11. Creativity

Emily Wierszewski
Seton Hill University

Definition and Background

Creativity is the process of assessing a problem and, in response, developing multiple innovative solutions; additionally, creativity often requires the flexibility to adapt or even discard some of those solutions in the face of ***failure***. While creativity was once thought to be an innate skill, today we accept that creativity can be learned through observation, connection, and persistence (e.g., Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015; Kelley & Kelley, 2013; Robinson, 2017; and Seelig, 2012). As Stefanio Zenios, co-director of the Center for Entrepreneurial Studies at Stanford, has said, because it is "a structured, systematic way to solve problems," anyone can learn to practice creativity (qtd. in Fyffe & Lee, 2016).

The creative process begins when we either observe or are given a problem. David Kelley and Tom Kelley (2013) of the IDEO global design company share stories of innovators inspired by observation. In one narrative, they describe how a medical engineer redesigned a pediatric MRI machine from a child's perspective, transforming it into a pirate ship adventure after witnessing anxious pediatric MRI patients (pp. 15-16). Creativity researchers of all stripes agree that to exercise creativity, we must be curious about and pay careful attention to our world. Because design thinking is ***user-centered*** and focused on ***human factors***, designers need to pay special attention to the people who inhabit the world in their observations. Zenios recommends spending time studying and conversing with users, especially around moments of "challenge" in order to learn more about the problems that users face (qtd. in Fyffe & Lee, 2016). Mark A. Runco (2003) also emphasizes that creativity involves both "problem-solving and problem finding" through observation and awareness of the world (pp. 658-659).

The next stage in the creative process involves ***ideation***. Creative solutions are often formed when we make novel connections between objects or ideas, thinking beyond what's obvious to discover new and meaningful relationships (Andreason, 2014; Kaufman & Gregoire, 2015; Seelig, 2012). This stage in the creative process is similar to critical thinking, in that it requires us to analyze our design problem from many angles. However, while the endgame of critical thinking is to evaluate a problem, the endgame of creativity is to develop solutions to a problem. In his 2005 commencement speech to Stanford students, Steve Jobs reflected that "Creativity is just connecting things." Jobs was known for telling the story of how an undergraduate typography course

DOI: https://doi.org/10.37514/TPC-B.2022.1725.2.11

inspired the aesthetic of the Apple computer. He was among the first to consider the relationship between visual design and computing. As was the case with Jobs' ideas for the design of the Apple computer, successful connections are often transformative and change how we think about or interact with the world (Csikszentmihalyi, 2013). In art and in poetry, these relationships are quite common and are often labeled metaphors. As the poet Jane Hirschfield put it, "The balancing between expected and unforeseen, both in aesthetic and cognitive structures, is near the center of every work of art."

Creative solutions are often the result of divergent thinking, which, as the name implies, involves the production of many original ideas that can diverge "in any direction" (Acar & Runco, 2019, p. 157). Selcuk Acar and Mark A. Runco (2019) emphasize that because divergent thinking goes in several directions, it can even involve "thinking with opposites or even contradictions" (p. 153). Creative solutions are not only wide in scope but large in number. As Eden Hennessey and Julie Mueller (2020) confirm, divergent thinking involves developing a vast number of solutions in response to a problem (p. 509). These solutions are often generated in generous quantities because divergent thinking doesn't initially require us to address the "fit" or feasibility of those solutions. In this way, divergent thinking stands in contrast to convergent thinking, "which seeks to narrow the number of alternatives based upon certain criteria, such as effectiveness, efficiency, appropriateness, usefulness, or fit" and comes later in the design process as prototypes are developed and user tested (Stuhlfaut & Windels, 2015, p. 244).

Developing a large quantity of new or unexpected ideas is a practice that is best done collaboratively. As Zenios notes, collaborating allows creators to play on one another's strengths, as well as their previous experiences and unique perspectives. "By combining those ingredients together," Zenios argues, "you can come up with new and creative ways to solve a problem" (qtd. in Fyffe & Lee, 2016). The importance of collaboration at this stage in the creative process is stressed by scholars writing about creativity in a variety of professional and educational contexts (consult, for instance, Hokanson, 2006; Hsiao et al., 2017; Lee et al., 2019; Zhong & Fan, 2016; Zidulka & Kajzer, 2018).

