to explore familiar topics and were purposefully oriented to raising socio-linguistic and cultural awareness. However, learners did not show to appreciate some of the suggested topics and the project teachers abandoned them, leaving the students to select their own subjects autonomously. Data show that the frequency of responses increased in proximity of the transnational face-to-face meetings [5], which flanked on-line activities.

As additional instruments, two wikis were set up by the course writers, one for frequently asked questions and the other, which was used more frequently, for intercultural topics. The aim of the latter was to create entries which emphasised the cultural differences among the four countries involved in the project and gave the learners the chance of cooperating in the educative process more actively. In fact, the creation and control of hypertextual pages in a wiki were left to the learners, who changed, cancelled, or rather added content to an original text. These activities permitted them to work in close cooperation with other individuals of the peer group and to create an international community of learners. The combination of the multi-faceted learning activities proposed by the project found their best application in the possibilities of interaction that the tandem partners engaged during the course of the three-month period, either through the internet or during the four planned transnational meetings, where they could personally meet and engage face-to-face exchanges.

Impact of Motivation in Lifelong Learning

Motivation is a central issue in any learning activity, and it has been recognised relevant in L2 learning since there is no natural need to know other idioms besides the native language for survival in the home country [12; 13]. Therefore, the need for L2 learning arises from an urge, a wish, a preceding event or rather a response to an external stimulus. As emphasised by Gardner [12], motivation in second language acquisition is more than simply wanting to learn it. From the observation of motivated learners, it has emerged that they have high expectations for life and are ready to expend efforts, are attentive, self-determined and goal-directed. These aspects characterise what in sociological terms is defined as an intrinsic motivation type, which is connected to the internal needs of the individuals to fulfil their ambitions, develop their interests or extend their education. Of course, besides these aspirations, L2 learning is also sometimes associated with extrinsic goals, such as finding a (better) job and travelling, namely with an instrumental motivation type. It is obvious that the reasons for learning another language vary greatly and depend on the learners' age, education level and socio-economic background, as well as their living environment [12]. The majority of the participants in Literalia were observed to be driven by an intrinsic motivation type since the project was a lifelong learning activity mainly attended by adult people already graduated and employed. They started the programme because they wanted to engage new friendships and to be mentally active, with only some of them needing an L2 to travel and to find a better job.

The type of motivation influences the participation in learning activities and, together with affective variables, play an important role in the attendance at courses. It has been observed, in fact, that a lower level of anxiety and a positive attitude towards the L2 community are strictly connected to better proficiency levels, together with the use of enjoyable activities that satisfy the innate needs for competence and self-determination [14]. Also neurological studies suggest that pleasure is central in

successful learning activities, as it results from goal-directed behaviours that obtain a positive response. The pleasant external stimuli diminish negative feelings and activate the circuits of reward involved in learning. For this reason, it is utterly important to create this cause-effect circuit in any teaching environment, especially when learning can be endangered by a lack of any natural need or urge as in L2 formal teaching environments [13]. All the activities that give pleasure and excitement, that are associated with exploring new ideas and developing knowledge help to improve autonomy, self-determination and self-perception of competence. They are connected to the sensations emanated from the effort in accomplishing and in performing a task that characterise successful learning. On the contrary, the lack of motivation associated with low perception of competence and freedom of choice usually ends in failure [14].

Moreover, the open-mindedness to other cultures and the favourable attitude towards the language to be learned seem to play a fundamental role in the mastery of L2 [15]. A language is better learned when a learner sees strong values in being able to communicate with native speakers, when there are not other methods for communicating with the natives, and when he is encouraged by L2 speakers to speak the language. Similarly, one of the conditions for learning a second language is for Spolsky [16] the need to distinguish between knowledge and use, and to reach various degrees of knowledge with the aim of communicating with native speakers. Multicultural groups and the *many speakers* condition, i.e. when lots of speakers are fluent and native, foster L2 use, and provide the learners with a good motivation to learn.

Literalia workspace was planned to be a motivating environment for communication where the many speakers condition was satisfied and the L2 was the only means of communication. Moreover, the tandem partnership offered the chance to make new friendships, which positively oriented the attitude towards the target language and the target language community. These connections were further strengthened by meetings, where the tandem partners could meet personally.

Moreover, the learners worked in a friendly environment and in a relaxed atmosphere, because they could choose to stay at home or in the school laboratories and send messages, chat or write in the forums whenever they liked, without time restrictions. The activities strictly adhered to their interests, such that, whenever they did not like them, they were let free to abandon them [5]. In addition, internet communication modalities reduced the feelings of anxiety and permitted to save one's face in case of errors, therefore the learners could dare and interact more freely, without any fear of judgement. One important aspect was the role of the tutors who only acted as facilitators and did not evaluate the learners' performances. Only errors that endangered comprehension were corrected by the tandem partners in a continuous exchange of roles between teacher and learner, thus minimising the negative impact of correction on the learners' self-esteem.

Some Data

The data, which come from the answers of the end-project questionnaire, are informative of the feelings of the learners and their consciousness regarding their proficiency level. The answers are a key to understand how autonomous learning supported language learning [17; 11].

Overall 232 users were registered on the workspace, 25 of them were trainers, organisers or teachers. Among the participants 137 were German, 48 Italian, 29 English, and 18 Polish. Among the Italian learners, only 26 accepted to work in tandem partnerships. The Italian partners usually sent from 1 to 10 mails during the three-month period of the contract, at a frequency of 1 or 2 mails per week, thus meeting the demands of the contract.

Only 29 *Literalians* acceded the chat line, 12 from German, 9 from Italy, 6 from the United Kingdom and 2 from Poland. Although a few *Literalians* used the chat, they did it with constancy, as shown by the 140 chat sessions that took place in the workspace, especially in the learners' chatroom [16]. From the small number of students who participated in the chat, one might think that learners did not consider it important. However chatting was believed useful by the majority of the students that performed the activity (useful and very useful for 22 of 26 learners). In general, all the project initiatives were considered useful and very useful by the greatest part of the learners and email exchange, more than anything else, was believed to be a very useful practice. Actually, the tandem partnership activated were all successful, possibly because email exchange could be organised autonomously by the learners either with respect to time, to topics or to their proficiency level. Being an asynchronous way of communicating, email exchange gives time to reflect on forms, to search for the right word and to follow one's rhythm. In general, the self-evaluation of the competence reached in L2 was positive, with 13 people believing that Literalia improved their proficiency and 12 that it greatly improved it.

Finally, the satisfaction of the participants and the most encouraging data come from the answers relative to the motivation and self-esteem. With the exception of two learners, 24 participants declared that they felt motivated and 25 Literalians of 26 felt that they increased their self-esteem. This unequivocally witnesses the appreciation of the proposed activities and their success in promoting L2 learning, also considering that none of the Literalians abandoned the project.

Conclusions

Literalia project represented an alternative method for teaching languages to adult learners that combined the advantages of communicative methods with various computer facilities, using a Moodle platform. It offered the students to practice the L2 in an intercultural context, where they could direct the goals of their learning activity.

The objective of Literalia was to encourage adults to learn foreign languages and develop their intercultural knowledge. In order to reach these objectives, various activities were planned to involve all the students: email exchanges between tandem partners, chat sessions, forums, blogs and four transnational face-to-face meetings.

Every activity was planned with the aim of creating an intercultural community of learners through which they could overcome problems linked to personality, age, attitude towards the L2 and the L2 speaking communities. *Literalians* formed a group, despite their different nationalities, and communicated directly with foreign peers using meaningful and authentic language and developing their communicative competence in a relaxed atmosphere, free of anxiety and embarrassment.

