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An emerging qualitative study on Project management as a bridge between cognitive learning and employability

Erina Guraziu[a]*, Giovanna Del Gobbo[b]

[a]*University of Florence, FORLILPSI, Via Laura, 48, Firenze, 50121, Italia*
[b]*University of Florence, FORLILPSI, Via Laura, 48, Firenze, 50121, Italia*

Abstract

The paper presents one of the results of an innovative research on the training value of Project management. The research was realized in the field of the Ph.D. in Education and Psychology at the University of Florence.
The research has investigated the potentiality of Project management for the development of those transversal skills useful for employability. The main focus of the research has been the effects of learning Project management in formal contexts, as well as the embedded training value of Project management itself.
The paper focuses on learning enablers and learning benefits of Project management in tertiary education.

Keywords: Project management employability transversal skills sustainability citizens

1. Introduction

In a rapidly evolving labour market, where 40% of people will need to undergo reskilling and upskilling processes by 2025 [1], transversal skills are an utmost for being employed, since they contribute both to the professional

*Tel.: [a]+393288127968; [b]+393881495874
E-mail address: [a]erina.guraziu@unifi.it; [b]giovanna.delgobbo@unifi.it

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development, career management, and career learning of the individual [2], and the organizational development of the working environment. What training devices allow to integrate the learning contents with methods that support the development of these transversal skills? The research has decided to investigate whether Project management can be considered as a training device capable of simultaneously representing "learning content", an intentionally acted learning process in working contexts, and a training method.

In fact, the research started with 3 hypotheses:

- Project management could be a transversal area of learning, functional to the development of certain skills that facilitate employability [3]; [4]; [5]; [6]
- Project management could have a transformative value: it may allow students of tertiary education to adopt an approach of critical reflection and transformative dialectics, putting in crisis, constructively, their assumptions and meaning perspectives [7]
- Project management could be used as a pedagogical device [8] embedded [9] with academic disciplines through the contextualization of practice and multidisciplinarity.

So, the main objective of the research was to analyse the use of Project management as a sustainable pedagogical device [8] able of encouraging tertiary education students, specifically EQF Level 5 [10]; [11], to develop those transversal skills that foster their sustainable employability [5].

To study the potential of the teaching device based on Project management, the research focused on non-academic tertiary education, since 1) it is closer to vocational training and therefore able to foreshadow the formative value also in working contexts in terms of informal educational action / embedded in the profession of the Project management; 2) it is also considered as a bridge to third-level university education and thus it can foreshadow possible uses of Project management in higher education [12].

2. Research method

The research was emerging qualitative [13] providing a contextual meaning to the experiences, interpretations, and descriptions of the samples involved in the case study and the focus group and interviews. The research was designed according to the Grounded Theory [14], approached through the case study (first exploratory and then explanatory) [15]; [16]; [17]; [18] and deepened through interviews and focus groups that provided primary information intending to bring out similar case studies, highlight good practices and lessons learned [17].

Through focus groups and interviews with 10 professors of Project management at higher education institutes, the initial hypotheses were discussed. The preliminary results were practiced during the explanatory case study, consisting of the 24 hours of Project management taught to 38 students at the tertiary level, EQF Level 5.

The emerged categories from the analysis of interviews and focus groups allowed us to analyse if and how the learning of Project management in informal and formal contexts allows people to acquire those transversal skills that the scientific literature attributes helpful for adults to become sustainably employable.

The pedagogic device developed at the end of the exploratory phase was used during the explanatory case study, to "*describe and evaluate the effects (visible and less visible), in real contexts, of specific educational interventions and study the situations in which a specific educational intervention provokes or not the desired effects*" [17, p. 158].

The paper will discuss the transversal skills acquired by students after the Project management course taught through the use of the developed pedagogic device, replying so to the specific research question:

What are the benefits (defined as objectively measurable improvements) that 24 hours of Project management (PRINCE2®) learning brings to tertiary education students, EQF Level 5, in terms of transversal skills?

Finally, we will discuss the triangulation of the results that emerged from the empirical research with the transversal skills that the literature defines as useful for individuals' sustainable employability.

