PBL and Design Thinking to Unleash Student Creativity

By Beth Holland on September 1, 2016 10:20 AM

In January of 2016, the World Economic Forum released a series of reports about the future of work. According to their research, we are entering a **Fourth Industrial Revolution**. Where the first industrial revolution brought steam engines, the second ushered in electricity, and the third introduced computers and the Internet, the fourth fuses the digital, physical, and biological systems of the world. The new technologies associated with this era will fundamentally change the nature and context of work at an unprecedented pace and at a global scale.

According to **The Future of Jobs** report, creativity will be one of the top three required skills by the year 2020. Workers will need to seek out novel solutions, apply knowledge in different ways, and consider options for problems that have never before existed.

in 2020	in 2015
1. Complex Problem Solving	1. Complex Problem Solving
2. Critical Thinking	2. Coordinating with Others
3. Creativity	3. People Management
4. People Management	4. Critical Thinking
5. Coordinating with Others	5. Negotiation
6. Emotional Intelligence	6. Quality Control
7. Judgment and Decision Making	7. Service Orientation
8. Service Orientation	8. Judgment and Decision Making
9. Negotiation	9. Active Listening
10. Cognitive Flexibility	10. Creativity

Source: Future of Jobs Report, World Economic Forum

However, the American public school system evolved as a by-product of the first industrial revolution which valued rule-following, conformity, and a quest for the "right answer." This stark contrast then raises a critical question: how do we foster more creative students?

In his 2005 Scientific American Mind article, Unleashing Creativity, Ulrich Kraft explained that creativity could be nurtured, arguing that new solutions emerge from configuring existing knowledge and understanding in infinite and unique ways. Where intelligence may be an innate and finite trait, it only determines the potential for individuals to engage in convergent thinking - the ability to find a single answer to a problem using traditional or orthodox methodologies. Creativity, on the other hand, examines a person's innate ability to engage in divergent thinking - the process of seeking out novel problems and solutions (Kraft, 2005).

Children enter into schools as creative individuals full of imagination and curiosity. They ask questions, seek out new solutions, and genuinely want to learn, yet traditional assessments and school structures reward convergent thinking. As students progress through a system that values the acquisition of a single right answer and receive validation based on their ability to produce a "right" response, then they develop new neural pathways that deter rather than foster creativity and divergent thinking (Kraft, 2005). To foster creativity requires not only the acquisition of a domain of knowledge but also the opportunity to make new associations by constructing unique artifacts of learning.

The question then becomes how to balance the requirements of the current educational system with the future need to foster more creative and complex thinkers. As an instructor with **EdTechTeacher**, I regularly hear teachers express concerns about how to innovate their classroom practice and adopt new strategies to meet the intellectual demands of the future given the influence of external pressures such as standardized tests, common assessments, other colleagues, and even parents. However, Johns Hopkins University professors Gregory, Hardiman, Yarmolinskaya, Rinne, and Limb (2013) argue that creativity requires both routine and adaptive expertise meaning that creativity and content do not represent an either/or debate.

According to Gregory et al. (2013), routine expertise results from the acquisition of knowledge and experience. Students cannot be creative if they do not possess background understanding of the content, context, and associated procedures. Adaptive expertise then leverages this foundational knowledge such that students can engage in problem solving and look for ways to change and adapt their prior understanding to seek out novel solutions. Collaborative, hands-on, project-based learning experiences provide students with an opportunity to both acquire routine experience and engage in the more divergent thinking that may ultimately unleash their creativity.

Over the past several months, I have written about the rise in popularity of **Project-Based Learning (PBL) and Design Thinking to scaffold the process of innovating** classroom practice. These frameworks offer teachers a structure for designing new learning experiences that

stimulate inquiry, problem-solving, idea generation, and creativity. Whether students engage in empathy and define new problems via the design thinking process or present their learning to an authentic audience as the culmination of a PBL experience, they gain the opportunity to build that adaptive expertise required by this fourth industrial revolution.

References:

Gregory, E., Hardiman, M., Yarmolinskaya, J., Rinne, L., & Limb, C. (2013). Building creative thinking in the classroom: From research to practice. *International Journal of Educational Research*, 62, 43-50. doi:10.1016/j.ijer.2013.06.003

Kraft, U. (2005). Unleashing creativity. *Scientific American Mind*, 16(1), 16-23.

Categories: Questions worth Researching

Tags: Creativity   Design Thinking   PBL   World Economic Forum