Explore, Plan, Create: Developing a Makerspace for Your School Community

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A **MAKERSPACE** is a place where people can create, tinker, hack, remix, and remake both as individuals and in collaboration with one another. A wide variety of Makerspaces are now cropping up in libraries, schools, and other community gathering places. Despite the common association with particular tools like 3D printers and CNC routers, a Makerspace is more than just a set of tools or a cool idea. Successful Makerspaces, particularly in educative environments, balance practicality with creativity and collaboration to serve the needs of the school community.

**MICHIGAN MAKERS**

Last spring, a group of graduate students at the University of Michigan partnered with a local middle school to create a Makerspace in the school library. The students expressed the desire to develop programming skills, experiment in a supportive collaborative environment, and learn about their world in new ways. We graduate students had many considerations in getting this program—Michigan Makers—off the ground. Now in our second year, we have moved to two more sites. Development of three after-school Makerspace programs has taught us that there are many factors to consider when designing programs for budding makers.

We realized that planning a Makerspace requires consideration of community needs, current resources, and general feasibility—the same considerations necessary for other library programs. We’ve described some of our sticking points in this article. Taken in order, they offer an opportunity to think systematically about possible areas of challenge and opportunity as you consider creating a Makerspace within or in partnership with your school community. We begin with ideological factors because they serve as the foundation for more logistical considerations.

**STUDENTS**

A strength of the maker community is its focus on the ideas of makers, not the goals of their instructors. The students ultimately decide what they design and create. This means that, regardless of your big plans and ideas, a variety of outside influences will shape the direction of your Makerspace. These may include the school culture and broader community environment, students’ ages and prior knowledge, and their relationships with one another. Student needs should drive the process of designing projects, purchasing materials, and soliciting helpers.

The three communities of students involved in Michigan Makers have entirely different skills, expectations, and desires. As a result, the Makerspaces—although run by the same core group of mentors—function in very different ways. At one site, the students want to dabble with ideas...
at their own pace, seeking assistance only occasionally. At another site, the students are more interested in the challenge of collaborating with mentors and one another to produce projects. Although each model is appropriate for the individual community, we have had to learn to operate differently with each group of students.

▶ STAMINA

While the initial spark of an idea is an important step toward getting a Makerspace off the ground, the ability to sustain the energy is equally critical. Consequently, it is essential to consider your own stamina. Without the energy to invest in a new program—which requires researching ideas and learning new skills—you’re Makerspace will struggle. Also consider the stamina of your students. School schedules can be demanding, and it’s important to be realistic about the time and energy that you and your students have available.

In the first year of Michigan Makers, we experienced a rapid decline in energy and enthusiasm among the leadership team as the semester intensified. We planned fewer moments of active instruction and more activities for loosely-guided exploration. Our students remained high-energy and high-stamina. This year, the students arrive at the end of the school day with little energy left in reserve. Makerspaces, by nature, allow people to be contemplative and to take charge of their own time by creating space for tinkering and experimentation that may or may not lead toward a product. This year, we are supporting rejuvenating activities in addition to capacity-building ones because we’ve learned that makers thrive in an environment where they can decide on activities that suit their current energy levels.

▶ SUPPORT

Support comes in the form of both monetary resources and community contributions. While a large budget may offer stability and luxuries, community support can be equally valuable. When considering your budget, focus on the things that you can do and avoid focusing on your limitations. Makers can do a lot with very little, and working within your means is a realistic aspect of the design process.

Very few makers can operate in isolation, and new programs need a network of support if they hope to grow into sustainable, vibrant communities. This support may come in the form of experienced makers or hackers who are willing to serve as mentors, community groups who are able to provide space and resources, or other individuals who may lack experience but share in your enthusiasm. Community partnerships can offer your students broadened horizons, as well as help you maximize your energy and stamina.

Michigan Makers originally came into existence due to the partnership among the school librarian, an information school faculty member, and a group of graduate students. Our support network continues to grow as we work together to brainstorm ideas, garner interest in the program, and inspire student enthusiasm.

▶ SHERPAS

Another essential step in developing a Makerspace is discovering where to go for expert advice. While making requires a certain amount of “learning as you go,” experts can provide valuable tips and context for any program. Within the Michigan Makers community, we refer to these experts as our sherpas. Sherpas—guides renowned for their skill and prowess in mountaineering—make possible treks and expeditions that would be impossible if attempted alone.

