Assignment 2: Informal Learning Assignment

Maker Movement in Education

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The maker movement is becoming more popular and growing at a rapid rate. In 2014, President Obama even hopped on board and hosted the first-ever White House Maker Faire to encourage creativity and invention (Halverson & Sheridan, 2014). As a result, you can find maker spaces across the world in various types of places, such as schools, libraries, museums, organizations, and even in homes (Halverson & Sheridan, 2014).

Creativity and innovation are the core of the maker movement (Schrock, 2014). "The learning-by-doing approach also has precedents in education: project-based learning, Jean Piaget's constructivism and Seymour Papert's constructionism" (Martinez and Stager, 2014). Constructivism theory, in particular, recognizes project-based learning as a way that people learn best, which could be why Martinez and Stager (2013) gave recognition to Seymour Papert as being "the father of the maker movement" (p.17).

The maker movement is a "new industrial revolution" that has three main characteristics: the use of digital tools products, cultural norms of working together, and common design file standards These characteristics are what sets the movement apart from inventors producers, and tinkerers of the past (Anderson, 2012, p. 21).

A catalyst for the maker movement is attributed to Make: Magazine, which launched in 2005. This publication really helped to stimulate the maker movement by writing about maker related projects. It's published six times a year and is referred to as the "Gutenberg Bible of the burgeoning maker community" (Martinez and Stager, 2013, p.27). The popularity of the maker movement continued to expand in 2006 as a result of the introduction of the Maker Faire.

The Maker Faire is a whole new experience that is an exciting combination of a science fair and a county fair with a twist. It's a family-friendly event for all ages. People from all different backgrounds, ages, and walks of life attend this massive event so they can share their work, knowledge, and resources with others. In some instances, this is the only venue that allows makers to 'show and tell' their work. Between the two flagship Maker Faires in California and New York, this two-day event brings in about 200,000 people annually. In fact, the success of this event has inspired the creation of over 200 independent mini maker faires around the world (Welcome to Maker Faire, 2018).

The root of the maker movement is cultivating community (Litts, 2015). In education, a makerspace can transform a classroom. The environment naturally becomes a community that is engaging and students are active in their learning. It is common for numerous projects to be going on at the same time. And as the teacher takes a backseat, the students learn how to share materials, work collaboratively as they transform and grow into various roles (Schrock, 2014, Stager, 2014).

The technology and materials that are available today for students are exciting. However, even though maker spaces can have all the latest gadgets and tools, the focus of learning is not on the tools, it is on the product and the process it took to get there (Halverston & Sheridan, 2014). In reality, a makerspace does not have to have all kinds of expensive resources. There is no specific set of materials that you need. In fact, it can look very different in every setting and can evolve with any type of budget.

It is time for a change. Too many schools do not allow children to feel like they are capable of great things even though research shows that higher-order thinking skills and deep

content knowledge are achieved through meaningful projects and experiential environments (Stager, 2014). Nowadays, kids, at a very young age know how they can find the answers to just about anything within a few clicks. They are resourceful and it becomes an instinctive occurrence for them to be active in their learning. Unfortunately, when they are in school and they are exposed to a mundane, standards-based setting, they are limited by the knowledge of the teacher and the textbook. When a kid can do so much more at home and is constrained in school, it can be frustrating or boring for them (Martinez and Stager, 2014).

The maker movement is helping to alter this mindset. A makerspace can provide a hands-on, rich, and authentic learning experience through the active process of creating and discovering (Martinez & Stager, 2013), while they plunge into learning science, technology, engineering, and math (STEM) concepts. Although these informal learning spaces may not reflect their impact on standardized test scores, this should not be an excuse to shy away from implementing them. They have the ability to build on a child's passion and allows them to be eagerly engaged in projects. The tools, passion, and projects can empower children to solve problems, produce shareable artifacts, and express themselves (Martinez & Stager, 2014). Makerspaces can be instrumental in fostering design thinking and critical thinking skills, as well as inspire self-directed learning. These attributes are all important, even though they are hard to measure on a standardized test.

Some schools may feel that they do not have the room for a makerspace. However, as they see the value in it, they have overcome this obstacle by utilizing a common area, such their library. A library can be an ideal place for connection and collaboration. Since it is a common area, it is also useful for storage and sharing of materials.

The 'do it yourself' phenomenon is nothing new. People have been making things since the beginning of time. However, in our culture where today's students are used to being consumers, a maker space allows them to become the creators. When students are so engaged that they lose track of time or they cannot wait to get to school, you know you are doing something right (Martinez & Stager, 2014).

References

Anderson, C. (2012). *Makers: The new industrial revolution.* New York: Crown.

Halverson, E. & Sheridan, K. (2014). The maker movement in education. *The Harvard Educational Review, 84*(4). 495-504. DOI: 10.17763/haer.84.4.34j1g68140382063

Litts, B. (2015). Making learning: Makerspaces as learning environments. Retrieved from http://www.informalscience.org/sites/default/files/Litts_2015_Dissertation_ Published.pdf

Martinez, S. & Stager, G. (2013). *Invent to learn: Making, tinkering, and engineering in the classroom.* Torrance, CA: Constructing modern knowledge press.

Martinez, S. & Stager, G. (2014, July 21). The maker movement: A learning revolution. *ISTE*. Retrieved from https://www.iste.org/explore/articleDetail?articleid=106

Stager, G. (2014, Winter). What's the maker movement and why should I care? Retrieved from http://www.scholastic.com/browse/article.jsp?id=3758336&scrlybrkr= 3eef142b#&print=2

Schrock, A. (2014). "Education in disguise": Culture of a hacker and maker space. *Journal of Education and Information Studies 10*(1), pp.1-25. Retrieved from https://escholarship.org/uc/item/0js1n1qg.

Welcome to maker faire. (2018). Retrieved from https://makerfaire.com/