3. Sustainable Employability and Project management

The rapidly evolving post-modern society [9], defined as the "*ontology of becoming*" by Gauthier & Ika [20], characterized by reflexivity [21] and directed versus hyper-reflexivity [20] requires that individuals adopt flexibility and resilience to manage change, uncertainty, and ambiguity while becoming able to make previsions [22] facing the "*Black Swans*" [23]. The new "*sustainability citizens*" [24]; [25] should possess those fundamental skills that

characterize the capacity to manage today's complex challenges [25]. These fundamental skills can be acquired lifelong in a continuous and spiral [26]; [27] process that goes through non-formal, informal, and formal learning.

These "*fundamental skills*" [25] "*human skills*" [1], "*core skills*" [28], or "*soft skills*" [29], are characterized by high transferability between sectors and occupations and therefore can relate to the employability of individuals.

In fact, "*There is a link between skills transferability and the risk of losing a job or failing to find another one. Employability of individuals is based on specific skills, but transversal skills support it*" [29, p. 9].

As defined by Yorke & Knight [9], the construct of employability goes beyond the ability of individuals to find a first job or to possess "specific skills". "*It connects with a range of discourses and has many facets which range from understanding of one or more subject disciplines to 'soft skills'. It also encompasses both academic intelligence and 'practical intelligence'*" [9, p. 14]. Employability is connected therefore to the capacity of individuals to deal with complexity and transformation while facing efficiently the world of work [30]. Hence, employability is not a state but a continuous transformative lifelong process, which needs to be constantly maintained "sustainable" [5], including "*not only the wider range of attributes required to be successful within jobs; […] [but also] the attributes required to manage ones' career development in ways that will sustain one's employability*" (p. 7).

The interrelation between managing own "sustainable career" [31]; [32] and the Project manager role has been a growing focus of research in the last year [33]; [34]; [35]; [36]; [37], so as the roles and competences of the Project manager [38]; [39]; [40].

In fact, the Project manager possesses hard and soft skills that allow acting cross-cuttingly within initiatives that are born to introduce change and to respond in an innovative and integrated way to diversified and, at times, opposed needs. These initiatives are called projects, which are temporary, cross-functional, and uncertain [41] and therefore complex and may be highly complex. The Project manager is the person who manages, in an integrated, systemic, and reflective way, the complexity through the projects.

Concerning the competences of the Project manager, the Individual Framework "Competence Baseline for Project management - ICB4" [42] organizes them into three areas (p. 5): People - personal and interpersonal competences required to succeed in projects; Practice - technical aspects of managing projects; Perspective - the contextual competences that must be navigated within and across the broader environment.

The Area "People" identifies 10 competences: self-reflection and self-management; personal integrity and reliability; personal communication; relationship and engagement; leadership; teamwork; conflict and crisis; resourcefulness; negotiation; results orientation.

These competences coincide with what emerged during the explorative phase of the research.

During the interviews and focus group, professors, who also share an experience as Project managers, were asked which transversal competences Project management allows acquiring if learned in informal and formal contexts.

Results are shown in figures 1 a) and b).