The learners found the main resources for their language improvement in their foreign peers. The tandem partners were at the same time learners and teachers, in a continuous exchange of roles that maintained an equilibrium in the pair. For this reason, they could save face even in case of miscommunication or errors, which did not create embarrassment or a feeling of defeat.

Such a context was highly motivating, both because it caused goal-directed behaviours and because it engendered positive emotions derived from the success in the negotiation of meaning with native speakers. The end-project questionnaire confirmed that the students felt motivated and thought that the activities on-line were useful or very useful to improve their competence in L2. However, although chat sessions and emails can be considered a modality between oral and written language, Literalia mainly developed the written modality. The use of webcams and additional resources for financing face-to-face meetings would help to improve oral communication and to strengthen the contact among the learners.

Projects of this type can be developed in addition to "classic" language courses as well as in rural and poor areas because they enhance the use of a contextualised L2 as a means of communication and create learning conditions similar to the L1 environment.

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EDUCATION AND LEARNING IN HIGHER EDUCATION IN PORTUGAL: EVALUATION OF THE SELF CONCEPT OF COMPETENCE IN ONLINE ENVIRONMENTS

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Abstract

Studies focused on learning experiences have clarified the concept of education in higher education, particularly in Portugal, but few have elucidated about virtual environments on academic achievement and feelings of competence of students as they learn. On the assumption that academic success is influenced not only by the power of learning but also the way students perceive themselves, and that these factors predict their subsequent success, we've relied on national studies concerning self-concept of competence of students. The main issue was to situate the self-concept of competence of university students into new virtual learning environments through online methods of teaching. This research involved 278 higher education students enrolled in classes for courses in Social Sciences which was introduced a novel approach, with education mediated by web tools, and then appraised on their perception and self-concept of competence. We rely on the Self-Concept of Competence Scale [1, 2], having adapted all 31 items to online environments. The main findings indicate that the students had high perceptions of their self-concept level of competence. The results suggest therefore that the application of online pedagogical models [3], may have a very positive impact on self-concept of competence of students in higher education, even in social dimensions.

Keywords: E-moderating; Problem-based-Learning; Self-concept of competence; Virtual learning environment.

Introduction

The Higher Education institutions in Portugal, today, face unique challenges. Aware of the need for change, in general, these institutions have been introducing reform initiatives, covering in their strategic plans new frameworks of operation, in which *e-learning* and/or *b-learning* has its place. However, many teachers have resisted these arrangements, because they suspect that this imposes an impoverished learning experience, based only on the distribution of contents via a learning platform, and offering little diversity in terms of teaching-learning experience. To overcome these biases, it is necessary to use models that incorporate processes of deconstruction that promote "true" collaborative and constructivist learning environments.

In addition to this, to make changes in this sense also requires a reconstruction of the teaching profession and a comprehensible set of teaching, mentoring and monitored training. The innovation will allow co-participation on issues of pedagogy, developing what in Anglo-Saxon literature has shown great impact and is called *scholarship of teaching and learning* [4], or "learning communities" [5, 6]. It is, therefore, important that all actors involved in higher education master skills such as team work, resource management, and maintain an open dialogue about quality, at the expense of individualism, and privilege of a culture of collegiality and mutual help in the resolution of educational problems. In fact, from the scientific study of problem solving problems we know that a similar process occurs within a problem space, with an initial and a final state, rules, restrictions and legal operators [7]. Hence, any theory on human action should explain, along with the effective accomplishments, the predictable variations [8, 9, 10]. In other words, the trajectories of competence development rather than global changes, point to specification, to differentiated domains [11], or spheres of expertise [12], involving essential elements, its own operations, specific knowledge and inherent beliefs. Although the processes underlying learning and development provide a general route, its recursiveness throughout the experiences of the individual will come to manifest itself in the construction of its current skills, in specific areas [13]. The fact that development is dynamic and co-participated by the different systems and sub-systems implies positing procedures for self-regulated variation and selection, themselves subject to variations and selections – which explains the tendency to *learning to learn*. The analysis of heuristics may be instructive on how the subjects identify and solve problems [14, 7], but the study of

restrictions to the development of heuristics can clarify how the subjects construct and apply them to different areas of knowledge, and are reorganized internally [13],

By this we mean that while the competences adjusted to new learning environments and activated from new formats of content presentation, whether as problems that students must solve or scenarios they must analyze, for the purpose of pragmatic use of information, incentives to new research and self-regulated epistemic growth to consolidate knowledge are now beginning to surface in academic pathways of students and their teachers and tutors. We have reasons to believe that its re-edited construction to address new problems or scenarios within a prescriptive model will tend to generalize to the practices of teaching, learning and research. Thus, these competences, that we dare call info-cognitive and social, will enable new forms of management and organization of knowledge and its application. In this sense, we have witnessed in recent years the emergence of various models of learning in virtual environments related to the development of communities of practice and learning and to problem solving [15], that have sought to address these concerns and have allowed a reflection on the “new” functions that teachers and students are called to perform in new learning environments. Among the existing models, we highlight the models of research communities [16, 17], of e-moderation [3], related to the development of learning communities and the learning processes within these communities, and the learning models involving the solution of problems as envisaged by Jonassen [18], called CLE- *Constructivist Learning Environments* and the model *Multiple Perspectives to Structure Learning Objects* [19],

The study now presented is therefore designed to better understand the operability of some of these *blended learning* models, analyzing the impact of new learning scenarios, and of these models in students’ perception of competence, in particular with regard to self-sufficiency, responsibility, self-direction and self-regulation, confidence in its own competences, ability to solve problems, problematisation, planning and decision making, in applying knowledge to practical situations, to invest and motivate to learn, as well as to explore and deepen learning, reflected in improved outcomes.

The self-concept of learning competence under analysis is a predictive variable of the academic relationship, and refers to the perception of oneself in the ability to deal effectively with the environment, enjoy successes and deal properly with failures, triggering cognitive and affective mechanisms that promote persistence, effort and the active search for challenges to achieve objectives focused on learning. The high concept of competence is associated with objectives focused on results, and with a low concept of competence, vulnerability to failure and dropout achievement patterns [20]. Although cognitive skills are considered most representative of competence [21, 22, 23], like Faria and collaborators [24, 2], we define self-concept of competence as a set of perceptions of personal competence in the cognitive, social and creativity areas.

Methodology

The participants in this study were undergraduate students (n = 280) enrolled in blended online courses offered through Moodle platform during one semester at different Portuguese high schools and university, involving students of diverse courses (especially in Health and Education). Aged between 17 and 54 years old, there were 133 female and 95 male students (cf. table 1).

		Age				Total
		[17 – 24]	[25 - 34]	[35 - 44]	[45 - 54]	
Sex	Female	83	26	16	8	133
		36.4%	11.4%	7.0%	3.5%	58.3%
Sex	Male	63	21	9	2	95
		27.6%	9.2%	3.9%	.9%	41.7%
Total		146	47	25	10	228
		64.0%	20.6%	11.0%	4.4%	100.0%

Table 1. Sample characterization by cross tabulation between age and sex

The instrument used to study the learning community in our teaching environment was the Self-Concept of Competence Scale (SCCS) [26, 2] adapting its 31 items to virtual learning environments.

