



Location: Room 6 KGH

COMING THIS FALL

Preparing students with skills for their future

- Problem Solving
- Critical Thinking
- Science
- Technology
- Art
- Engineering
- Math

# Table of Contents

I.	<b>Maker Movement</b> .....	3
II.	<b>Why We Need a Makerspace</b> .....	4
	Benefits of a Makerspace	
	Growth Mindset	
	Learners	
	Thinkers	
	Constructionists	
III.	<b>Description of Makerspace</b> .....	9
	Objectives	
	Mission Statement	
	Location	
	Start-up	
IV.	<b>Goals for Makerspace</b> .....	10
	Year One	
	Year Two	
V.	<b>Makerspace Partnerships &amp; Collaborations</b> .....	10
	Local Partnerships & Collaborations	
	Makerspace to Makerspace Collaboration & Growth	
VI.	<b>Supplies</b> .....	12
	List of Supplies	
VII.	<b>Funding</b> .....	16
	Potential Funding Sources	
	Sustainability	
VIII.	<b>Evaluation</b> .....	17
IX.	<b>Publicity</b> .....	19
	Website	
X.	<b>References</b> .....	19

## Maker Movement

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Incorporating the Maker Movement into our schools is a great way for students to learn through active engagement in the curriculum while at the same time preparing students to be technologically literate and responsible cybercitizens. Catlin Tucker writes, “It makes so much sense to create more opportunities for all young people to develop confidence, creativity, and interest in science, technology, engineering, math, arts, and learning as a whole through making.” (Tucker 2014).

Educators are experiencing all kinds of pressures and mandates. In the book “Invent to Learn: Making Tinkering and Engineering in the classroom” , the authors remind educators that “one of the responsibilities of being a teacher is to translate the mandates of the educational system to something that helps children understand their

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*The Maker Movement is a technological and creative revolution underway around the world. Fortunately for educators, the Maker Movement overlaps with the natural inclinations of children and the power of learning by doing. Embracing the lessons of the Maker Movement holds the keys to reanimating the best, but oft-forgotten learner-centered teaching practices. New tools and technology, such as 3D printing, robotics, microprocessors, wearable computing, e-textiles, “smart” materials, and new programming languages are being invented at an unprecedented pace. The Maker Movement creates affordable — even free — versions of these inventions, and shares tools and ideas online, creating a vibrant, collaborative community of global problem-solvers.*

*Sylvia Libow Martinez and Gary Stager  
Why the Maker Movement Matters to Educators (2013).*

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world” (Martinez & Stager 2013). Makerspaces offer teachers those opportunities.

# Why We Need a Makerspace

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Yong Zhao, author of "World Class Learners" , writes that we need to prepare our students for the globalized world and that is not something the traditional classroom is good at. Zhao' s believes we need to cultivate independent thinkers who think creatively and foster the engineering that is in all humans. (Zhao 2012) Engaging students in meaningful real projects rich with technology and encouraging making and tinkering creates an environment for continuous learning. By implementing the power of the growth mindset and makerspaces we can prepares our students to be the innovators, thinkers, problems solvers and creators they will need to be to be successful.

## Benefits of a Makerspace

- builds upon students' technological fluency in engaging real works of mathematics, science, and engineering.
- "encourage our young people to create, build and invent – to be makers of things, not just consumers of things." President Obama 2013
- "business leaders politicians, and futurists all agree that creativity and STEM-based making are top priorities for today's young people" (Martinez & Stager 2013).
- brings creativity back into the schools. To create is human.
- gives students the freedom to learn by making and to all be actively learning.
- fosters creative global entrepreneurs. It help students become resourceful, flexible.
- increases the engagement of all students by increasing the range of experiences available to them
- allows students to find and explore things that they are drawn to.
- all students can find success regardless of backgrounds, disabilities, economic status, etc.
- closes the digital divide by allowing all students opportunities to build their technology skills as they incorporate technology into their making.
- allows students a platform to collaborate and share with others.

- sets high standards and supports the curriculum in powerful, meaningful ways
- teaches 21st century skills: critical thinking, problem solving, collaboration, leadership, agility & adaptability, initiative & entrepreneurialism, effective oral & written communication, accessing & analyzing information, curiosity & imagination

## Growth Mindset

Educating students to fulfill their potential requires the teacher and education environment to move from a “fixed mindset” and to adopt and build a “growth mindset” environment. Carol Dweck, author of “Mindset: The New Psychology of Success” , writes: “For twenty years, my research has shown that the view you adopt for yourself profoundly affects the way you lead your life. It can determine whether you become the person you want to be and whether you accomplish the things you value.” (Popova)

The makerspace will help students realize their potential by implementing the growth mindset at the beginning and laying a foundation of growth that can continue beyond the walls of the space. The makerspace will help our students thrive on challenges and view failures as opportunities to stretch their abilities and grow. Feedback will be given that focuses on process. The makerspace will establish high expectations in a risk-tolerant learning zone.

