

Mideastern Michigan Library Cooperative 3D Printer Project 2016-17

“Innovation, Inspiration, Collaboration”

Introduction

During the revision of the Mideastern Michigan Library Cooperative’s Technology Plan, we not only review what we have accomplished over the previous three years, but also what we intend to accomplish during the next three. The Plan was designed to be ‘specifically flexible’ so as to set goals for the cooperative and determine budget needs, while remaining fluid enough to encourage inspiration and innovation as they occur. MMLC is open to both successes and/or failures and operates with an overarching mission of serving members when, where, and how they determine they need services.

The 3D printing initiative grew out of a desire to provide equipment that was somewhat out of the norm for most member libraries. 3D printing was suggested as a possible technology that might be interesting to introduce. From there, we decided to investigate whether it might work by purchasing an inexpensive, small Micro 3D (M3D) printer. Chippewa River District Library Director and the technology staff agreed to be our host library/experimenters. After several months of testing, members were invited to a meeting to view the printer in action and hear what the CRDL experience had been. Attendees were intrigued enough to endorse the idea of a larger project. In addition to CRDL, we were pleased to have two libraries – Capital Area District Library and Bay County Library – that had already purchased 3D printers and were excellent advisors throughout the project.

Participation

Each of the 20 MMLC public library systems signed on to the second phase of the pilot project and the group expanded to include a school library and two academic institutions. The second phase involved purchasing several printers for member library use. Unfortunately, the school and one academic institution were not able to complete the project as planned. All libraries contributed to the ongoing conversation as we progressed through the second pilot year and each library system completed a year-end evaluation.

Organization

Members were divided into seven regions and were invited to attend a full day Advisory Council workshop that focused on describing the project, sharing information through guest speakers, member discussion/collaboration on timing/method of circulation of equipment, and finally distribution.

Regions of Cooperation:

1. Flint Public Library/Holly Township Library/ Mott Community College
2. Lapeer District Library/Dryden Township Library/Almont District Library/Ruth Hughes Memorial District Library/Goodland Township Library/North Branch Township Library
3. Chippewa River District Library/Coleman Public Library/Pere Marquette District Library
4. Shiawassee District Library/Vernon District Public Library/Community District Library /Laingsburg Public Library
5. Genesee District Library
6. Capital Area District Library
7. Grace A. Dow Memorial Library/Public Libraries of Saginaw/Bay County Library

Overall, attendees were very positive about the day of discussion and outside experts. A few suggested that a hands-on demo and/or some actual training would have enhanced the day for them.

Equipment/Repair

After researching and exploring several options and conducting a membership discussion conference call, MMLC purchased seven Lulzbot Mini 3D printers. Also purchased for each region was a laptop, mouse, scanner, and filament (printing and cleaning.) The total MMLC budget expense was \$16,819 or \$2,403 per set-up. The Lulzbot turned out to be an informed and very lucky printer choice because of its ease of use and dependability. We were also lucky to have CRDL volunteer to load all software and verify that all equipment was ready for distribution. The Lulzbot printers are nearly 'plug and play' and proved to be both sturdy enough to travel between libraries and dependable performers overall. The number of equipment repairs were very few and the company was quick to respond when contacted. Installation of a replacement part, in one instance, did turn out to be somewhat of a challenge. Lulzbot has an outstanding support department and libraries felt free to contact them directly. When contacted about a piece that had become damaged, Lulzbot sent the specs and the library was able to print and install the piece using the 3D printer. Moving forward, each library will decide whether to continue use of the 3D printer and equipment via the same regional group. All equipment will be transferred to the responsibility of a single library within that region with shared insurance and maintenance costs.

Experience

This was a "get your feet wet" kind of project with no expectations or requirements regarding use in the library. Most libraries embraced the project with excitement at the beginning and that feeling grew as actual staff use in the library increased and applications for programs unfolded. A few expressed concern that the learning curve would be too high to benefit from the experience and, in some, the reality of not having a staff member who could dedicate time to working with the printer hindered full exploration. To be fair, there were items throughout the trial that did not print correctly. Some were machine error and others were design or operator error. Libraries embraced both the successes and failures as part of the learning curve. Many libraries have indicated that they do see applications for future programming and are anxious to have the printer back for more extensive use. A few have decided that 3D printing was a good experiment for their library, but it is not something that they could sustain or want to offer beyond the pilot. While there had been a lot of early conversation about developing policies, none of the libraries offered general use by the public and so policies were not yet necessary.

Many libraries offered demonstrations and would have the printer in a public area for observation. Some early concerns about the potential smell was not as big an issue as originally anticipated, although some staff members were sensitive to the odor and others expressed some feelings of being ill while in the vicinity of the printer as it was working. Another concern was the hot temperature of the extruder and that it would be hazardous to patrons, especially children, who might want to touch the moving parts. Some libraries placed warning signs on or near the printer and one library purchased an acrylic cover which allowed patrons to see, but not touch. A byproduct of the cover is that the smell is trapped inside and when the lid is opened, the odor is stronger. A possible solution for that problem could be to add a ventilation fan. In a few instances, patrons mentioned that the sound of the printer as it worked was distracting in a library setting. The cover does cut down on the noise as well.

Libraries also experienced a true interest and curiosity on the part of patrons. During programs, the library would often begin a printing project while talking about the many things that 3D printers are used for in engineering, medicine and fine arts. Using both Thingiverse and Tinkercad, staff were able to choose or design items to customize with the library or patron name. Staff would print items after the program and participants would pick them up later.

Printed objects were used as give-a-ways or prizes at open houses and other library events. Comments on best things about the project included: “offering the opportunity for the community to see a 3D printer in action”; “to have this technology on display in our rural area”; “being able to customize for our patrons”; “seeing the enthusiasm of the staff”. Comments on the worst things about the project were far fewer, but included: “the fear of breaking the machine”; “to have something not print correctly”; “anxiety about having to learn how to design a project using a new software”.

Specific examples:

- A lot of rocktopus models were printed as a first experiment
- Bookmarks, Pen holders, Keychains – Darth Vader, Dewey, Googly Eyes
- Printed spare pieces for the Hand Challenge program (collaborated with Mott Community College using their Fab Lab 3D printer for actual hand parts)
- Craft accessories – stars for holiday project, cookie cutters
- Children’s program on gears assembled to make a keychain
- Library Olympic medals for outdoor field events
- A few libraries allowed teens and tweens to use Tinkercad for design experience and printing of personalized items
- Various gadgets were printed by teens during a library lock-in
- Staff meeting used to give instructions on use
- Showed YouTube videos of 3D projects around the world while projects printed
- Demos for home schoolers and adult patrons
- Walk-in demo days
- Introduction of new programs on Tinkercad, use of Little Bits, and Makey Makey activities. Programs have been offered 11 times so far with a total attendance of 128.

Final Evaluation

The overall evaluation was highly positive and enthusiastically received. One of the best outcomes was the collaboration between libraries that might not have had the chance to work together before on a common purpose. While there were a few bumps along the way with scheduling, overall the planning and agreed upon circulation timeframes worked well. One caveat expressed is that it is very important when considering an innovation of this type to get staff buy-in and be certain that staff have the time to devote to the initiative. With that in mind, another end result with a positive impact is renewed staff enthusiasm for introducing new services. Sharing printers and printing expertise definitely made the cooperative a stronger organization. The project also reinforced the idea that there are still technological equipment and advancements that can be introduced, shared, and evaluated successfully within the cooperative environment.

**When something works, embrace the success; when something doesn’t,
suspend the effort and be ready to try something else!**

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