The *Self-Concept of Competence Scale* - SCCS, as mentioned above, is formed by 31 items, each rated on a 5-point *Likert* scale in which “1-Totally Disagree” indicates a low self-concept of competence

and “5- Totally Agree” indicates a high self-concept of competence, reflecting the degree to which each individual self-characterizes itself in each field of competence. The SCCS items are organized into 3 broad areas: *Cognitive, Social and Creativity*. The first includes three sub-scales called: (i) *Resolution of problems*, assessing the perception of competence in the field of cognitive learning, problem solving and applying knowledge to practice; (ii) *Sophistication in Learning*, which assesses the perception of competence in the field of investment and motivation in learning; and (iii) *Prudence in Learning*, which assesses the perception of competence in the field of accuracy and depth in learning. The second dimension comprises the sub-scale: (iv) *Social Assertiveness*, which assesses the perception of competence in the social area, especially the ability to express opinions, make new acquaintances and initiate actions; and the sub-scale (v) *Social Cooperation*, which assesses the perception of competence in the field of cooperation with others. And finally, the third dimension formed by the sub-scale (vi) *Divergent Thinking*, which assesses the perception of competence linked to creativity.

In different courses (in Health and Education) of undergraduate degrees, students were enrolled in blended online courses offered through Moodle platform, during one semester at different Portuguese high schools and university. At the end of the courses, these students answered the SCCS survey, which has been adapted to online learning in virtual environments. The survey was presented in paper format and the database was constructed in SPSS (Statistical Package for the Social Sciences, version 19.0). The main issue was to situate the self-concept of competence of university students into virtual learning environments through online methods of teaching. We intended to validate the instrument for collecting empirical data, adapted to virtual learning environments, but also to identify the degree of self-concept of competence, when learning involves the management of knowledge and relationships in virtual environments, at a time when we started using methodologies based on information technology and distance communication. It is also our aim to estimate whether, in virtual environments, students perceive themselves as much or more competent than in real environments face-to-face interaction in synchronous time. Ordinal responses were scored using the 5-point scale (scaled from 1=Strongly Disagree to 5=Strongly Agree). There were no inverted items.

Results and discussion

The study of reliability revealed that the instrument used in this study is valid (Table 2).

Variables	Cronbach's Alpha	N of Items
SCCS	0,964	31
Cognitive	0,935	16
Social	0,891	11
Criativity	0,829	4

Table 2 - Reliability Statistics found for SCCS and each dimension

In spite of all this, items were scored along all points of the range (from 1 = Strongly Disagree or 2 = Disagree to 5 = Strongly Agree), mean responses for the 31 items extended from 3.60 to 4.13, with a standard deviation range of 0.669 to 0.921. That means that students recognize each dimension of self-concept of competence relevant when learning in an online web-base.

The main results of this study indicate that the students had high perceptions of their self-concept of competence, with central issues around item 4 (e.g., mode = 4), supporting the recognition of ownership of the cognitive, social and creative characteristics, indicating a high self-concept. It is nevertheless interesting to see that the social dimension is, on average, the one that scores more favorably. The results, also, suggest that the application of online pedagogical models can have a very positive impact on the self-concept of competence of higher education students, and can even improve social competences and the perception of a more supervised development of social characteristics.

Conclusions

Normally, studies in Portugal focused on learning experiences have clarified the concept of education in higher education [25], but few have shed light on virtual environments on academic achievement and feelings of competence of students as they learn. On the assumption that academic success is influenced not only by the power of learning but also the way students perceive themselves, and that these factors predict their subsequent success [1], we have relied on studies concerning self-concept

of competence of students [1, 2]. The main issue was to situate the self-concept of competence into virtual learning environments through online methods of teaching, a new trend in our educational system. We intended to collect empirical data, identify the degree of self-concept of competence when learning involves the management of knowledge and relationships in virtual environments, at a time when we started using methodologies based on information technology and distance communication. It is also our aim to estimate whether, in virtual environments, students perceive themselves competent. We conclude that online pedagogical models are valuable to foster pedagogical gains [3, 18], and that new learning scenarios have effective impact in raising self-concept of students' competence.

Assuming that the self-concept of competence is a significant predictor of academic relationship, referring to the perception of itself in the ability to deal effectively with the environment, assess the successes and the failures to adequately deal with, causing cognitive and affective mechanisms that promote the persistence and effort to learning and problem solving, we arrive to the conclusion that virtual environments are beneficial to elevate the learning results. The high self-concept of competence is associated with good results, while a low self-concept of competence is associated with vulnerability to failure and dropout patterns. The main findings in this study indicate that the students had high perceptions of their self-concept level of competence. However, the cognitive dimension dominates, being the most representative of the self-concept of competence. But also we must attend to the social and creative domains of students' experience. When someone knows that he/she is able, have more will to get the goal and predisposes to the supply and demand of help, in a healthy relational climate and cooperative problem-solving.

And to some extent, it is curious to note that students in virtual environments can keep a closer proximity to each other than in person in classes. A blended methodology seems to validate the intent of the Bologna process, humanizing the teaching and the student responsible for the quality of their learning and intensity of their involvement in educational process [26, 27]. We've observed that the self-concept of competence is strengthened in relation to the face-to-face learning experience, except for some aspects of social cooperation. This observation enforces de empirical validity, calling attention to the insufficiency of distance learning in some of the relationship and communication components of the process of learning. Therefore, the results suggest that the application of online pedagogical models simultaneously to face-to-face approaches may have a very positive impact on self-concept of competence of students in higher education, even in social dimensions, and in the perception of a careful coaching.

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INSTRUCTIONAL PRINCIPLES, UNIVERSAL LEARNING DESIGN AND THE ROLE OF TECHNOLOGIES

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Abstract

Inclusion rises new and important challenges in educational design and practices. Curriculum design should not be addressed to an “average student” and subsequently adapted to special subjects; instead it should be conceived so as to be *for all* since the very beginning of the design, taking into account the various peculiarities (special needs, gifted students, cultural differences, language differences). Fields such as the architectural design and technology design, have already fully endorsed the Universal Access principles; more recently the educational domain has also started to endorse a “Universal Design for Learning” (UDL) perspective. Inside this context we propose an “Instructional Design for All” model (IDAll), which moves from a comparative analysis of Gagné, Merrill and Cognitive Load Theory general models matching it with the domain of Special Needs. Within this theoretical framework we focus on how technology becomes a crucial asset for an effective approach to Universal Design Learning implementation. The role of technology is relevant for the increased flexibility in setting up learning environments (face2face, online, in mobility) and for the increased possibility of customizing the education according to specific contexts and needs.

Keywords: Instructional Design, Universal Design Principles, evidence-based education, accessible education, Special Education

Introduction

This work is framed within the WISE (Wiring Individualized Special Education) Italian project aimed at supporting educational processes for homebound students (<http://www.wisefirb.it/>).

The IDAll model currently provides the “knowledge kernel” of the e-PEI counselling software expert system we are currently working on to support instructional designers [1].

While the current e-PEI implementation is linked to the homebound users’ category, the theoretical approach here described targets a reference framework within the Instructional Design background in order to extend its general value to all students. The main goal is to accommodate cultural, ethical and regulation needs with the capability offered by technology and general instructional principles.

Cultural Framework

Our age is characterized by an increased relevance attributed to the issue of inclusive universal rights to accessing resources and realizing each individual’s potential, regardless from her physical, psychological, social, cultural constraints. In the educational context we witnessed a sound commitment to a progressive disappearance of barriers precluding the access to information and knowledge society.

The *inclusion* and *maximum development* principles [2] pose new challenges in curriculum design, inviting to reconsider it according to different foundations: it is not a matter of addressing curricula/course design to an “average student” and subsequently adapt it to students particularly gifted and/or with specific deficiencies; instead it is matter of conceiving it as targeting all students – since the beginning – accounting for the various specificities (special needs, gifted students, cultural differences, linguistic differences etc.). A relevant contribution in this direction can come from the advancements in research fields related to educational and technological sciences.