Finally, the influence on creativity of our environment, identities, and previous experiences as human beings cannot be overlooked. For instance, our ability to engage in creativity can be encouraged or restricted by the parameters and tone of our environment. Petro Poutanen (2013) provides an example, writing that "A normative environment that permits people to disagree may liberate people to be more creative by allowing otherwise banned discourses to emerge and stimulating additional ideas through competing views" (p. 113). This applies both to workplace and classroom settings. Scholars like Marc Santos and Megan McIntyre (2016) have written about the importance of balancing uncertainty and unknowns with appropriate support structures for students when teaching the creative process.

Design Application

When thinking creatively, not all of our observations and ideas will be successful. Thus, creativity necessitates a willingness to persevere through and in spite of failure. In her decades of creativity research, Nancy C. Andreason (2014) discovered that "Creative people tend to be very persistent, even when confronted with skepticism or rejection." Creativity demands not only an openness to making mistakes, but the self-awareness to learn from them (Kelley & Kelley, 2013). Although schooling and society at large have arguably conditioned most of us to fear failure, it is an expected and important part of the creative process.

Creativity manifests in both abstract and concrete forms in the design process. When conceptualizing and defining the problem space for a specific task, communicators and designers can demonstrate creativity by offering unconventional perspectives to the definition and ideation processes of design thinking. Similarly, they may be expected to articulate and realize radical solutions and ways of actualizing proposed designs through the prototyping and testing phases. Creativity is a constant strength as well as strain that sustains the design process. For technical communicators who work with design teams, it is important to understand creativity as an ongoing tide rather than a distinctive moment of inspiration. Creativity requires vigor and endurance on the part of the designer throughout the design process to ensure the materialization of exceptional solutions.

Pedagogical Integration

Creative thinkers are exceptional observers. Pulitzer Prize winning poet Mary Oliver (2003) concludes her poem "Yes! No!" with the following line: "To pay attention, this is our endless / and proper work." Oliver regarded attention as key to the creative process, and she wasn't alone in this thinking—the concept of mindfulness appears throughout modern creativity research. Students need to be taught observational skills and mindfulness about the world around them. Here are some ways that can be accomplished:

- Encourage students to spend time in locations related to their domains of study and to keep observational journals about what they notice people doing and how they interact with design in their environments.
- Require students to record observations related to the design problems they face, including how users interact with designs (much like the medical engineer described above in the work of Kelley & Kelley, 2013). They can learn to talk to users about their experiences.

Creative designers are proficient at making novel connections, but many students find this to be a complex, unfamiliar skill. The more practice students have with this kind of cognitive work, the more creative their design solutions will be. Below are some specific ideas for developing divergent thinking in the classroom.

- Teach students the concept of metaphor to show them a familiar, accessible way to see how unlike things can have working relationships. Show them an example of metaphor in advertisements. (If you're looking for inspiration, try car ads! A recent Mitsubishi print ad compared their SUV to a rhinoceros.) Then, ask them to each bring in two examples of metaphors in advertisements for the next class. Spend class time analyzing and discussing the metaphorical relationships in their example ads, and talk about their favorites. Which examples are most effective and why?
- Ask students to practice connecting two dissimilar objects or concepts in as many ways possible. Present them with a list of various objects and a list of various concepts. Have them choose one from each list. Ask them to begin by brainstorming a list of as many similarities or relationships as they can think of for their two list items. Then ask them to create a metaphor from their brainstorming (could be anything from an ad to a photograph to a video to a poem).
- Ask students to brainstorm a problem they face as students on your campus. Then, work as a class to brainstorm solutions that focus on divergent thinking. Emphasize to students that divergent thinking requires us to temporarily censor the critic in our minds (the one that would say, "That won't work!"). Do not rule out any solution, no matter how outlandish. Practice this frequently as a class.
- Require students to participate in regular divergent thinking sessions which ask them to think of as many ideas as possible in a short amount of time (for example, they could engage in an exercise like the 30 Circles Challenge, which requires making circles into as many recognizable objects as possible in a short period of time; this and other ideas can be found on the blog for IDEO, https://www.ideo.com/blog).

