Notes from Insight XI

December 2018

We thank Dean Burghardt for his sponsorship of this series, and the presenters, especially Mike Beltran, Nick Marchuk, and Pam Daniels, for their presentations and assistance in teaching about Maker Spaces!

What the literature says about Makerspaces:

We found that the literature highlights at least 4 impact areas for 3D printing and Makerspaces, that is, areas where use of Makerspaces can make a positive contribution to education:

- Awareness, knowledge, understanding of concepts
- Skill-building
- Engagement or interest (in project, major, STEM)
- Diversity, Accessibility, Inclusion

Here are a few references to those points:

American Society for Engineering Education, "Envisioning the future of the maker movement: Summit report," Washington, D.C., Summit Report, 2016. https://www.asee.org/documents/papers-and-publications/papers/maker-summit-report.pdf

American Society for Engineering Education (2017) "Advancing the Maker Movement," Washington, D.C. http://aeir.asee.org/wp-content/uploads/2017/12/2017-Advancing-the-Maker-Movement.pdf

Masters, A. S. (2018) How Making and Maker Spaces have Contributed to Diversity and Inclusion in Engineering: A [non-traditional] Literature Review Paper presented at 2018 CoNECD - The Collaborative Network for Engineering and Computing Diversity Conference, Crystal City, Virginia. https://peer.asee.org/29543

Some possible objectives that could come from using makerspace methods:

- Obtaining a physical object rapidly to test a design concept and being able to modify the object quickly
- Generating parts for a design that would be difficult to obtain otherwise
- Obtaining skill in going from a concept to a computer representation to an object
- Illustrating a scientific or engineering concept that is difficult for students to grasp from traditional teaching

- Understanding how variations in physical features modify behavior/performance of an object
- Learning independence to direct their own learning; start exploring, and reaching proficiency

What students know already:

Students are coming to college with some maker skills already, since 3D printing is becoming ubiquitous. Pam Daniels recommended this book:

Free to Make: How the Maker Movement is Changing Our Schools, Our Jobs, and Our Minds by Dale Dougherty
https://g.co/kgs/6oHDhg

MakerSpaces at Northwestern:

The Rapid Prototyping and Fabrication Lab in the Segal Design Institute:

https://design.northwestern.edu/about/design-facilities/prototyping-lab.html

The Corner Makery in the Ford Building, open 25/7, and available to anyone after taking an information session

https://design.northwestern.edu/about/design-facilities/corner-makery.html

Mudd Library Maker lab:

https://www.library.northwestern.edu/libraries-collections/mudd-library/technology-spaces/maker-lab.html

There are others, and these links may get you started:

https://digitallearning.northwestern.edu/events/video-production-and-prototyping-mudd-lightboard-studio-and-maker-lab

https://digitallearning.northwestern.edu/article/2016/08/17/next-gen-3-d-printers-arrive-garage