Makerspace sherpas serve as mentors as you learn about maker culture, tools, and projects. They provide new ideas and perspectives, and can offer the additional push you need when troubleshooting. Thankfully, they need not be physically present in your community. Rather, digital collaborative tools, vibrant online forums, and a plethora of maker resources create opportunities to interact with mentors from around the world. One sherpa that we frequently consulted was Super-Awesome Sylvia. This was helpful as we brainstormed ideas to introduce to the middle school students in our program. (See the list of Additional Resources for other sources of guidance.) Once you discover the places and people where you can always find inspiration, you are ready to dive into the logistics of creating a Makerspace.
Consider flexible options for both the location of your Makerspace and furniture within it. Space and objects send signals that guide students’ behavior and movement. You may be in another classroom instead of the library, or may need to switch locations from week to week. Think about what furniture is available to you, as well as its arrangement. Mobile work areas—or the space to rearrange furniture—are ideal, as large equipment and projects with bulky components will by nature require more space. The ability to relocate furniture is also handy for facilitating group work.

The visual clues of your Makerspace are also important. We always provide a written menu of options for the day. With projects spread throughout the room, it’s helpful to have a condensed list to consult. At one of our locations, a permanent counter near the doorway acts as a first-stop point for nametags and initial directions. Providing visual support for how projects work can also be helpful. Laying out all of the components of a project on the designated workspace and displaying directions, tips, and website links on a whiteboard or monitor allows students to skip the questions and get right to making.

**STORAGE**

Space and storage go hand-in-hand. If your “space” is a cart that travels from classroom to classroom, storage is then determined by the number of shelves on the cart. Storage options may also determine the tools and materials you can have. One spare cabinet cannot hold a 3D printer, a CNC router, six sewing machines, and tablets for every student. Thankfully, there are many maker tools such as Raspberry Pis, Arduinos, and basic circuitry equipment; these do not take up much space at all.

Storage, or lack thereof, can also affect your stamina. At our current locations, we cannot store materials in either building. Instead, we use several large plastic tubs and a collapsible dolly to move between sites; these are not always easy or ideal to move. Storage of and access to your equipment becomes an important logistical factor to consider in conjunction with space.

**STUFF**

You may notice that the last thing we mention is the “stuff.” While 3D printers have become the unofficial mascot of the maker movement, there is no shopping list of required Makerspace equipment. Taking into account several factors—students’ interests, projects, budget, space, and storage—every Makerspace’s collection of tools and materials is unique. A combination of tactile, low-tech materials and high-tech digital tools offers students a variety of exploratory challenges and styles of making. Computing devices, scrap paper, conductive dough, outdated electronics for tinkering, programming software, sewing machines, fabric, cameras, and yes, 3D printers are all fair game.

The use of equipment can also help shape the environment of your program. We worked within our tight first-year budget to purchase just a few sets of microcomputing equipment. This encouraged collaborative learning and created peer experts who became comfortable with the new equipment early on and then shared their knowledge with others. We’ve also refrained from pulling out everything at once. Student interests and skills evolve over time, and scaffolded introduction of stuff can help them appreciate the building of skills and the process of making.

**MAKING THE CONNECTIONS**

Consideration of the aforementioned factors allows us to ground the development of our Makerspace in the goals and values of libraries. In *The Atlas of New Librarianship*, R. David Lankes writes, “The mission of librarians is to improve society through facilitating knowledge creation in their communities” (Lankes 2011, 13). Within the context of educational Makerspaces, librarians can strive toward this mission by facilitating programs that encourage exploration and production of new ideas, offering opportunities to build community, and fostering an attitude of play and creativity. Intentional planning and practical consideration of challenges allow for thoughtful implementation of any library program, including Makerspaces. However, as experienced librarians and educators know, flexibility and reflection is key to success.

We hope that our experiences can be useful as you consider implementing a maker program in your own educational community and can help you develop a Makerspace filled with meaning, new knowledge creation, and play-filled exploration.

**REFERENCES:**


**ADDITIONAL RESOURCES:**


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