Need for Creativity in Art Education
Suzannah McEntire
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In the following essay I will attempt to define creativity, the importance for teaching creativity in art education, examine cognitive brain research, and discuss strategies to reincorporate and promote creativity in the art classroom. Art education curriculum needs to be reconstructed for contemporary and future times in order to solidify its place and importance in education. Creative, divergent, innovative, and critical thinking skills are essential for our students' future, and educators must address these needs in art education with careful consideration. Education today is a business-like machine directed by policy and standards constructed to prepare students for college entry, but not necessarily for life as adults in a post-industrial society. The NCLB act of 2001 has emphasized standardized testing and forced schools, fearful of loosing funding, to devote time, budgets, and resources to specific tested subject areas. In a 2009 interview on the importance of creativity Sir Ken Richardson, an expert on creativity stated the following:

> Education is becoming so dominated by this culture of standardized testing, by a particular view of intelligence, and a narrow curriculum, and education system that we're flattening and stifling some of the basic skills and processes that creative achievement depends on. (Azzam, 2009, para 19)

According to Freedman (2007), this emphasis on standardized testing has "limited spending on learning resources, but increased spending on testing and a narrowed curriculum of 'inputs' (reading and math), not 'outputs' (critical thinking and expression)" (p 207). Educators need to reexamine and refocus curricula in a way that will prepare children for an unpredictable future. Educators need to anticipate that the education provided to students today may be

irrelevant in the imminent future. Society's new post-industrial world problems depend on "every ounce of ingenuity, imagination, and creativity to confront these problems" (Azzam, 2009 para 9). Creative and innovative thinking behaviors and problem solving are needed for new technology and for technology that will arise in the future global economy. Preparing students for the unpredictable as adults can be accomplished by promoting creativity and divergent thinking in early education, as well as in art education. This preparation can be successfully done in myriad ways to produce empathetic, socially conscious, and environmentally engaged students. Through art education curricula, focused in visual culture, service learning, and creative community involvement can engage students' interest in their multicultural and democratic society. This interest in turn will create more meaningful educational experiences, while allowing for artistic creativity and expression to flourish and will encourage creative thinking and problem solving.

Although creativity is valued in society, policy makers, laws, and standardized testing sometimes oppress creativity in art education. In Illinois, "assessors of state goals refuse to allow art educators to use the term creativity in goals because creativity cannot be measured with multiple-choice tests" (Freedman, 2007 p. 206). When did testing become more important that educational content and thinking? According to Robinson (2009), "The regime of standardized testing has led us all to believe that if you can't count it, it doesn't count. Actually, in every creative approach, some of the things we're looking for are hard, if not impossible, to quantify. But that doesn't mean they don't matter" (p. 26). Can thinking be measured with a multiple-choice test? Is thinking or creativity irrelevant if it is not assessable in this way? Zimmerman (2009) believes that "past and postmodern notions about creativity need to be revisited to explain

how they have potential to become an important part of contemporary art education theory and practice" (p. 384).

What is Creativity and What is Not?

Creativity has no clear definition and is an elusive concept (Milbrandt, M., & Milbrandt, L. 2011). Creativity is a somewhat intangible process of thinking and producing. Creativity is about looking for valuable new ways of doing things (Azzam, 2009). Creativity incorporates multiple ideas, possibilities, and sometimes accidents. The definition of creativity in education and psychology has not been defined finitely, and because of its unpredictability, it is difficult to assess.

According Robinson (Azzam, 2009), there are three misconceptions about creativity. The first is that only a few people have it. The second is that it is only employed within special activities. Robison expresses that creativity is usually associated with the arts, but his belief is "creativity really is a function of everything we do. So education about creativity is about the whole curriculum, not just part of it" (Azzam, 2009 p. 22). The third misconception is that creativity is undisciplined and not associated with skill. In fact, creativity is a disciplined process that requires knowledge, control, evaluation, and skill. Extraordinary insights, breakthroughs (Azzam, 2009), and sometimes mistakes. (e.g., the discovery of penicillin) (Video Arts Limited 2015), are creative and disciplined work.

Cognitive research

Neurological studies using Magnetic Resonance Imaging (fMRI) machines have produced evidence showing anatomically distinct areas of the brain are activated during differing types of cognition. Creative thinking has been shown in fMRI images to co-activate the brain when shifting between divergent and convergent cognition. According to Wright (2012),

"creative people tend to look at possible relationships between two or more things then shift to analytical thinking to search for possible solutions" (para 2).Therefore creative thinkers move between opened modes of divergent associative thinking to more closed modes of convergent cause-and-effect thinking (Wright, 2012 &Video Arts Limited 2015). Convergent thinking, the idea of one correct answer, taught in education, hinders divergent creative thinking of multiple ideas or possible answers.