Technologies and accessibility

The development and spread of digital technologies allowed by progresses in network infrastructure and end users devices, together with the development of users applications, engendered an incredible potential as regards access to information and knowledge. The Internet fostered new access

paradigms for knowledge sharing and participation (online communities, social networking, etc.). The availability of new and always more efficient devices changed at the same time the way we communicate and access information. Devices with tactile interfaces (virtual desks and interactive whiteboards, tablets, etc.) miniaturized and portable (e.g. IPAD, smart phones, game consoles, etc.) endowed with capability to speak, recognize speech and movements, open unprecedented scenarios for technologies use in many aspects of human life. These innovations are particularly relevant for people with sensorial, motor or cognitive deficiencies in that they contribute to removing those barriers that only few years ago limited their interaction and access to information and knowledge. At the same time, increasingly strong instances aim at making technologies universally accessible and/or available in the wake of the slogan "Technology for all".

The most significant initiatives in this direction are:

- WAI, Web Accessibility Initiative, aimed at enabling disabled people's access to the Internet developed in 1999 by the World Wide Web Consortium;
- guidelines to ensure accessibility to personal computers, operating systems and applications, promulgated in 2001 by the U.S. Federal Government with the Workforce Rehabilitation Act (Section 508);
- standards and specifications set out in the field of accessibility by the International Organization for Standardization (ISO);
- e-Europe Action Plan 2002, recommending the adjustment of the websites of Public Administrations of Member States and the European institutions, to ensure that their contents are accessible for all;
- Italian Law 4 / 2004 (Legge Stanca), allowing disabled people to access new technologies and digital information, including the Internet, in order to overcome the current digital divide.

These initiatives stem from the belief that today more than ever, technologies are essential tools to access information, communication and, more generally, democratic participation. In light of this new awareness it is evident that any obstacle, physical or cultural, that prevents people to access these resources is therefore to be removed. To this end, the support of technologies can go well beyond extending access to resources, through simplified, alternative or adapted interfaces. Technologies can therefore provide an opportunity that cannot be renounced for accessing resources that could otherwise be precluded to certain categories of people. An incredible range of applications with prosthetic function, allow many people with disabilities to reduce their handicap and partially recover some sensory and motor functions, allowing to move and communicate in effective ways. Technologies allow also remote access to events breaking every distance barriers. Tools such as online discussions, video conferencing and virtual classrooms, provide the opportunity to learn, work and collaborate online especially for hospitalized and or homebound students.

Looking for grounding principles for an effective, accessible and universal education

The achievements promoted in the ethical and regulatory field related to the recognition of universal rights of information access and participation, can be fostered by technological innovations. An important role in the individual emancipation, is obviously represented by education. Education, today increasingly making use of technology, should enable all individuals to access appropriate pathways to an effective personal development, intellectual and professional growth.

To this extent, there is an urge to integrate and make available design and application knowledge and know-how that, in many cases, are developed separately. Instructional design, and, more generally, educational research, developed instructional principles supported by scientific evidence and experimental confirmation. An important role is therefore played by EBE (Evidence-based Education). EBE refers to the integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction [3, 4, 5, 6]. Such empirical evidence is drawn from scientifically-based research from fields such as psychology, sociology, economics, and neuroscience, and especially from research in educational settings and from empirical data on performance used to compare, evaluate, and monitor progress.

Another important aspect is related to instructional theories: for instance the principles developed by Gagnè [7] in the Seventies provide interesting connection elements with the indications developed later by Merrill [8], with the suggestions recently formalized by authors involved in the approach called Direct / Explicit Instruction [9] as well as in the instructional model proposed by the Sweller's Cognitive

Load Theory [10]. Such principles, that in our model constitute the pedagogical knowledge base, feed the selection and set up processes of the best teaching strategies related to the context.

Another important reference is provided by the Universal Design for Learning (UDL), developed by the Center for Applied Special Technology (CAST) in the USA (<http://www.udlcenter.org>) which has tried to bridge the gap between scientific knowledge and inclusive schools implementation. However, this approach deals only with inclusion in F2F educational settings.

Our work reflects the awareness that is essential to bridge the existing gaps by integrating the knowledge gained in different areas in order to bring out the universal principles for the design and implementation of an effective learning for all, including subjects with special needs, enlarging inclusion to different cultural and operational contexts (face to face, online or blended).

The elements composing the IDAll model illustrated in Fig. 1 concern decision making actions (instructional design) and applications actions (instructional implementation).

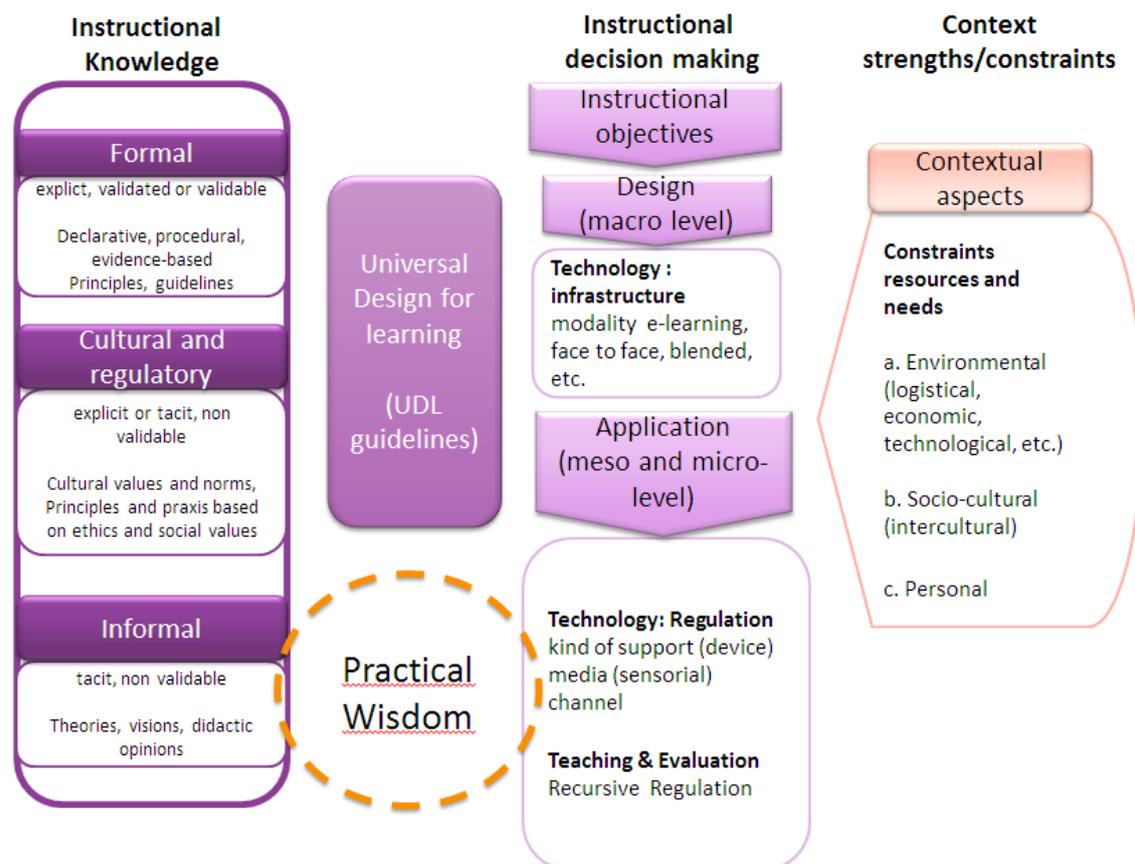


Figure 1: The IDAll (Instructional Design for All) model

The IDAll model focuses on the decision-making activities required for setting up an educational program. These decision-making activities are supported by the instructional knowledge available (Fig. 1, left side) and are at the same time related to the current contextual aspects representing both resources and constraints (Fig. 1, right side).

