

Makerspace Club Planning Document



Maker Movement

“The maker movement is the philosophy that students learn best by making/creating. Maker classrooms are active classrooms. In active classrooms one will find engaged students, often working on multiple projects simultaneously, and teachers unafraid of relinquishing their authoritarian role. Collaboration between students is flexible and teachers experience a seamless metamorphosis between mentor, student, colleague, expert, and personal shopper, all in service of their learners.”

Sylvia Libow Martinez and Gary Stager

Invent to Learn: Making, Tinkering, and Engineering in the Classroom (2013).

The maker movement is the philosophy of learning by “making”, combining technology, creativity and learning. It recognizes that learning is student centered, knowledge is gained through experiences, and students are engaged in activities through problem solving. Research shows that students learn best by creative, collaborative, hands on learning. “Knowledge is not merely a commodity to be transmitted, encoded, retained, and re-applied, but a personal experience to be constructed. Similarly, the world is not just sitting out there waiting to be to be uncovered, but gets progressively shaped and transformed through the child's, or the scientist's, personal experience.” (Ackermann 2001, p.7) Students need to be actively engaged in their learning and educators need to figure out ways to help engage students in their learning. A makerspace can help students develop fundamental core skills: problem solving, persistence, and creativity.



“The mission of the Fairbanks North Star Borough School District is to provide an excellent and equitable education in a safe, supportive environment so all students can become productive members of a diverse and changing society.”

Fairbanks North Star Borough School District

Mission Statement.

The Fairbanks school district’s mission is to encourage students to become productive members of society. Incorporating makerspaces into schools can prepare students for future skills and careers. As stated by Schwartz (2014), “Kids want to make an impact on the world and very often they are more motivated by contributing to the common good than to anything else.” Makerspaces encourage students to collaborate, create and share in skills and concepts. Makerspaces is where authentic learning and problem solving take place. According to the Fairbanks North Star Borough School District Technology Plan, one of the district’s goals is to prepare students for a world rich in technology with appropriate 21st century skills and knowledge. Objective 1.5 in the FNSDSB Technology Plan is to investigate new technologies to support student learning and achievement (p.4). Makerspaces encourage students to use and create new technology while learning. Objective 1.7 in the FNSDSB Technology Plan is to investigate and develop educational structures to optimize the use of technology to improve student learning (p.4). Makerspaces are educational structures that can be used to teach rigorous problem solving concepts as well as encourage the use of technology.

“Creating a classroom makerspace is an opportunity to give students ownership of their own learning as they explore their own passions.

Sylvia Libow Martinez and Gary Stager

Invent to Learn: Making, Tinkering, and Engineering in the Classroom (2013).

School makerspaces encourage students to become teachers and share their knowledge with others. As stated by Martinez & Stager (2013), “We have an obligation to build upon the technological fluency the students bring to us, expand learning opportunities, and amplify human potential.” North Pole Elementary School needs a makerspace to encourage students to obtain/promote essential skills that will prepare them for their future and encourages them to become productive members of society.

This year Mrs. Gryga’s class will be piloting a class set of Nexus 7 Android tablets. Students will have the opportunity to use the tablets to create and share their maker projects. The combination of technology and makerspace will encourage a classroom where students will learn from one another.



Mrs. Gryga's MakerSpace

Mission: To allow students to create, learn and collaborate with their peers. Students will build activities/projects based both on curriculum and student interests. The Makerspace will be aligned to state, district and ISTE standards.

- Students will be given 60 minutes once a week on Fridays to plan and design projects.

Objectives:

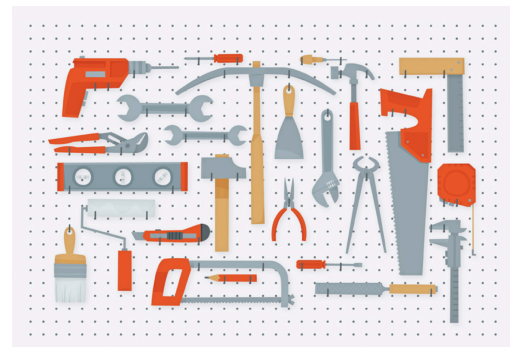
- Foster creativity and confidence in each student.
- Develop educational contexts that connect making to curriculum and state standards.
- Promote a creative space within which significant engagement and idea sharing takes place.
- Encourages open dialogue and collective contribution.

Supplies:

| | |
|-------------------------|----------------------------|
| Colored Pencils | Rubber Bands |
| Electric Drills | Rulers |
| First Aid Kit | Safety goggles |
| Glue | Scissors |
| Hammers | Scratch and Scratch Jr |
| K'Nex | Screwdrivers set |
| Legos | SketchUp software |
| Littlebits | Staplers and staples |
| Markers | Storage Containers |
| Measuring tapes | String, rope, yarn |
| Modeling Clay | Tape |
| Needle nose pliers | Tinker Toys |
| OSMO | Used computer parts |
| Paints and paintbrushes | Various batteries |
| Paper | Various types of Cardboard |
| Paper clips | Velcro |
| Plastic Materials | Wood |



Cost: Approximately \$1,000.00



Funding:

- Transfer site, many items free from the North Pole transfer site i.e. cardboard, wood, old computer parts, used toys, etc.
- Parent donations
- Community donations
- Donorschoose.org
- Gofundme.org



Evaluation:

To ensure that students' educational needs are being met and that goals of the club are aligned with standards and the Fairbanks North Star Borough School District technology plan:

- Students complete a survey to evaluate the maker club at the end of each quarter (October, December, March and May).
- Makerspace host will keep a record of how many students projects were completed per quarter and how many group projects versus individual projects.
- Administration will be asked to come and observe students in the makerspace. Administration will be asked to complete a reflection survey.

Publicity:

The makerspace website can be found at <http://clubmakerspace.weebly.com/>. The website will be used to share information with parents and administration about the makerspace. Student projects will also be shared on the website.

Collaboration:

Our makerspace will use the [AK Makerspaces](#) Google Community to asynchronously collaborate with other makerspaces in Alaska.

Makerspace Resources:

- Wendler Middle School, Anchorage School District:
<https://tmerculief.wordpress.com/category/about/>
- Mustang Makerspace, Anchorage School District:
<https://sroleffmakerspace.wordpress.com/>
- Gooshi Heen Elementary School, Sitka School District:
<http://www.room6kgh.com/makerspace.html>
- Arctic Light Elementary School, Fairbanks North Star Borough School District:
<http://clindquil.wix.com/arc-makerspace>

Makerspace Resources cont'd:

- Make Magazine: <http://makezine.com/>
- Makerspace Playbook: <http://makered.org/wp-content/uploads/2014/09/Makerspace-Playbook-Feb-2013.pdf>

References:

Ackermann, E. (2001). Piaget's constructivism, Papert's constructionism: What's the difference. *Future of learning group publication*, 5(3), 438. Retrieved May 20, 2015, from http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf

Fairbanks North Star Borough School District. (n.d.). *About us*. Retrieved July 21, 2015, from www.k12northstar.org/about

Fairbanks North Star Borough School District. (n.d.). *Technology plan 2014-2017*. Retrieved July 21, 2015, from http://www.k12northstar.org/sites/default/files/fnsbsdtechplan2014-2017_0.pdf

Martinez, S., & Stager, G. (2013). *Invent to learn: Making, tinkering, and engineering in the classroom*. Constructing Modern Knowledge Press.

Schwartz, K. (2014, September 4). *How to turn your school into a maker haven*. Retrieved July 21, 2015, from <http://ww2.kqed.org/mindshift/2014/09/04/how-to-turn-your-school-into-a-maker-haven/>