

Chapter 28

Using Technology to Foster Creative and Critical Thinking in the Classroom

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ABSTRACT

Enhancing and nurturing creative and critical thinking skills are important goals for 21st century learning yet high stakes assessment and standardized curriculum leave little room for realizing these goals in 21st century classrooms. Used appropriately, technology help teachers create personalized learning environments and attend to the type of motivation and engagement that nurtures creative and critical thinking skills. This chapter explores conceptions of creativity, draws on theories of motivation to identify optimal conditions for nurturing creativity and suggests technology supported strategies for creating those conditions.

INTRODUCTION

Meeting the needs of diverse learners in today's classrooms requires that we pay attention to more than just good test-taking skills. Calls for critical and creative thinking have permeated discussions of educational reform. Fullan and Langworthy (2103) argue for deeper learning skills so that our current learners/future workforce can meet the demands of a rapidly changing world. They identify deep learning skills as character education, citizenship, communication, critical thinking and problem solving, collaboration, and creativity and imagination (p. 3). Similarly, the Partnership for 21st Century Learning (2016) identifies the 4 C's, critical thinking, collaboration, communication and creativity as essential 21st cen-

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tury skills. In the last decade, critical thinking, problem solving and creativity have become important goals of international education standards and reform efforts (European Higher Education Area, 2011; Ritchhart, 2015; U.S. Department of Education, 2006; Zhao, 2009).

In addition to the arts, where creativity is typically emphasized, creativity is at play in all areas of life and is valued by virtually every discipline, as well as business and industry (Pfeiffer & Thompson, 2013; Wagner, 2008) and subsequently, should be nurtured in all areas of schooling (Robinson, 2015). The kind of pedagogy and learning environment that cultivates critical and creative thinking must engage learners in new ways, be strength-based, learner centered and more personalized than traditional classrooms that focus primarily on test taking skills (Henshon, 2017; Robinson, 2015; Zhao, 2009).

The research on creative and critical thinking, mindset, and motivation can provide insight into optimal pedagogy and classroom conditions for nurturing creativity. Technology can provide a whole new layer of possibilities for meeting the needs of today's learners by promoting deeper learning and thinking to ensure that learners leave school ready to face the challenges of the 21st century. The purpose of this chapter is to apply what we know about how to nurture creative and critical thinking and identify ways that technology can facilitate those efforts.

BACKGROUND

Creativity, innovation, and critical thinking go hand-in-hand. Nurturing this kind of thinking involves making creative and critical thinking intentional by attending to both the classroom environment and student motivation. By providing a safe environment and purposeful assignments, students can engage in the creative process and use critical thinking skills in order to produce innovative ideas.

The Nature of Creative and Critical Thinking

Experts agree that creativity involves not only having novel ideas, but using critical thinking processes to engage ideas that are effective, useful or in some way have value (Runco & Jaegar, 2012). Robinson (2015) defines creativity as the “process of having original ideas that have value” (P.18). Robinson further characterizes creativity as the use of the imagination as well as critical thinking. He argues that while some consider creative thinking to mostly involve the free flow of ideas, creativity is actually a more complex process that involves allowing for imagination, putting new ideas in place, and being reflective about, evaluating, and refining those ideas.

Creativity is often used interchangeably with innovation. Couros (2015) defines innovation as a way of thinking that creates something new and better. Wagner (2012) discusses several definitions of innovation which incorporate creativity and problem solving and result in a product, idea or solution that is novel and has value. In other words, having a creative or original idea is only half of the creativity equation. Putting ideas into play in ways that allow them to be tested and refined results in new and valuable solutions, products, or innovations, finishing the equation. Wagner (2012) identifies strategies used by creative thinkers as pursuing curiosity, asking good questions, collaborating, listening to and learning from others, using integrative thinking, and acting and experimenting. According to Pink (2005), creativity involves symphony, the act of putting seemingly unrelated ideas together, evaluating ideas, recognizing patterns and relationships, and connecting the dots in new ways to create something original, something no one else has envisioned.

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