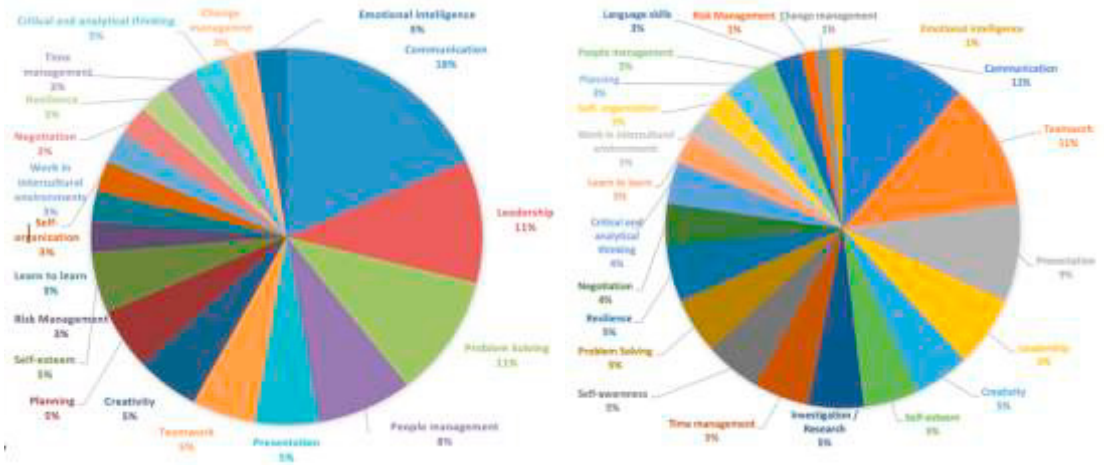

Fig. 1. Transversal competences acquired through the learning of Project management: (a) informal contexts (b) formal contexts. Source: self-elaboration

From the analysis of the codified segments, it emerged that the learning of Project management in informal contexts allows the development of 19 transversal competences. Through the analysis of the cumulative relative frequencies of the encoded text segments, it emerged that 4 transversal competences represent more than 50% of citations: Communication, Leadership, Problem-solving, and Managing People.

From the analysis of the codified segments, it emerged that, in the formal contexts, the learning of Project management allows students to develop 22 transversal skills. In fact, to the 19 competences mentioned in the informal context, 3 others are added: "Self-awareness", "Doing research" and "Linguistic skills".

From the analysis of the competences, cited at least once by the professors interviewed, it emerges that:

- 90% agree with "Communication" and "Teamwork".
- 70% agree with "Presentation".
- 50% agree with "Leadership".
- 40% agree with "Creativity", "Self-esteem", "Research", "Time Management", "Self-awareness", "Problem-solving" and "Resilience".

As it will be shown in the results section, these transversal competences match those that the literature identifies as necessary for people's employability.

4. The enabling factors of Project management

Through the selective coding of the encoded text segments, it has been possible to show that the enabling factors that allow the learning of Project management to develop transversal competences in the informal context are also reflected in the formal one, through learning mediators deriving from the Active Learning Methodologies:

- Informal context: a logical and structured framework of reference; the creation of a community of practice [4] within the Project management team [41]; cross-functionality; learning by experience [26];
- Formal context: technical and analytical tools; the Project management environment; a process of critical reflection; the Project management method (PRINCE2® for the specific research); the project situation; the intentionally acting of the professor; Teamwork; the configuration and involvement of a project sponsor and a problem poser [44], usually expressing real work environment challenges.

In each learning context, the factors that enable and inhibit the acquisition of transversal skills through Project management have been analysed. In both contexts, the "culture of Project management", which requires understanding to acquire awareness, is the main enabler or hinder factor:

- In the labour market organizations: Project management culture is related to the awareness of the benefits that using a Project management approach brings to business competitiveness, management of complexity, knowledge management, and development of a business model based on projects using PMOs.
- In the formal context of tertiary education: it is the need for the decision-makers of the tertiary education institution, but also the academic staff, to understand the benefits of Project management for the employability of students, anticipating a work environment that graduates will find after their studies, helping them to see more clearly the connection between academia and world of work, acquiring a mental structure that allows them to manage activities in a structured and organized way, also providing tools for being capable individuals and carrying out projects, regardless of their subject area, as well as fostering the above mentioned soft skills.

The low knowledge of Project management in academia does not allow to use it as a tool to support teaching because it is not considered relevant or as a tool that acts as a bridge between the academic world and the world of work because the connection is not such evident. The low culture of Project management is related to some pre-concepts, such as that it is sufficient to have some organizing skills or to attend a short non-formal training to become a Project manager. On the contrary, it is necessary to demonstrate technical and behavioural skills, as well as to acquire experience to be able to manage projects efficiently.

5. Benefits of learning Project management at tertiary education in terms of skills that foster employability of students

In the case study applied with explanatory purpose, the pedagogical device developed at the end of the exploratory phase was used to evaluate the effects of the educational intervention with respect to the improvement of transversal skills by students at course completion.

