

Developing a Makerspace in Your School Library

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Recently libraries have begun offering Makerspaces as part of their programming. At the 2013 Annual American Library Association Conference there were multiple poster sessions, concurrent sessions, and pre-conference workshops focusing on Makerspaces in libraries, communities, and other preservation institutions.

Public libraries like the Chicago Public Library have created Maker Labs. CPL's makerspace focus is on 21st century learning and STEM/tech skills while working to spark creativity and imagination. Yolande Wilburn, a librarian at CPL, discusses "programming as collection development" in relation to their innovation lab and their recent makerspace. They have a laser cutter, milling machine, silhouette cameo vinyl cutter, and a makerbot replicator two 3D printer. CPL uses all open source software so their patrons are able to continue working on projects away from their lab.

The Detroit Public Library has created makerspace workshops for their teen space. Workshops last two hours once a week, and a dedicated closet creates easy access to their materials. Their most popular workshop is a Bike Tech workshop where local bike mechanics show teens how to take apart and put together their bikes as well as general bike maintenance

The University of Michigan School of Information has partnered up with local middle schools to create the Michigan Makers, an after-school maker program. Graduate students, a university faculty member, and the school librarian work together to serve fifty middle school students (Gustafson, 2013, pg 36). Last year they worked with East Middle School in Plymouth, Michigan. Projects/Lessons range from playing with circuits, game design, and photo manipulation. Students receive digital badges for completing challenges and reflect on their projects on a blog.

Standards for 21st Century Learners

Makerspaces build on projects that allow exploration, tinkering, and imagination. In a world of ever changing technology and numerous ways to access information, students have to become adept at navigating these tools. Ellen Gustafson argues that there are a number of AASL Standards that relate directly to the philosophy and goals of makerspaces:

- Display initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts (1.2.1)
- Demonstrate adaptability by changing inquiry focus, questions, resources, or strategies when necessary to achieve success (1.2.5)

-Use both divergent and convergent thinking to formulate alternative conclusions and test them against the evidence (2.2.2)

-Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations (3.2.1)

-Demonstrate motivation by seeking information to answer personal questions and interests, trying a variety of formats and genres, and displaying a willingness to go beyond academic requirements (4.2.2)

-Maintain openness to new ideas by considering divergent opinions, changing opinions or conclusions when evidence supports the change, and seeking information about new ideas encountered through academic and personal experience (4.2.3) (AASL 2007) (Gustafson, 2013, pg. 35).

Makerspaces create an environment in the library that allows students to develop these skills.

Makerspaces provide a space for students where they are allowed to play around with their own ideas, ask their own questions, and think like scientists. It can provide a project-based learning environment where students have the freedom to choose what they want to do without a set of instructions that they must follow. They are allowed to experiment and think like scientist and explorers.

Factors to Consider

Space

Space is a valuable commodity in most schools these days. Depending on the scope of your space, you may want to consider a stationary or mobile makerspace in the school library. You will also want to think about where and how you will store supplies. Like the Detroit Public Library you may want to dedicate a closet, shelf, rolling cart, or other specific storage unit to your supplies. If you are including any machines like 3D or laser printers, you will need a dedicated space for students to work with those machines--include tables and supplies easily on hand. There should be workspaces for both independent and collaborative work. Don't forget to think about lighting and electrical outlets. The Detroit Public Library teen space uses tables that can be pushed together in different shapes to allow various collaborative work settings. They also have a mobile stage for performances and instruction (Preddy, 2013, pg. 41).

If you literally have no physical space to create a makerspace in your school, consider reaching out to maker communities in your area. If possible, take your students to visit these makerspaces and possibly enter into some formal partnerships. This is a great

opportunity for library advocacy and outreach. Think about developing your library collection by purchasing materials on makerspaces, including how to start one and various projects that can be done in them. Materials should be both physical and digital. School librarians can also create makerspace kits/activities that can be used in classrooms or other areas in the school. (Houston, 2013, pg. 27).

Funding/Budget/Supplies

Many makerspaces, including the one at the maker lab at the Chicago Public Library, are partially funded by grants. There are a number of grants available focusing on the STEAM disciplines that can be used for makerspaces. One thing to keep in mind when considering grant funding is how grant restrictions will affect your makerspace, including how it will be developed and used.