The decision making process is composed of two main levels:

- 1) the infrastructural one - macro level - within which decisions are made on the technological and communication system,
- 2) the application one - meso and micro level - which provides the needed regulation and leads to the operational deployment and ongoing fine-tuning.

At the highest level (macro) decisions are made about the educational objective and how to best adapt it to users (with respect to students number, age, previous expertise, homogeneity / heterogeneity, availability for sharing and collaboration, presence of special needs, etc.), the type of intervention

(face to face, distance, blended mode), the type of technologies to be used, which media formats and for what functions as well as the general criteria for learning evaluation and assessment.

At the lowest level, meso and micro, operational decisions are made: curriculum organization (e.g. scomposition in learning units, at a meso level) identification of teaching strategies to be used, best communication methods for the envisaged learning contents, the type of technologies to be used at different times (organization of information, media selection, choice and balance of media components such as text, images, audio and video, etc., at a micro level).

The design process, even if it is represented in terms of two separated moments, can also be seen as a unitary process: the operational choices at the design level continue to evolve as the background conditions from which methodological-didactic solutions emerge. In the initial phase there is a first setting, that draws more from the instructional theories and that accounts for the the constraints and opportunities offered by the specific context. At this level the choice of the overall setting can be made with respect to the instructional objectives and contextual aspects. As regards the choice of technologies and their use, the available resources must be analyzed at this level. Moreover the consistency of the technologies with the characteristics of the learning tasks must be assessed as well as the willingness and the ability of individuals to use them. Different choices will be made, for instance, when technologies are available but they are too complex for the ability of students or, conversely, when the audience has high technological skills but there limited financial resources for deploying them. More analytical decisions at this level, are those related to the choice of using technology at home, in the classroom, in blended mode. With regard to the field of e-learning we know that there are different uses ranging from the emphasis on structured content that can be used autonomously by students (content-oriented self-paced learning) to models where there is high social interaction and freedom of action (active, collaborative, social-informal learning, etc. [11].

Each component of the IDAll model representing an overall view of the educational decision making, can be further detailed and more analytically described.. Instructional Knowledge feeds the decision-making process through three main different types of knowledge: formal, cultural and regulatory, and informal.

The first type of knowledge, defined as "formal", constitutes the body of knowledge that the educational research matured and formalized using scientific criteria and/or on the basis of verifiable criteria.

The second type of knowledge, the "cultural and regulatory" one, refers to those precepts, such as norms, values and principles that are formed or defined in a particular historical period and within a specific cultural context. These knowledge guide the practices in the absence of objective evidence with respect to efficiency or effectiveness (eg guidelines and rules defined by international agencies, inspired by ethical principles and values etc.). This type of knowledge, though being formal, cannot be validated.

The third type of knowledge, the "informal" one, gathers both the tacit knowledge as well as theories, visions and opinions on didactic theories. Although not being explicit, this knowledge guides every designer's and educator's actions, even if often in unconscious way.

Beyond these kind of knowledge there is also the "practical wisdom". Everything that is learned directly from experience is inside this kind of knowledge. Knowledge that may be enhanced by reflection and by activities such as those of action research. In the history of thought, a large and heterogeneous literature (see authors such as Aristotle, Dewey and Lewin) refer to it in terms of "practical wisdom" [12].

Inside these general frame our endeavour is mainly devoted to gap the main weakness of the UDL which in its current formulation is applicable only to face-to-face educational settings and it does not clearly highlight the role of technology, especially at an infrastructural level. Our integration to the UDL is currently in progress. Technology plays an essential role both in offering an important diversification in the communication channel (e-learning, mobile learning, etc.) as well as in offering a means of regulating of the general instructional principles to the specific needs of the individual learner.

Conclusions

In this paper we presented and extended summary of the IDAll modell, developed in order to meet the needs for concrete answers to the universal right to a *high quality Education*. This model arises from the need to integrate different knowledge formulated in different research areas: instructional design, special education, educational technology, ICT, usability and accessibility.

Related future work envisages the adaptation of the UDL operational principles in a broader context than that for which it has been developed so far (the inclusion concept related to the school context), also accounting for new social learning contexts allowed by current network technologies.

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BETWEEN DEMON AND DIVINE: INTERNET IN TEACHING· THE ASPETE PARADIGM

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Abstract

From what sources and how do we learn today? What constitutes a "modern" curriculum? Current literature argues that, increasingly, the acquisition of knowledge takes place beyond the formal and organized educational process. Based on the above, the role of new technologies and the media are gradually being recognized in shaping the attitudes and perceptions of students. Therefore, in the field of education, information technology and the culture of image are gaining a major role in school learning. For instance, the internet seems to form a parallel digital program known as e-curriculum. This study presents and evaluates the findings of a quantitative and qualitative research. Using questionnaires and focus groups the study examines a sufficient sample of new teachers (more than 150 graduates of the School of Pedagogical and Technological Education of Athens/ASPETE). The study examines the opinions and attitudes of new teachers in secondary education, mostly on the following directions: a) the media as an alternative source / method of knowledge acquisition, b) the level of familiarity of the respondent with new technologies and the relative quality/ adequacy of training, c) the use of the internet in the learning process and the update of the educational content • especially in certain categories of learning objects, d) the limits and guidelines for the appropriate/ pedagogical use of the media and e) the dynamics of social networks in the educational process and more specifically, their utilization, the problems that may arise and the prospects they create.

Keywords: e- curriculum, social networks, teaching via the internet, media, secondary education

Introduction

In our times, which have been characterized as the times of the information and knowledge society [1], Information and Communication Technologies (ICT) as well as the Mass Media play a crucial role [2] [3]. In the same context, the Internet has become a «vehicle» for the transfer and exchange of information, independent of any social, geographical, economical or other limitations. In particular, digital social networks and the possibilities they offer, have changed radically the way people interact, cooperate and transmit information [4]. Education could not have been left uninfluenced from the abovementioned developments. The speed by which the information provided on the Internet and the media is produced and enriched has brought limits to the expertise of teachers. Digital technology brings revolution in educational systems, transforms their content and reforms traditional educational activities in order to answer modern individual and social needs.

ICT and education: internet and social networks

According to modern international literature, the acquisition of knowledge takes place more and more outside the limits of science and the formal educational process. Consequently, the role and the penetration of ICT and the Media are gradually recognized in the formation of trends, attitudes and perceptions in the minds of students. Children and adolescents use more and more the culture of image in order to "construct" the new type of knowledge. At the same time, training in the use of the Media is expanding and acquires a more essential role in school learning [5].

Thus, progressively, knowledge and skills acquired through the Internet seem to form a parallel "e-curriculum" [6]. The World Wide Web, especially its recent version known as Web 2.0 or Read/Write Web [7], realizes the vision of communication and cooperation among people from different places across the world [8]. The most important change in Web 2.0 is the existence of social networks. According to Hargadon [9], Web 2.0 came to change radically the field of education in the 21st century, by (re)forming the ways in which learners discover and conquer learning, teachers approach teaching, as well as the way they interact and learn from one another.