Finally, many students are fearful of failure and also of tackling design problems when a solution or path forward is unclear. The ability to face a challenging problem without being weighed down by unease about succeeding is crucial to the practice of creativity. Santos and McIntyre (2016) refer to this "discomfort" and uncertainty inherent in the creative process as "disequilibrium" and argue that designing coursework that pushes students to work within this disequilibrium is a critical part of teaching creativity. Here are some ideas for how to accomplish this in secondary and postsecondary classrooms:

- Assign students problem-based design exercises. To encourage radical imagination, students may be asked to perform a thorough examination of the problem, and then create three probable solutions—one as the slightly improved version of the current resolution, one as the conservative new direction, and one as the revolutionary idea unconstrained by existing realities. Through the collaborative process of choosing a workable solu-

tion as a class, students have the opportunity to practice persistence and become comfortable with failure in a safe space.

- Encourage students to engage in written reflections at the conclusion of the design process and to assess challenges and how they were managed. For excellent reflection questions and a more thorough discussion of this approach, see Santos and McIntyre (2016).

References and Recommended Readings

Acar, S., & Runco, M. A. (2019). Divergent thinking: New methods, recent research, and extended theory. *Psychology of Aesthetics, Creativity, and the Arts*, *13*(2), 153-158.

Andreason, N. (2014). Secrets of the creative brain. *The Atlantic.* https://www.theatlantic.com/magazine/archive/2014/07/secrets-of-the-creative-brain/372299/?utm_campaign=brainfood&utm_medium=email&utm_source=farnamstreet.org

Csikszentmihalyi, M. (2013). Creativity: Flow and the psychology of discovery and invention. HarperCollins.

Fyffe, S., & Lee, K. (2016, January 19). *How design thinking improves the creative process*. Insights by Stanford Business. https://www.gsb.stanford.edu/insights/how-design-thinking-improves-creative-process

Hennessey, E., & Mueller, J. (2020). Teaching and learning design thinking (DT): How do educators see DT fitting into the classroom? *Canadian Journal of Education*, *43*(2), 499-521.

Hokanson, B. (2006). Creativity in the design curriculum. *Journal of Visual Literacy*, *26*(1), 41-52.

Hsiao, S. W., Wang, M. F., & Chen, C. W. (2017). Time pressure and creativity in industrial design. *International Journal of Technology and Design Education*, *27*(2), 271-289.

Kaufman, S. B., & Gregoire, C. (2015). *Wired to create*. Random House.

Kelley, D., & Kelley, T. (2013). Creative confidence: Unleashing the creative potential within us all. Crown Business.

Lee, J., Jung, Y., & Yoon, S. (2019). Fostering group creativity through design thinking projects. *Knowledge Management and E-Learning*, *11*(3), 378-392.

Oliver, M. (2003). Yes! No! *Owls and other fantasies: Poems and essays* (p. 27). Beacon Press.

Poutanen, P. (2013). Creativity as seen through the complex systems perspective. *Interdisciplinary Studies Journal*, *2*(3), 207-221.

Robinson, K. (2017). *Out of our minds: Learning to be creative.* John Wiley & Sons Ltd.

Runco, M. A. (2003). Creativity. *Annual Review of Psychology*, *55*, 657-687.

Santos, M. C., & McIntyre, M. M. (2016). Toward a technical communication made whole: Disequilibrium, creativity, and postpedagogy. *Composition Forum*, *33.* https://compositionforum.com/issue/33/techcomm.php

Seelig, T. (2012). inGenius: A crash course on creativity. HarperOne.

Stuhlfaut, M. W., & Windels, K. (2015). The Creative Code: A moderator of divergent thinking in the development of marketing communications. *Journal of Marketing Communications*, *21*(4), 241-259.

Zhong, X. M., & Fan, K. K. (2016). A new perspective on design education: A "Creative Production-Manufacturing Model" in "The Maker Movement" context. *EURASIA Journal of Mathematics, Science, & Technology Education*, *12*(5), 1389-1398.

Zidulka, A., & Kajzer, M. I. (2018). Creativity or cooptation? Thinking beyond instrumentalism when teaching design thinking. *Journal of Management Education*, *46*(6), 749-760.