Lesley Preddy, the school librarian at Perry Meridian Middle School, suggests repurposing and recycling items that others might think of as junk or pieces of scrap. She lists a number of items for collection: plastic gift cards, glass jars, puzzle pieces, yarn, felt, stickers, old books, milk cartons, wood scraps, gift wrap, tissue paper, egg cartons, fabric, buttons, and used greeting cards. She also suggests you stock up on markers, pens, pencils, crayons, glue, paper, scissors, etc... during back to school sales shopping. Check with local stores for educator discounts and enlist the school community to help collect various supplies. You may also consider including the following tools in your supply closet: microwave, iron, glue guns, cutting mat, trimmer, hammer, mallet, soldering iron, woodburning pen, computer, color printer, laser printer, 3D printer, open source software, etc...(Preddy, 2013, pg. 42).

Liability/Technical Support

If you are going to include items like 3D and laser printers, you will want to think about the technical support needed to maintain them and troubleshoot problems. You will also need to consider training for your staff on these machines and training for your students. Having students engage with irons, mallets, hammers, etc... in the library poses a liability issue. The Allen County Public Library in Fort Wayne, Indiana requires patrons to fill out an application form and waiver before they are allowed to use the makerspace (Jacobs et. All, 2012). The Michigan Makers asks for permissions slips and a parent orientation before students can participate (Houston, 2013, pg. 27). Best practice for school libraries is to have some sort of makerspace policy, user agreement, and/or permission slip for the students using the more heavy duty equipment in the library. Examples of these types of policies can be found on various library makerspace websites.

Hours

Open Access: You may want to have hours in the day where students are able to drop by the makerspace and play/make/work on anything they choose. This could be coordinated with study halls or free periods.

Workshops: Scheduled workshops are a great way to get local community members into your space or provide some sort of guided instruction to your students as they learn how to use the makerspace. You may want to display instructional signs, past projects, or different activity objectives and standards for your students (Preddy, 2013, pg. 42).

Classroom Pop-ups: You could also consider partnering with other teachers and co-teaching makerspace activities in classrooms during regular class hours. Preddy proposes: creating a giant tetrahedron, constructing igloos out of milk cartons, quilting, cooking a no-bake recipe, using puzzles, magnetic poetry, and legos, making bookmarks, jewelry, book covers, pressed flowers, and greeting cards (Preddy, 2013, pg. 42). The Michigan Makers also offer a number of objectives and lessons on their sites that could be adapted for classrooms.

Staffing

Staffing will depend on the hours you choose to keep your makerspace open. If you have open access, you will need to make sure there is someone supervising at all times even when guided instruction is not occurring. The Allen County Public Library partnered with TekVenture incorporated, a non-profit dedicated to making. They were able to staff their space with volunteers from TekVenture. Partnering with local organizations may offer you access to both equipment and staff that would otherwise not be attainable on a school budget.

Scheduled workshops and classroom pop-ups will allow the school librarian, other educators, and community members to be present and run the space with adequate supervision.

Conclusion

Starting a makerspace in the school library is a great way to address AASL Standards for the 21st century learner and common core state standards. There has not been a lot of research done on common core and makerspaces, but makers and other educators are starting to put together activities that align with these objectives. Makerspaces allow for an environment that encourages creating, independent learning, project-based activities, and fosters inquiry. These spaces go beyond crafting and engage makers in creative play and imagination. These spaces can be physical and virtual. Whether you decide to include high tech gadgets and machinery or use donated or local materials, starting a makerspace is a great way to engage students and drum up some excitement in the library.

Resources:

Gustafson, Ellen. "Meeting Needs: Makerspaces and School Libraries." *School Library Monthly* 29.8 (2013): 35-36.

Houston, Cynthia. "Makerspaces@Yours School Library: Consider the Possibilities!" *Kentucky Libraries* 77.3 (2013): 26-28.

Loertscher, David. "Maker Spaces and the Learning Commons." *Library & Information Science Source* 25 (2012): 45-46.

Preddy, Lesley. "Creating School Library "Makerspace"" *School Library Monthly* 29.5 (2013): 41-42.