Contemporary research studies the use of social network websites in teaching and learning, while the equivalent educational interventions are being planned. Web 2.0 has influenced education so much that terms such as «Learning 2.0», «School 2.0», «Class 2.0» or «Education 2.0» have already appeared. The central idea is that second-generation technologies of the World Wide Web permit the creation of interactive and participatory applications by recreating many possibilities that result from human cooperation [10]. The possibility of learners' participation makes such a technology very attractive in teaching, since it is compatible with constructivist perceptions on learning and on the participation of the student in the production of knowledge [11] [12]. Moreover, the use of Web 2.0 goes hand in hand with the principles of socio-cultural learning theories, according to which, the acquisition of knowledge happens within specific cultural frameworks and is actually created on the basis of social expression and the interaction of individuals with one another [13].

The introduction of such technologies in education and their proper usage depend, to a large extent, on the perceptions and attitudes of teachers. The criteria shaping the perceptions and attitudes of teachers are: the effectiveness of teaching, the possibility to avoid other problems, as well as the degree of control they are able to have on ICT [14]. Greek teachers have a positive attitude towards the usage of ICTs and their possibilities [15], [16]. In general, they believe that ICTs increase the motivation of learners to participate in the educational process [17], they develop their critical thinking [18] and they contribute to the introduction of student-centered models. However, some disadvantages are also being recorded, such as the big workload, the management of teaching time, bad administrative and technological support [19] [20] and a low self-confidence of teachers as far as ICT is concerned [21].

A «modern» curriculum should be adjusted to the new socio-economical facts and international developments (multicultural society, globalization), as well as to the criteria according to which human resources approach new knowledge and its management. So, what should be the role of the Internet in «modern» curricula according to the teachers?

Research objectives

In Greece, the introduction of the Internet was received, for many years, with a suspicious and negative attitude [22]. Such «demonizing» approaches were reinforced by the fact that the majority of Greeks were IT illiterate. In the last decade, however, the situation seems to have changed, and suspiciousness fades away; the Internet gradually dominates everyday life, as well as the professional sphere, including education [23]. But what is the place of the Internet in the hearts of teachers and, by extension, in their everyday teaching activities? How do they cope with and what is the influence of the developments in the worldwide web (e.g. social networking) on their work? What are they troubled with? To what extent is the teachers' community ready to be part of the progress? The present paper has been supported by two parallel researches (June 2001) on a sufficient, representative sample of teachers of different specializations in secondary education. The respondents are students in the educational training program «EPEK» of the School of Pedagogical and Technological Education of Athens. The objective of the research was to investigate the perceptions of the teachers about the possibilities offered –mainly- by the Internet and social networks to the educational process and to modern Greek schools.

Methodology

The methodology used is based on two surveys, a quantitative and a qualitative one, which try to follow the methodology of educational research that dictates the combination of methods and techniques in collecting and interpreting research findings [24]. The questions asked in these two surveys basically concern six thematic axes: a) the level of familiarity/ degree of difficulty that ICT and the assessment of the formal training that teachers have received present for them, b) the ways in which students acquire knowledge nowadays (within and outside formal education and the curricula), c) the use of the Internet in the learning process, d) the application of ICT in the educational reality, e) the degree of familiarity of the subjects with social networks and their perceptions on the educational usage of networks, and f) the problems and perspectives that may arise from including social networks in teaching.

The first survey was based on the method of questionnaires given to 150 teachers (women and men, aged 23 to 45, from all around Greece). The technique of non-probability samples was used in sampling, while results were drawn from a quantitative analysis of the answers by SPSS. The questions were mainly closed-ended [25], with a pre-defined set of dichotomous or multiple-choice answers. The questionnaire also included five-point ranking-scale response options (Likert) and it was created on the basis of the aforementioned thematic axes (and also included demographic questions).

The second survey was based on the method of focus groups. In this qualitative data collection technique, a small number of participants (4 to 9 persons) discuss and comment on a specific subject with the guidance of a trained intermediary. The participants are qualified according to some common characteristics, such as their relation to the subject in question as well as the dynamics developed among them during the sessions [26]. This survey was conducted in a random sample of 8 people (two groups of 4 people), regardless of their specialization and their level of training in ICT usage. The results of the survey were acquired after recording, processing and analyzing the answers (documentary analysis) [27].

Results and discussion

The questionnaire was given to 150 teachers, students of the School of Pedagogical and Technological Education of Athens (ASPETE); 60 of them were men (40%) and 90 were women (60%). 106 teachers, who constitute the biggest part of the sample, were 22 to 33 years old (70.7%), 34 respondents were 34 to 44 years old (22.7%), while 10 of them were more than 45 years old (6.7%). As to their studies, 58% of the sample has successfully completed the postgraduate program, 30.7% has graduated from a Higher Education Institute or a Technological Educational Institute (AEI/TEI) and 11.3% has a PhD. The majority of the sample -58.7%- indicated that they work in Education and they are students of ASPETE, while 20.7% of the subjects mentioned studying as their main occupation. Therefore, 119 out of the total sample were active in education and 31 were potential teachers.

When examining the ways we learn, the total of the respondents (100%) agreed that, nowadays, knowledge is also acquired beyond the limits of the educational process; 38% consider that this trend is quite strong. The vast majority, 95% think of the Internet as the basic source of knowledge for students. Television follows with 66% and family with 66%, while school gathered 50% (the respondents could choose up to four options from the proposed answers; for more information see Table 1). The liberalization of the Internet and easy access seem to contribute to the fact that the Internet is considered to be the main source of knowledge for students. Moreover, television has a great influence while the family's cognitive dynamics are at the same level. School, as an institution of knowledge, gathered a percentage that has an ambiguous interpretation. It is worth noting that «Church» was not chosen as a source of knowledge from the sample. Finally, it should be noted that in the «free choice» field, the teachers noted «classmates» as an influence in knowledge acquisition.

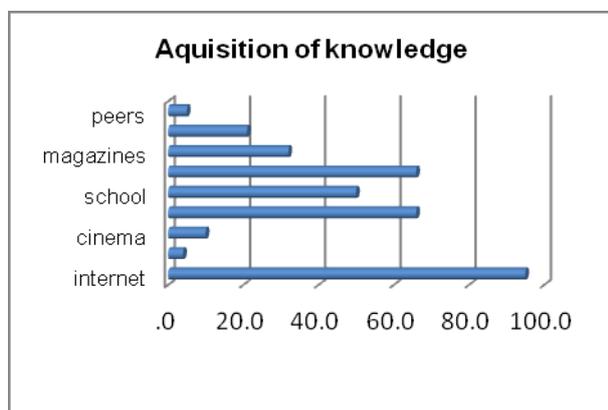


Table 1.

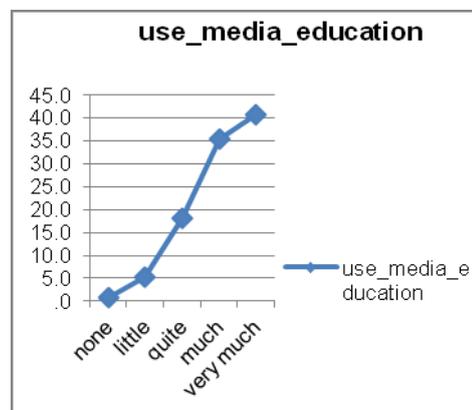


Table 2.

The level of formal training on ICT/ media received by the teachers was also examined in a second phase. The level was characterized as rather good by 60% of the respondents. Most subjects (70%) had taken part in educational training seminars in the past, which underlines the importance attributed by the teachers to the continuous amelioration of their knowledge and skills. It should also be noted that 147 teachers (99.3%) believe that the introduction of courses on ICT and the media in secondary education is necessary (Table 2).