The course lasted 24 hours, was delivered completely in distance learning mode, and involved 38 students enrolled in the Higher Technical Institute "Energy and Environment", EQF Level 5, in Tuscany, Italy.

We made explicit use of the PRINCE2® method for the design of the 24 hours Project management course for two reasons: first, the research focused on this Project management method in order to check if there is any connection between the method used and the transversal skills by students; second, the interviewed professors stated that the method, standard or body of knowledge does not make the difference on the learning outcomes acquired by students, but, PRINCE2®, being a method, is more engaging for them, because they understand it better.

The pedagogical path of the course was designed with the objective to allow students to acquire at least a double-loop learning [45]; [18]; [46]; [47], meant as being able at first instance to solve problems emerged during the cases studies presented in class (single-loop) and, in the second instance, to be able to structure a new project as a result of new action schemes, related to cognitive, experiential and relational fields [46]. At the end of the course, students had to be able to justify their project, replying to the question: why should it be funded?

The results obtained by students, in terms of transversal skills improved, were evaluated according to 3 perspectives: 1) professor/researcher's one; 2) interview with students and 3) self-evaluation questionnaire, administered to students before and after the course.

The 20 items self-evaluation questionnaire referred to the transversal skills listed by professors during interviews, without considering "language skills" and "work in international environments" because out of scope. To facilitate the self-evaluation of students, it was necessary to describe transversal skills into easily understandable learning outcomes, written as self-declarations where the students could identify themselves and that include a progression from a zero to the highest level. That's why the EntreComp Framework [48] was taken as a reference. EntreComp is the framework designed by the European Commission to foster the entrepreneurial skills of the European Union's citizens and organizations. The Framework is an 8-level progression model "*to transform ideas and opportunities into action by mobilizing resources*" [48, p. 10] providing 3 areas of competences, each organized into 5 competences, described through learning outcomes, written as self-declarations.

Unfortunately, due to the privacy restrictions of the institute where the course was carried out, it was not possible to match the samples before and after the course. The two samples were considered independent.

Results of the change demonstrated by students after the course are shown in Table 1.

Table 1. T-test, degrees of freedom, probability, and effect size of each transversal skill. Source: self-elaboration

Transversal skills	T-Test	dof	p	*d*
Communication	-1.609	73.0	0.112	-0.374
Creativity	-1.453	73.0	0.151	-0.338
Leadership	-1.713	73.0	0.091	-0.399
Risk management	-3.249	73.0	0.002	-0.756
Problem-solving	-1.645	73.0	0.104	-0.383
Negotiation	-1.390	73.0	0.169	-0.323
Teamwork	-2.368	73.0	0.021	-0.551
Resilience	-1.259	73.0	0.212	-0.293
Self-organization	-1.086	73.0	0.281	-0.253
Learn to learn	-1.517	73.0	0.134	-0.353
Time management	-2.384	73.0	0.020	-0.555
Critical and analytical thinking	-2.045	73.0	0.044	-0.476
Investigate/Research	-3.948	73.0	< .001	-0.918
Self-esteem	-0.604	73.0	0.547	-0.141
Planning	-4.019	73.0	< .001	-0.935
Presentation	-4.319	73.0	< .001	-1.005
Change management	-1.956	73.0	0.054	-0.455
People management	-1.619	73.0	0.110	-0.377
Emotional intelligence	-2.204	73.0	0.031	-0.513
Self-awareness	-1.638	73.0	0.106	-0.381

Since the indices of "Skewness" and Curtosi found that the data were distributed pseudo-normally, it was possible to calculate the significance of the difference between the averages in the pre-and post-intervention questionnaires using the T-test for independent samples. The T-Test analysis showed that 8 transversal skills were significantly ($p<0.05$) different between pre and post-intervention.

Calculating the effect size of these 8 skills using the Cohen *d* index [49], it emerged that the transversal skills that have undergone a larger change ($d>0.8$) were Presentation ($d=1.005$), Planning ($d=0.935$), and Investigate/Research ($d=0.918$); Risk management recorded a change above average ($d=0.756$). Four other skills recorded a medium-sized change: Time management ($d=0.555$), Teamwork ($d=0.551$), Emotional Intelligence ($d=0.513$) and Critical and analytical thinking ($d=0.476$).

