

Leonardo's Workshop

Makerspace Expansion Rationale

Waters Fine Arts

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Choice-based Artmaking & Makerspaces



Makerspaces and maker projects are firmly grounded in sound educational theory. The work of Papert, Piaget, Vygotsky, Dewey and many others puts the child at the center of learning, rather than the teacher. Educational theories such as constructionism, constructivism, Montessori, and the Reggio Emilia approach all support making as a way to learn.

“We’re trying to understand what it means to foster in young people a sense of maker empowerment, meaning one has a sensitivity to the designed dimension of objects and systems, along with the inclination and capacity to shape one’s world through building, tinkering, re/designing, or hacking,” says Lecturer

Shari Tishman, the principal investigator on the project and director of Project Zero [harvard.edu] "My hope is that by encouraging young people to tinker with their world we're empowering them to reinvent it."

The essential ingredients in maker projects are people, problems and materials. Problems are posed (by the teacher or the student), and people use materials to attempt to solve those problems.

Design Thinking



Engineers, businesses, social entrepreneurs and other innovators have used design methods and processes for decades to create new solutions for many different types of challenges. But Design Thinking isn't just about specific steps to follow to innovate -- thinking like a designer can transform the way you approach the world when imagining and creating new solutions: it's about being aware of the world around us, believing that we play a role in shaping that world, and taking action toward a more desirable future. Design Thinking gives us confidence in our creative

abilities---and a process to take action---when faced with a difficult challenge.

Passion Projects/Genius Hour



In traditional learning, teachers map out academic standards, and plan units and lessons based around those standards. In Genius Hour, students are in control, choosing what they study, how they study it, and what they do, produce, or create as a result. As a learning model, it promotes inquiry, research, creativity, and self-directed learning.

Genius Hour is most notably associated with Google, where employees can spend up to 20% of their time working on projects they're interested in and passionate about. The study and work is motivated intrinsically, not extrinsically. The big idea for Google is that employees motivated by curiosity and passion will be happier, more creative, and more productive, which will benefit the

company in terms of both morale, “off-Genius” productivity, and “on-Genius” performance.

21st Century Skills



Those who bring making into educational programming-and then proceed to transform the learning experience because of it-speak not only to the connection between making and numerous subject areas but also to the “soft,” non-cognitive skills that are developed. These skills are the 21st century skills that makerspaces report as engaging in: creativity and innovation, communication and collaboration, critical thinking and problem-solving, adaptability. Coupled with the creation of a portfolio, which necessitates time for reflection, opportunity for expression of youth voice, and a showcase of abilities, making is helping to prepare youth for any life or career pathway.

All content taken and adapted from a variety of sources, available upon request.