

Designing Learning Environments to Facilitate Creativity

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Abstract: Creativity is often placed alongside collaboration as a 21st-century skill. However, research in collaborative learning has outpaced research in developing creativity skills. This design case study uses the Creativity Landscape conceptual framework as a conceptual lens through which to operationalize creativity in the design of learning environments, and proposes that constructionist learning principles, design thinking, designerly ways of knowing, and reflective practice are ideally suited to the development of various aspects of creativity.

The creativity landscape framework

Although creativity shares equal billing with collaboration as an essential 21st-century skill (Sawyer, 2014), the various conceptualizations of creativity found in the literature promote confusion and lack of systematic guidance for those who wish to design learning environments which facilitate creativity (Hanson, 2014). And yet the relationship between the design of learning environments and creativity is an area of great research potential (Diego & John, 2011). The Creativity Landscape conceptual framework has been applied to the analysis of creativity tools and techniques (Donaldson, 2016), and to analysis of instructional design projects (Donaldson, 2017). This paper describes the application of the framework as a guide to design for facilitation of creativity in a specific learning environment. This framework describes the rich landscape of creativity research through the use of four categories and prominent concepts within each:

- **Creative Environments:** Learning environments which facilitate creativity are highly collaborative, generative, playful, unregulated, and promote lowered inhibition.
- **Creative Mindsets:** The mindsets required for optimal creativity include perseverance, openness to experiences, tolerance of ambiguity, autonomy, creative self-efficacy, and mindfulness.
- **Creative Process:** The creative process has been conceptualized in various ways. Common features among different process models are stages including identification of problem, framing, preparation, idea generation, incubation, unconscious cognition, insight, and refining.
- **Creative Cognition:** Cognitive processes can be seen as falling somewhere along a continuum ranging from divergent to convergent thinking, including metaphor creation, perspective taking, analogical thinking, frame creation, conceptual combination, abductive reasoning, synthetic thinking, pattern recognition, and elaboration.

Optimal facilitation of creativity involves a balance among all four categories, as well as a strong mix of elements from within each category.

Design case

This design case study was on aspect a larger design-based research project which applied the Creativity Landscape conceptual framework to the design and delivery of a hybrid course on multimedia for teaching and learning. The 10-week course design included 3-hour weekly face-to-face classes accompanied by a robust online aspect in a learning management system organized in weekly modules which included weekly overviews, readings, videos, and online assignments. The course design was aligned as closely as possible to constructionist principles (Papert & Harel, 1991). The course design was structured around two group projects, four individual projects, and frequent reflective assignments. The first group project (weeks 2-4) used a design thinking process model, and the second group projects (weeks 5-10) allowed the students to decide on their own processes. The four individual projects (weeks 4-7) involved meaning-making through artifact construction. There were reflective assignments in both the face-to-face classes and online. After the course was designed and taught by the author, the Creativity Landscape conceptual framework was applied as a diagnostic tool to identify areas in which the facilitation of optimal learner creativity was strong, as well as areas in need of improvement in future iterations of the course design. The analysis was conducted according to a breakdown of course design elements: reflective assignments, individual projects, group projects, online atmosphere, and face-to-face atmosphere. Each course design element was then scored according to the percentage of creativity aspects specifically addressed according to the components in each of the four Creativity Landscape domains. Averages were then calculated for each assignment type and for each creativity domain.

First iteration findings

The reflective assignments were weak at facilitating development in the Creative Process Stages domain. The individual projects were strong in facilitating development in the Creative Context and Environment domain, and facilitated minimal development in the three other domains. The group projects addressed more aspects of all four creative domains than did any other type of work. These projects were strong in facilitating development in the Creative Context and Environment domain and facilitated moderate development in the Creative Process Stages and Creative Cognitive Processes domains. They facilitated minimal development in the Creative State of Mind domain. The online atmosphere was designed to focus on preparation (Creative Process Stages) and elaboration (Creative Cognitive Processes). However, it facilitated only minimal development in these domains, and was weak in facilitating development in the Creative State of Mind and Creative Process Stages domains. The face-to-face atmosphere was particularly strong in facilitating development in the domains of Creative Context and Environment and Creative Cognitive Processes. It facilitated only minimal development in the Creative State of Mind and Creative Process Stages domains. In-class instructor feedback emphasized tolerance of ambiguity (Creative State of Mind), playfulness (Creative Context and Environment), and metaphor creation (Creative Cognitive Processes).

Second iteration findings

The second iteration of this course was designed to leverage the strengths of the first iteration towards addressing the weaknesses. The reflective assignments originally only asked students to reflect on their processes and products, but were changed to include reflection upon emotional states, identity, and relevance to their current and future lives. This led to improvements across the four creativity domains. In the first iteration, the individual assignments were self-contained, but in the second iteration they were integrated into the group project so that each individual artifact would be woven into the group final project. This increased the creativity across the four domains, but there is still room for improvement in the Creative State of Mind and Creative Process Stages domains. In the first iteration, only the first group project used a design thinking process. In the second iteration the second group project was integrated with all the individual projects. This boosted the creativity levels in all four domains dramatically. The online aspects of the course were redesigned to include greater focus on creative self-efficacy, metacognitive practices, and a reflective state. As in the first iteration, the online atmosphere was the weakest of all design elements, but there were improvements in all four domains. However, a great deal of work will be needed in the next iteration to purposefully address the areas in which it was weakest, particularly in the Creative Process Stages and Creative Cognitive Processes domains.

Discussion

In the first iteration, the use of the Creativity Landscape conceptual framework was effective as a diagnostic tool in providing an easily-applied means of evaluating the degree to which course design features were weak or strong in facilitating development of creativity in general, as well as in particular creative domains. In the second iteration the Creativity Landscape conceptual framework was effective as an instructional design tool by suggesting concrete steps which could guide design moves towards increasing creativity. The Creativity Landscape conceptual framework provided a conceptual lens through which to explore design choices for facilitating greater creativity in the design of learning environments. This design study suggested that the principles of constructionist learning, design thinking, designerly ways of knowing, and reflective practice have potential in promoting creativity and warrant more investigation toward operationalizing creativity in learning environments in light of common placement of creativity on par with collaboration in 21st-century skills.

References

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- Funding was provided in part by Drexel University Office of International Programs.