6. Results

To check if the 8 transversal skills that recorded a significant change were those that the scientific literature relates to the employability of people, they were triangulated with:

- The Frameworks of transversal skills for employability [1]; [28]; [50]; [51]; [25]
- The PRINCE2® method [41]
- The Area "*People*" del *Framework* ICB4 – *Project management* [42]
- Explorative Research Phase: the informal context and the formal one of tertiary education
- Case study of the explanatory phase (researcher/professor perspective and student interviews).

Fig. 2. Triangulation of sources and data on transversal skills. Source: self-elaboration

The clusters of competences defined by the World Economic Forum [1] were used for the triangulation of transversal skills.

Results are shown in figure 2.

Through the triangulation of perspectives, as highlighted in the figure, it is possible to conclude that the transversal skills that are developed through the learning of Project management in informal contexts, but especially in formal ones, converge mainly with:

- The "human skills" predicted by the World Economic Forum [1] as those that will be decisive for employability because they cannot be replaced by machines.
- The "Fundamental Skills for Sustainability" [25], which are considered crucial for "citizens of sustainability" to become agents of positive change.

So, learning Project management may contribute to the sustainable employability of individuals, aware that employability is a process that derives from complex forms of learning and that, for this reason, it cannot be measured simply by transversal skills [4].

7. Final reflections

The construct of employability assumes that education overcomes the barriers between formal, informal, and non-formal education, to allow an accompanied transition of students versus the world of work and adulthood [30].

A factor that limits the teaching of Project management in academia is related to a theme of international debate regarding the framing of Project management only as a managerial practice or as a specific field of research.

As Garel [52] points out, Project management was born in the 1960s as a managerial discipline, and research dates back to the mid-1990s [20]; [53]. Project management has also been challenging to integrate into traditional management disciplines, although it has been increasingly widespread since the beginning of the 21st century.

In fact, quoting Garel [52]: *"[…] Project management is a generalized practice in contemporary capitalism and a legitimate field of research, even if it is still nascent. Project management is not a "crossroads discipline", which would mean diluting its content and making it a "receptable" or repository of what is produced elsewhere, in the*

academic disciplines. Project management exists in and for itself, with its own corpus of knowledge, concepts, organizations, methodologies, and lines of thinking. The status of Project management as a "theory" continues to compete for recognition against its "professional" dimension. This tension is commonplace in disciplines rooted in practices, especially when they are new." (p.664)

This debate on "practical" or "scientific " status for a new discipline, as Project management is, recalls what Dewey [54] stated about the transition of education from an "empirical state to a scientific one" and the inseparable link between educational practice and scientific abstraction. The "concrete educational experience" is considered by the author as the "primary source of all research and reflection, because while it poses problems, it tests, modifies, confirms and rejects the conclusions of intellectual investigation" (p. 25). It is the empirical practice that poses the problems to which science responds with abstraction, but the transition from an empirical condition to a scientific one takes time, especially if the transformation is recent and therefore, imperfect.

The doubtful scientific value of Project management is the main obstacle for all science-oriented faculties, as it does not fall within the classical scientific domains. Framing Project management as a specific field of research and not only as a managerial practice requires overcoming resistance to change, which comes from attachment to the traditional fields of research.

It was in 1959 that Gaddis, in the article "The Project Manager" [55] stated: "If we are to grow as advanced technology grows, we must realize the new importance of the Project manager" (p. 1).

In fact, in the forecasts of the World Economic Forum [1] on professional profiles that worldwide will register a growing demand by 2025, the Project manager is positioned at the 11th position (p. 30). The profession is placed among the top ten whose demand will be growing by 2025 in Brazil, Germany, Japan, India, Italy, Mexico, United Kingdom, and Spain.

Project management is not connected to a specific sector but is applicable in any personal and professional field. In fact, renovating education itself, as well as "p*lanning and implementation of a new curriculum or major change requires a Project management approach and mindset*" [56].

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