Making it in the Learning Commons

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Intro

More than a decade ago, the learning commons at St George's School was undergoing some major changes. We renovated to open up our space and give it more flexibility and to address a greater variety of needs and uses. There was much consultation, planning, and money devoted to the project and the actual reno took us about three months. Within these major changes a small and innocent purchase was made. The school's first 3D printer.

This is not the story of 3D printing nor is it makerspace evangelization. I am the last person to advocate for a makerspace in every learning commons. What this is, however, is the story of how that innocent purchase spawned a journey that is continuing to this day and how it benefits from (and conflicts with) it's relationship with other uses of the learning commons space. Hopefully, this story fosters some thinking about the benefits and detriments of making in your space and in your community and the relationship between making and other uses of the learning commons space. First, a little more history.

Early Days

Ours was not the first proposal for a 3D printer in our school. Ours was the first purchase. The other proposal was made by a robotics teacher who was far more knowledgeable in that area of technology and had a stronger case for specific uses of such a device. Robotics needed ways of fabricating strong and high precision components for their robots. Ours was a simpler desire to experiment to see if there was a need or even a desire for students to design and make in our newly renovated space. The proposal to purchase a 3D printer for the learning commons was successful for two important reasons. The first was simple and obvious. We selected a Makerbot Replicator 2 (no longer in production) which was relatively inexpensive for what was available at the time. There was low risk to purchasing something that may, in the end, get little use. We didn't know. The second reason was the visibility and access to this machine. In the learning commons, everyone in the school could see it and use it. There were mornings when I couldn't get into my office because of the number of students crowded around the printer to watch and see what was printing. The other

proposal was for a considerably more expensive machine that would have to be locked in an office for the use of select people.

It didn't take long to generate enough interest to form a club around our new makerspace; really, at that time it was nothing more than a 3D printing club. Students started meeting a couple of times each week to learn some simple CAD (Computer Aided Design) software and design things to be printed. The encouragement was always to expand our forms of making to use other tools, materials, and techniques, but since 3D printing was the sexy new thing, most students tended to gravitate toward this form of making. It wasn't long until we needed a second Makerbot and both machines were in fairly constant use.

At this time, we had a strong relationship with a local makerspace owned by an alumnus of our school. This allowed students to visit for special projects and staff to get training in different methods of making. It allowed expanded access to tools and guests from the makerspace to come into the school to run workshops with the students. We expanded our tool set, skills, and knowledge. It also prompted the increased use of laser cutters and the eventual purchase of a new machine.

The footprint of the makerspace within the learning commons was gradually growing. An area that had once been devoted to our reference collection was taken over by space for tools and work surfaces. The original home for the original 3D printer was a desk in the learning commons office. Once it became evident that you'd have to work pretty hard to do yourself any serious injury around a 3D printer, the printers moved out into the open common space and when additional printers and the laser cutter were added, they also took up space out in the open.

This opening up of the use of space, while creating a dedicated and visible makerspace, also started to cause tensions with other uses of the space. As a student settles in to write or study for a test, they can now be interrupted by the sound of a fume extractor or air compressor a meter away. Making requires space, and during the busy times in the learning commons there can be competition for the use of that space. Sometimes glues or burning material emit fumes that aren't the best for inhalation. Certain making projects need to plan their time around less busy times of the day to limit the effects of this noise and fumes on others in the space. In an ideal world, any student should be able to make anything at any time.

Advent of Fusion

A few short years after the establishment of the makerspace, there was a move to establish a special program at the grade 10 level that would allow certain students to dig

deep in the STEM fields. There was a successful outdoor education program that had been running for years and it was felt that the use of their structures could benefit students with other interests. There seemed to be an interest in STEM among students in the school and this seemed like a good way of dealing with it. While I was certainly not the most qualified person to teach science, math, or even more advanced technology courses, I did have some ideas of how a program could be developed and ran my ideas up the proverbial flagpole. The short version of the story is that I ended up heading up this new program. I partnered with a Science and Maths teacher who are still with the program today and we began our adventure.

The interesting thing for a librarian audience is that this STEM cohort, which we've dubbed "Fusion", bases itself out of the learning commons. The learning commons is the almost perfect space for a group of curious minded folks who want to learn by making and all have different areas of interest within the wide umbrella of STEM. The students all take Math, Science, English, and Technology Explorations together. While they typically meet in different rooms in the school for their classes, when we come together, we tend to do it in the learning commons. The technology class is taught in the learning commons with regular access to the makerspace. There are reading and research aspects of the technology course that naturally take advantage of the books and digital resources in the learning commons and all presentations are in this more public space. While it is most definitely a public space and we lack places to hang class-based work and resources, it also brings the cohort into the public eye and increases awareness of its activities. Our activities are **always** on display.