Assessing creativity

To create means to produce or make something come into being; therefore, ideas that are not acted upon are imaginative but not creative. In the 1960's George Land (TEDx Talks, 2011) was asked by the National Aeronautics Space Administration (NASA) to produce an instrument to identify creative personnel in order to address NASA's most challenging problems. The instrument tested the ability to look for a problem and come up with new, different, and innovative ideas and solutions. The assessment was simple and so successful Land decided to administer it to sixteen thousand five-year-old children. Assessed through his test, ninety-eight percent of the five-year-olds fell into the genius category of imagination. Astonished, Land decided to make it a longitudinal study and tested the same children again at ten and fifteen years of age. At ten-years-old the percentage of students scoring at the genius level fell to thirty percent, at fifteen-years-old the genius level fell to twelve percent. Many adults have also been tested with the same assessment and the resounding number of adults test at two percent genius level. Through Land's research he concludes, non-creative behavior is learned through our educational system. Educators need to scrutinize curriculums considering newer research in brain functions to prepare students for a future that will require creative and innovative solutions to the world's unpredictable problems. Robison (2009), Land (2011), Wright (2012) and

Zimmerman (2009) agreed that education needs to consider research of convergent and divergent thinking when designing curricula.

Teaching creativity

Both Wright (2012) and Lightfoot (as cited by, Wright 2012) agree that the greatest potential for nurturing creative patterns of thought later in life begins in early childhood. Creative thinking can best be fostered and nurtured in early education, specifically from the range of eighteen-months to four years of age (Lightfoot, as cited by, Wright 2012). Robinson contends there are two ways to think about teaching creativity. First creative thinking skills can be taught, like math or reading, and exercised through the use of visual thinking, analogies, and metaphors. Second, pedagogy can be designed for innovation and experimentation by "not giving them all the answers but giving them the tools they need to find out what the answers might be or to explore new avenues" (Azzam, 2009, para 30).

New Curriculum Models

William Wright (2012) suggests three strategies that foster creativity in the classroom for art educators. New curriculum models that include freedom to foster discovery through challenging, interdisciplinary, broadly based, and project orientation is the first strategy. Students are most creative when directly motivated by challenging lessons created with student interests in mind allowing for deeper engagement, enjoyment, and satisfaction.

Creative Collaboration

The second strategy is creative collaboration. Experiences, community, and culture influence humans' perceptions and the most original thinking is stimulated through collaboration with others' ideas. Intercultural and multicultural education creates diversity in perceptions, leading to more creative ways of perceiving the surrounding world. Through collaboration and

idea exchange, students experience diversity through exposure to differing ways of perceiving and thinking about solutions to problems. Some of the greatest scientific breakthroughs have occurred through collaboration of people with common interest's and diverse ways of thinking (Azzam, 2009). Robison (2009) and Wright (2012) agree that collaborative art assignments foster creativity. Open-ended art assignments approached collaboratively allow for differentiated perceptions, value of others' ideas of thinking, and foster communication.

Risk Taking and Room for Failure

Entrepreneur Elon Musk, the founder of Tesla, PayPal, and SpaceX, commented on innovation and failure in 2005. "Failure is an option here. If things are not failing, you are not innovating enough" (Reingold, 2005, para 18). Echoing Musk's ideas on the value of failure, a colleague stated recently when discussing education, "failure is just the first attempt at learning" (S. Price, personal communication, September 5, 2014). Concurrent with Musk (2005) and Price (2014), the value of failure is Wright's (2012) third strategy that emphasizes allowance for risk taking and room for failure. Risk taking and room for failure results in more attempts at creative options and possibilities for students. The probabilities of creative successes increase when students are allowed the freedom to experiment and fail.

Reflection

Our post-industrial society has outgrown the system education was founded on. The 21st century is a new information age that is unpredictable and requires modernization of our educational system and an overhaul of curricula designed to meet future needs. Creative and divergent thinking, imagination, and innovation are paramount "for generating solutions to real life problems now and in the future" (Zimmerman, 2009, p. 394). Thinking and learning in these

ways should be addressed through curricula in arts education and beyond if educators intend to prepare students for the unforeseeable and technological future in which they will live.

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