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JUNE 3-7, 2025
Nantes, France

Cumulus Association
L'ÉCOLE DE DESIGN Nantes Atlantique

REGENERATE THROUGH PLAY: INCORPORATING HUMAN-NATURE DYNAMICS IN DESIGN EDUCATION.

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ABSTRACT | This 90-minute workshop invites 20 conference participants to co-design four multiplayer games that integrate design education with systems thinking to address human-nature interactions and sustainability.

Climate crises exacerbate socio-economic disparities and political tensions (Cannon et al., 2020; Willige, 2024), linking to global geopolitics (Ghosh, 2017). Design education must equip students—especially undergraduates, the majority of whom do not pursue postgraduate studies (All India Survey on Higher Education, 2024)—to engage with these complexities. However, teaching complex theoretical models like Life Cycle Analysis and the Circular Economy at Undergraduate level remains challenging. In these contexts, active learning can enhance comprehension and retention (Minnick et al., 2022). Zimmerman (2008, 2022) argues that games can offer opportunities for understanding complex systems by introducing participants to systems literacy through structured play. Through games, people can also learn to interact with, modify, and innovate within systems. This approach also strengthens students' ability to apply theoretical knowledge to practical contexts. The proposed workshop merges play-based active learning with systems thinking to demonstrate application of complex theories through active learning.

WORKSHOP STRUCTURE:

The session unfolds in two phases: a 60-minute design period followed by 30 minutes for play and feedback.

1. Introduction (20 minutes)

An overview of game-based learning and its relevance to teaching complex systems will be presented. Two game models will be introduced - a) Games with Narrative Co-creation (such as Dungeons and Dragons); b) Games that simulate real-life complex systems. In the former, players have greater agency and in the latter, systems dictate players' actions more. Key theoretical concepts will be discussed — such as Systems Thinking, Life Cycle Analysis, Tensions among key stakeholders and socio-ecological resilience.

2. Game Design Phase (45 minutes)

Participants, grouped into four teams, will receive toolkits that include case study prompts, a game mechanics template, and materials for prototyping. Each team will explore a specific prompt — such as life cycle analysis, ethics of eco-friendly alternatives, stakeholder tensions in sustainable design practices etc. These are chosen to illuminate complex socio-ecological systems and stimulate discussion on integrating theory with practice. The participants will be given the option of choosing between one of the two aforementioned game play models. This phase will divided as follows:

- Step 1: Concept Development (20 minutes) – Teams define their game's objective, target audience, and mechanics
- Step 2: Quick Prototyping (20 minutes) – Teams create a rough version of their game using provided materials, incorporating role-playing, strategy, or cooperative problem-solving elements.
- Step 3: Game Rules & Testing (10 minutes) – Teams refine game mechanics, ensuring clarity and feasibility.

3. Playtest & Discussion (25 minutes)

Phase 1 (15 minutes): Each group rotates to playtest at least one other team's game while providing structured feedback in templates provided. The templates will include questions pertaining to engagement of players, simulation of real-life complex systems, player agency etc.

Phase 2 (10 minutes): A concluding discussion will synthesize insights on applying game-based learning in design education and potential adaptations for different classroom settings. Participants take back a methodology for active learning that can equip future professionals to navigate and address global environmental challenges responsibly and creatively.

KEYWORDS | DESIGN EDUCATION, GAMEPLAY, CLIMATE CHANGE, COMPLEX SYSTEMS, CO-CREATION

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About the Authors:

Lakshmi Srinivasan is a design educator, researcher, and practitioner with 8+ years of experience in industry and academia. She has a background from the University of Sheffield. Her work spans design research, interdisciplinary approaches to global challenges, including inequality, decolonial practice, climate change, and sustainable development. She has mentored for the JSPF scholarship, and has presented her work in over 13 notable international conferences such as the Include 2022, the Association of Architectural Educators (2023),, GWO etc. Lakshmi currently resides in India and is passionate about inclusive design education, critical pedagogy, mental health awareness. She also enjoys calligraphy and writing poetry.

Khushboo Jogani brings 20 years of experience in product design, ranging from luxury lifestyle to industrial products. She believes that "design is about seeing the invisible and making the impossible inevitable," combining aesthetics, functionality, and marketability. Her teaching philosophy emphasizes the ongoing cycle of unlearning and relearning, creating a dynamic environment where design thinking evolves. Khushboo encourages students to critically reassess their

understanding and prepare them to become visionary thinkers ready for future challenges. Her approach is both pragmatic and innovative, focusing on designs that are aesthetically pleasing and socially impactful while being business-savvy.

Acknowledgements: The authors acknowledge with gratitude the conversations and interactions with Eric Zimmerman and his text “The Rules We Break”.