Subsequently, on the question whether it is possible for the Internet to become a milestone in renewing the content of education, 42% of the respondents answered that they agree very much.

However, there are issues arising on the extent to which the Internet should be used. On this matter, 68% believe that the reliability of the WebPages used should be investigated. Moreover, 81% believe that a sufficient training of teachers can positively contribute to the rational educational use of the Internet. Finally, the familiarity of students (39%), as well as the technological equipment in schools (23%) seem to contribute to a smaller extent.

Then, the respondents were asked to propose those subjects –of general and technological education- in which the possibilities offered by the Internet could be best used. Among the subjects of general education, most of the answers indicated geography (80%), history (68%), essay writing (53%) and literature (33%). According to the explanations provided for their choices, teachers believe that history could be better taught with the use of the Internet, since Internet sources are more updated and modernized than books. According to the respondents, the use of media and video would make the teaching of these subjects more pleasant to children. Moreover, the successful teaching of geography depends on the use of maps and other means available on the Internet. Among the subjects of technological education, physics (80%) and mathematics (60%) stood out. The reasons are related to the use of computers and the application of simulation, videos etc. Modeling and interactive imaging are also facilitated by the use of the Internet. Finally, the ability for easy research of information, the range of sources and the better organization help the users-teachers to be well-informed in the fields that evolve rapidly.

The third phase of the research concerned social networks. 96 out of 150 respondents (64%) believe that social networks may have an educational use. Specifically, 59% believe that interaction through social networks (Table 3) facilitates direct communication among teachers and students. The sharing of images-presentations may have an educational use (47%, Table 4), while the exchange of messages between teachers and students is not recommended (69%).

chat_education

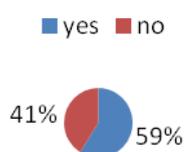


Table 3.

Sharing_videos_edu

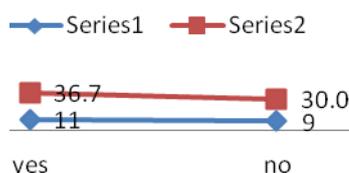


Table 4.

By contrast, 54 teachers (28%) would not opt for the introduction of social networks in the educational process. Specifically, the teachers believe that the Internet attracts unreliable and not easily verifiable information (30%). In addition, “real”, personal relationships between teachers and students are limited, and the attention of students in the classroom is distracted, since they are occupied with issues irrelevant to the educational process (web-surfing, 30%). Moreover, the exposure of personal work and easy access increases the risk of plagiarism and unfruitful commending (20%). However, the blame also falls on the teachers (20%), since they may neglect their duties because of the use of social networks.

The survey with focus groups gave similar information to that retrieved from the questionnaire; but in this case, the subjects had the opportunity to further analyze their answers in a qualitative way and present significant personal attitudes and perceptions.

On a first level of analysis, the familiarity of the respondents with the Internet and social networks seems to be very good. However, everyone (but one person) answered that the use of Web 2.0 tools presents important difficulties, which makes them reluctant to include such tools in their teaching – at least for the time being. This attitude is partially justified by the fact that the formal training they have received did not meet their needs. Specifically, regarding their training in ASPETE (courses on the inclusion of ICT in education), which constitutes their common point of reference, they thought that even though they had learned about some tools on a theoretical basis, they lacked practice.

According to the respondents, the Internet can be used in humanities and social sciences thanks to the possibility it offers for the acquisition of a large bulk of information. However, many of them also mentioned Science and some technological –more practical- subjects. The use of simulation for

experiments in a virtual laboratory or videos showing experiments in real laboratories could contribute to a great extent in building up knowledge related to the theories taught in these subjects.

The subjects are very familiar with social networks and most of them are positive towards using such WebPages in teaching. There was, of course, a small sample, who were negative towards the use of such WebPages in their daily life as well as in teaching. Nevertheless, the general impression given was that young teachers have the intention to use ICT, in order to improve their teaching. Specifically, they believe that all functions of such WebPages are equally important and, as a result, they support the use of a combination of such functions to enhance initiative, to cultivate imagination, creativity and social skills, as well as to develop critical thinking.

Despite their positive views, there were some objections and indications of potential risks. The main viewpoint expressed was that the teacher should very well organize the inclusion of such tools in teaching, in order to avoid the risk to cancel or not to achieve the initial objectives. It should be made clear to the students that these networks are not only used for entertainment, but for learning, so that they can adapt to this new practice and unpleasant phenomena (such as plagiarism, Internet violence/intimidation etc.) are avoided.

Conclusions

In the end, is the Internet an educational “demon” or is it “divine” in the eyes of young teachers? The majority of those questioned tend to think that both the Internet and social networks can upgrade the content of education. According to their viewpoints, the Internet is a cheap tool, which contributes to the mitigation of intolerance, promotes cooperation and reduces distance among people and civilizations. In addition, increased access and the variety of technological tools underline the necessity of assessing the educational function of ICT [28]. Such assessment no longer refers to quantity, but to quality, and does not focus on the introduction of ICT in teaching, but mainly on the methods and the content of teaching [29]. The dynamics of the Internet extend to social networking, which is seen as an important tool for teaching, capable to support modern teaching techniques [30]. Teachers, through their answers, revealed the need for a modern, updated and practical training on ICT, they proposed the introduction of a subject on the Media in the curricula and they considered necessary to update the teaching of certain subjects with the use of ICT and media. The results, as well as the critical, honest and responsible attitude of the teachers, form the best basis for a future expansion of the sample and the inquiries of the present paper.

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THE CONTRIBUTION OF INFORMATICS IN EDUCATION FOR THE SCIENTIFIC EXAMINATION

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Abstract

The scientific research lies on the “systematic, controlled, experimental and critical study of hypothetical propositions with regards to the assuming relations between physical phenomena”. Students are able to perform research, when they are aware of the processes of scientific examination, i.e. the knowledge of the means, methods, and practices of science. Significant elements of the scientific examination within the context of the development of related student abilities is the stimulus (e.g. curiosity, scientific queries), the goal (e.g. production of evidence leading to the answers of scientific queries, such as ideas, models and theories that are directing the research) and the experiment (e.g. type selection of scientific procedure in relation to the nature of the query, planning).

Research queries: The correlation of the students’ performance is examined through a) the use of a PC and b) by the influence of new technologies in the teaching process.

Methodology: For the testing of research assumptions, the data of the PISA 2006 (Programme for International Student Achievement) of OECD was used. The selection of PISA was performed because when estimating the students’ performance, the scientific research abilities are also evaluated. The t-test for independent samples was used as a statistical criterion for the testing of the mean performance difference between two categories, after testing for the normality of the distribution.

Significant findings: The 97% of the sample uses regularly a personal computer (PC). The mean performance is higher for students using a PC for educational purposes but also for those using a PC for entertainment, compared to those not using a PC at all. The mean performance of students attending schools, the directors of which, consider the lack of software and the non-access to the internet as influential factors of the teaching process, was lower compared to the mean performance of students attending schools, the directors of which, do not consider these factors as significant.

Conclusions: From the findings of the research, it is detected that the computer and software use in the educational process, under proper planning, seems to enhance students’ performance and development of abilities related to the scientific research.

Keywords: Education, ICT, Skills, Scientific research.

Introduction

The development of skills in Information and Communication Technologies (ICT) implementation is highly prioritised in all the developed countries and is moreover, a part of the educational aims, adopted by official bodies. International researches reveal that the PC availability and implementation, both in school and at home, is consistently related to the performance and a more efficient educational training throughout the school years. The integration of new technologies in education contributes, among others, to the development of mental-cognitive abilities, as well as to the students’ active involvement in the process of learning. The Informatics in education aims at the familiarization of students with the basic principles of computing and the contact with various uses of the computer as a cognitive-research tool and as a communication and information research tool, in the framework of their daily school activities and by the use of a research learning software.

