Chapter 32
Solving the Creativity Crisis:
The Critical Need for Professional Development in Maker-Centered Teaching

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ABSTRACT

Society's serious problems require creative thinkers. Developing an effective workforce relies on cultivating our children's creativity. Unfortunately, we are suffering a creativity crisis, particularly with young children. Since 1990, early elementary students have suffered the largest decrease in creative thinking capacity. Rather than learning through play, young children are taught by rote and tested extensively. Play is indispensable for early learners; without play, students are missing an essential element of early learning that stimulates creative thinking. To promote play, elementary teachers should be trained in maker-centered teaching, a playful approach to learning that embodies the essential elements of STEM education. To truly integrate maker-centered learning, there is a critical need for effective maker-centered professional development. Maker-centered teaching provides playful learning where young children can experience STEM and learn to think more creatively. With maker-centered teaching, we can make the next generation of innovators.

INTRODUCTION

Acquiring isolated skills and memorizing specific facts will not solve global issues such as climate change and the energy crisis; society's serious problems need creative problem solvers (Gee, 2010). Developing an effective workforce relies on cultivating our children's creative capacity. Unfortunately, we are suffering a creativity crisis (Kim, 2011), particularly with young children. Since 1990, elementary students suffered the largest decrease in creative thinking capacity. The problem is that they are taught by rote and tested extensively rather than learning through play (Miller & Almon, 2009).

The State of Early Elementary Education

We live in a culture of high-stakes testing (Koretz, 2017). With the No Child Left Behind Act of 2001, schools shifted their curricula to emphasize rote memorization as a means to prepare for standardized tests (Ellis, 2007). Today, most schools still place emphasis on content mastery; students acquire isolated skills and specific facts rather than engaging in learner-driven activities (Ravitch, 2016). This culture of testing, rote memorization, and content mastery has seeped down into early elementary education (Resnick, 2017; Robinson, 2015).

Over the past few decades, kindergarten classrooms have changed radically (Miller & Almon, 2009). When kindergarten was invented in the 1830s, there was a shift from a broadcast model to an interactive model; in kindergarten classrooms, young children played with geometric tiles, building blocks, sticks and peas, and colored paper (Brosterman, 1997). In an effort to understand the world around them, kindergartners created mosaic patterns, built towers, and designed three-dimensional structures. These young students were able to mix art and design, explore science and engineering, and express their creativity—all under the guise of play.

Unfortunately, play time has been replaced with academic time. According to Resnick (2017), "in many kindergartens today, children spend time filling out math worksheets and drilling with phonics flashcards" (p. 9). We are back to passive listening and the broadcast model emphasizing content trans-mission; young children are taught math and literacy skills and tested to ensure understanding (Miller & Almon, 2009).

An (Unintended) Result: The Creativity Crisis

Now that young students are taught by rote and required to follow instruction, there is less time for playful learning than envisioned in the 1830s kindergarten classroom (Resnick, 2017). Research shows that the implications for this paradigm shift in early education are far reaching (Miller & Almon, 2009). First, when school expectations emphasize extrinsic goals, young children's imaginations and intrinsic motivations are squelched (Honey & Kanter, 2013). Second, when students are required to follow in-structions, students spend less time formulating their own ideas and problem-solving strategies (Resnick, 2017). Ultimately, lack of play time stifles the creative energies of our young children (Hirsh-Pasek, Golinkoff, & Eyer, 2004).

Dr. Kathy Hirsh-Pasek, a childhood development researcher, argues that lack of play time and over-emphasis on academics is a national crisis (Hirsh-Pasek, Golinkoff, Berk, & Singer, 2009). To investigate this claim, Kim (2016) analyzed 272,599 scores from the Torrance Tests of Creative Thinking and found that—after 1990—creativity scores declined significantly. Essentially, "Americans are less creative today than they were 25 years ago" (Kim, 2016, loc. 182). The age group with the largest decrease in creative fluency was early elementary students from kindergarten to 3rd grade (Kim, 2011). Children are grow-ing up less intellectually curious than they were decades ago, and this directly impacts the creativity of our adult workforce.

The Need to Cultivate Creativity

Children's early experiences build their brain architecture; one can argue that early elementary education is the foundation for our adult thinking skills (Center for Childhood Creativity, 2018). According to the

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