The Future

The future is interesting for our learning commons and makerspace, and consequently for the programs and community that surrounds these spaces. We are lucky enough to be in the midst of a major rebuilding project for the school. Slated for opening in the fall of 2023, a new campus initially consisting of three independent buildings will open to house all academic classes, our Art Department, our Senior School Administration, our dining hall, and purpose-built library and makerspace facilities. The main floor of one building will consist of two makerspace labs with an open active work and collaboration space between them, our library, all personal and university counselling facilities, our learning support team, grade-based student support and an IT service desk. Every person entering this building, one of two specifically academic buildings, will pass the library and makerspaces. These spaces will also have windowed walls allowing open views in and out of theses spaces.

There are many predictions for the successes and challenges of these spaces. One of our current struggles is that our current learning commons space that includes the

makerspace is generally NOT a quiet environment. Students needing silent reading or study space often hide in other parts of our school. Being more explicit about quieter and louder spaces will, we hope, allow everyone to find a space that meets their needs, if not in the library and makerspaces themselves perhaps in an adjoining space. The growing makerspace has increasing needs for additional electrical, fume exhaust, and noisier machines. Separating these needs from a shared space with the library function will allow this to happen. We will also have all aspects of student life in the same space allowing the learning commons broadly to identify needs and support these programs. This feels like what the idea of a learning commons is truly all about.

Given that the spaces that currently fall within the same “four walls” will now be segregated, there will be challenges in terms of supervision, staffing, and reinforcing the idea that this is one space that serves overlapping needs and works together to support the community. We are simultaneously becoming larger and more inclusive and more separated and segregated. We are looking at ways of ensuring that there are physical indicators, such as furnishings and use of colours to unify the entire space. We will also need to look at new staffing and meeting structures to ensure that we are working well together toward a common goal.

An exciting opportunity that may become available to us with the opening of the new space is that of extending hours into evenings and weekends. These spaces will be on the ground floor and should be easily opened without compromising security to other parts of the school. We have a boarding community that could certainly make use of the spaces in the “off” hours and there may be opportunities, certainly in the makerspace, to open up programs and resources to the broader, non-school community. While the political advantageous to building stronger relationships with residents near our campus are obvious, the benefit of identifying potentially willing neighbours with expertise in areas of making could be a game changer.

Final Thoughts

There have been many things that we have learned about our community, learning, and making so far in our journey. Each of these things have been important realizations at some point and continue to impact our thinking.

First and foremost, like a learning commons, a makerspace is a community. It is at first a physical space that brings together people with overlapping interests. It is not a teacher directed program space although a thoughtful teacher can certainly offer programs that can support community needs.

We are always learning how we fit between, and not step on other successful programs in the school. We are a central space within the school, and we are a sub-community within the larger school community. We can feed other programs by introducing introductory opportunities. For example, we can do some basic work with arduinos, (an open-source electronics platform based on easy-to-use hardware and software) and students with the skills and the interest can move on to the robotics club in the school. We are not there to be the robotics club. But we also might over the only opportunity for certain things in the school. We have a sewing machine that sometimes gets used for projects. We are not a textiles club. But, as our textiles club has come in and out of existence over the years, we can serve as the only place in the school where a student can engage in that form of making.

Making, as a form of inquiry, can support the academic programs in the school. Making can be the focus of inquiry itself or provide an opportunity for students to demonstrate the learning through other inquiry in engaging ways. It is important to recognize though that making is a set of skills that needs to be developed independently of the inquiry in most academic projects. If a student doesn't already know how to build a model, or create a 3-dimensional map, they will need to spend additional time to learn these skills. Unfortunately, at least in our school, often the only thing that students ever learn to "make" is an essay!

As our programs grow, we need to adapt spaces and technologies to keep up. Modes of making come in and out of fashion and interests shift within a community. That expensive printer or cnc mill that you bought may get used constantly for a year or two and then sit on a shelf when some other mode of making catches your community's interest. That's OK and to be expected.

Finally, as a leader in the makerspace, a teacher librarian needs to be ready to get their hands dirty and be comfortable fixing machines. In lower tech spaces, fixing scissors or replacing blades on xacto knives might be all you have to do. In my space, I've had to regularly take apart printers to replace extruders or motherboards. It is a journey of constant learning and risk taking as one learns how these machines work. There is nothing worse than having all of these amazing machines in a space, but each being broken in some way and students lining up to use them. I know this, because it happens all too frequently!

Our journey with our learning commons continues to be one of excitement, learning, and growth. From a simple reconfiguration of space, to the innocent purchase of a small 3D printer, through to the complete redesign of the school and the learning

commons and makerspaces within it, we continue to try to find our community and address its ever-changing needs.

Further Reading

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