Methodology

During 2006, 190 schools from the 13 prefectures of Greece participated to the Programme for International Student Achievement (PISA 2006) of OECD. Approximately 49000 15-year old students (52% boys) were following the school’s study program. School principals were asked to answer a detailed questionnaire regarding a series of topics concerning school’s function. In particular, the school questionnaire asks for information with respect to the characteristics of the school (i.e., student body, school’s resources, staff), the organisation of the school, the environment in the curriculum and the career guidance and preparation of students for further education.

Regarding ICT information, school principals were asked to answer three questions about the school's resources. Specifically, they were asked about the number of computers that are "available in the school in total", "available only for instruction" and "are connected to the Internet/World Wide Web". In addition, a 4-scale grade was used to assess whether school principals consider the "shortage or inadequacy of computers for instruction", the "lack or inadequacy of Internet connectivity" and the "shortage or inadequacy of computer software for instruction" significant contributors that encumber school's capacity to provide instruction. Point 1 was given when school principals did not consider the abovementioned factors significant contributors (totally disagree), while point 4 was given when these factors were considered that contribute significantly at school's capacity to provide instruction (totally agree). The answers to these questions were further categorised in two groups: those that totally disagree with the influence of these factors to the educating system, and those that agree (little to totally) with the contribution of these factors to the educating system. Students' mean performance in Science was used to evaluate the extent at which the aforementioned factors influence school's capacity to provide instruction.

Statistical methods

Results are presented as mean \pm SE for the normally distributed variables and as frequencies (%) for the categorical ones. Normality was tested using graphical methods (i.e., histograms and P-P plots). The Student's t-test for independent samples was used to evaluate differences in students' mean Science performance regarding the influence of the shortage of ICT's availability in school and answer the research hypothesis. All tested hypotheses were two-sided. P-value <0.01 was considered significant to reject the null hypothesis. PASW Statistics 18 software was used for all calculations (SPSS Inc., Chicago, IL, USA).

Results

Among participating schools 6% were private, while the distribution of schools regarding the place of residence is presented in Fig. 1. In total, 4427 computers are available in all schools, while 3371 are available only for instruction and 3727 are connected to the Internet/World Wide Web. Differences regarding the ICT availability was not evident with respect to schools community (all p 's>0.01). The mean ratio of computers to school size was 0.11, meaning that in each computer approximately 10 students have access.

Results revealed that according to school principals perceptions, students had higher mean performance in Science when the shortage of computers, internet and computer software did not considered significant contributor to affect the school's capacity to provide instruction, as compared with the mean performance of students that school principals consider that the shortage of computers, internet and computer software influence the study program (all p 's <0.0001) (Table 1).

The same trend was noticed irrespectively of the school's residence. An exception was noticed regarding i) the "shortage of computers", where no difference was evident between students mean Science performance among schools located in small towns (i.e., 441 ± 2.35 vs. 448 ± 1.38 , $p=0.23$), ii) the "shortage of internet", where no difference was evident between students mean Science performance among schools located in villages (i.e., 383 ± 3.83 vs. 391 ± 4.97 , $p=0.30$) and iii) the "shortage of computer software", where no difference was evident between students mean Science performance among schools located in cities (i.e., 431 ± 8.17 vs. 430 ± 3.61 , $p=0.85$).

Conclusions

The present paper attempts a correlation of the use of ICT in education to the skills of the students in scientific research. This field-specific performance of the students was developed within the OECD programme for PISA 2006, mainly focusing in the field of Science. The selection of PISA was performed because when estimating the students' performance, the scientific research abilities are also evaluated. More specifically, significant elements of the scientific examination within the context of the development of related student abilities is the stimulus (e.g. curiosity, scientific queries), the goal (e.g. production of evidence leading to the answers of scientific queries, such as ideas, models and theories that are directing the research) and the experiment (e.g. type selection of scientific procedure in relation to the nature of the query, planning).

The data analysis has demonstrated that the mean performance in Science is higher for students using a PC for educational purposes but also for those using a PC for entertainment, compared to those not using a PC at all. Therefore, it appears that the correlation of the use of ICT in Education to the scientific research skills is identified. The view of school principals is interesting, though, and also

enables a further examination. Based on the analysis, it is indicated that in schools, where school principles do not consider the ICT use and development as influential and motivating in the learning process, students demonstrated a higher performance in Science. In this point, an adjustment difficulty to the new data of the Information Society, by instructors and other education-related staff, is probably identified. This difficulty is probably expressed by ignorance on the needs and the developing skills of the students. It is a significant point that requires examination and management in a way that all those involved in education could recognize the changes produced by the ICT in Education, the way of thinking and the perceptual process. Therefore, it is necessary to detect a. the obstructions for the efficient ICT use in education and b. ways to deal with these obstructions for the development of the digital age in schools.

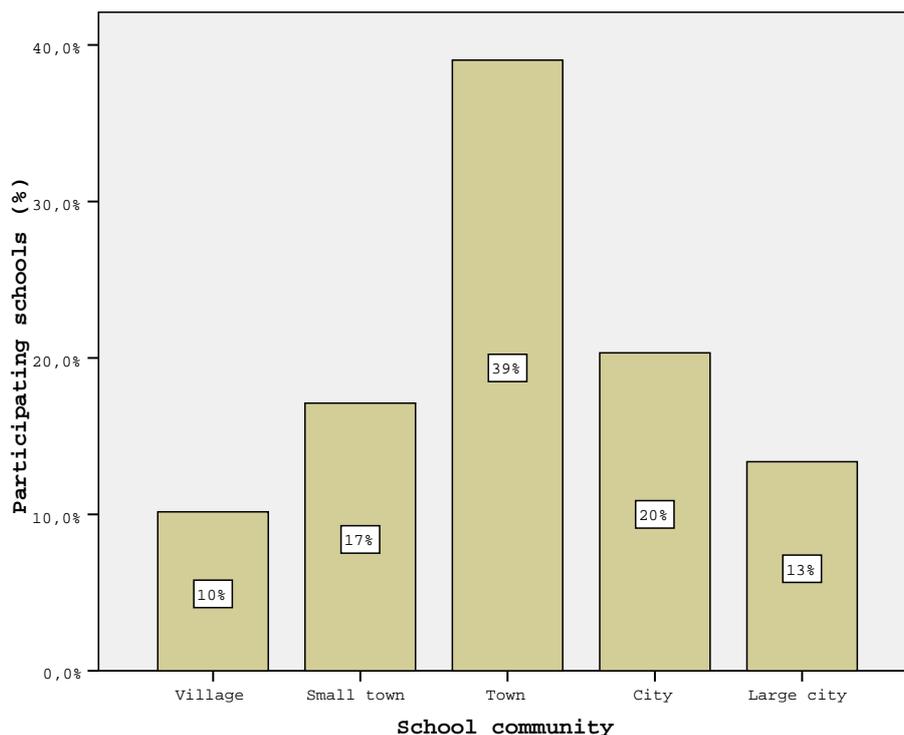


Figure 1. Distribution of participating schools according to the school community.

	No influence	Influence	P
Shortage computers	449±2.28	407±1.96	<0.0001
Shortage Internet	441±1.36	409±2.68	<0.0001
Shortage computer software	444±2.14	422±1.53	<0.0001

Table 1. Students' mean performance in Science, regarding the degree of influence of computers, internet and computer software shortages, according to school principles perspective

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