Students participating in the makerspace with the growth mindset will improve their intellectual outlook of themselves. Neuroscience research shows that we can grow our intelligence, in other words our minds are malleable. (Furlong 2012) Dweck writes “Let's give students learning tasks that tell them, "You can be as smart as you want to be.” (Dweck 2010)

Teaching students to realize their potential through the growth mindset means helping students develop through dedication and hard work. The makerspace will illustrate to student that hard work can be hard play. Albert Einstein said “Play is the highest form of research.” Plato said “Do not keep children to their studies by

compulsion but by play.” Dr. Spock points out that “A child loves his play, not because it is easy, but because it is hard” (Martinez & Stager 2013).

Using the growth mindset and allowing students time to tinker and play hard we can meet our Sitka School District mission of “educating our children to realize their potential and contribute in a connected global society”.

## Learners

When pondering the relationship between academic teaching and learning one might be quick to think that it is a cause and effect relationship – a teacher teaches and in return students learn. However what we really need to do is teach our students how to learn, fail and learn some more.

The makerspace will be learner centered and focus on the process of learning. Learning is interactive and builds upon students’ prior knowledge. There is less emphasis on learning the facts but rather on learning the processes. The teacher’ s role is to help students construct their own knowledge. Curriculum is presented whole and expands to parts. Big concepts and questions are emphasized. The space will consist of thinkers who can solve real problems and have emerging ideas about the world. Students’ interests and questions will be valued and help drive learning. There will be authentic problem solving with cross disciplinary learning. Critical thinking, ability to communicate and collaborate, self-organize and direct are just some of the skills enhanced in a makerspace. Students will making connection to why concepts matters.

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*“Curious kids learn how to learn, and how to enjoy it – and that, more than any specific body of knowledge, is what they will need to have in the future. The world is changing so rapidly that by the time a student graduates from university, everything he or she learned may already be headed toward obsolescence. The main thing that students need to know is not what to think but how to think in order to face new challenges and solve new problems.” Amanda Lnnng, Author: “The Power of Why” (Wright 2013)*

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In a makerspace learning is fueled by curiosity. Makerspace engage learning. Students learn how to build, problem solve, collaborate, and communicate. The teacher uses content to teach skills. Important things like motivation and curiosity will be fuel for learning. In the makerspace traditional academic teaching will be transformed to facilitate a passion for learning for all students.

## Thinkers

Students need to be 21<sup>st</sup> century thinkers. Students need to learn thinking and problem-solving skills that can only be learned through encountering challenges.

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*“How can we best prepare children and adolescents to thrive in the 21st century? This question is at the heart of what every educator attempts to do on a daily basis. Apart from imparting content of knowledge and facts, however, it’s becoming clear that the “noncognitive competencies” known as grit, perseverance, and tenacity are just as important, if not more so, in preparing kids to be self-sufficient and successful.”*  
(Barseghian 2013)

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21st Century learning requires students to think for themselves. They need to take control over their learning. Students need to be the center of their education experience to prepare themselves for their future.

Life is full of obstacles that can be turned into learning opportunities. In a makerspace students develop skills that help them face and overcome challenges.

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*“Great teaching isn’t just about content but motivation and empowerment: Real learning gives you the mental habits, practice, and confidence to know that, in a crisis, you can count on yourself to learn something new. That’s crucial in a world where, according to the U.S. Department of Labor Statistics, adults change careers (not just jobs) four to six times or where, as an Australian study predicts, 65% of today’s teens will end up in careers that haven’t even been invented yet.”* Alfie Kohn (Davidson 2012)

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Technologically driven transformations have and will continue to take place in the workplace. Students will be asked to be creative and overcome challenges throughout their adult careers. Student will face one challenge after another. They will be required to have grit, tenacity and perseverance. Traditional academic teaching

doesn't prepare students for the challenges of today's world and workforce. A high IQ and content knowledge is not enough for our students to be successful.

Grit, tenacity and perseverance comes from the student. Allowing students to tinker and make is one of the best methods to help students learn to figure things for themselves. A makerspace provides a great opportunity to tap into students' intrinsic motivations. Students can build on their strengths and interests. Students can challenge themselves to work at the edge of their competence. Tinkering and making helps students to understand that learning involves struggle and practice. "Bruno Latour, an influential anthropologist, studied the way that scientists really do their work in his book, *Science in Action: How to Follow Scientists and Engineers Through Society*. (Latour, 1987) What he discovered was that tinkering is closer to the way real scientists, mathematicians and engineers solve problems. Tinker and making is not just an unformed or immature way that science happens." (Martinez, Stager 2013) Tinkering helps our students develop the thinking and problem solving skills they need to develop the grit, tenacity and perseverance to be successful.

## Constructionists

Piaget described constructivism as the process of students constructing their own systems of knowing. The teacher focus is on the individual process of internal construction. Seymour Papert, father of the Maker Movement, expanded Piaget theory of constructivism with his ideas of constructionism. Constructionism focuses on students producing constructions that others can see and evaluate.

According to the American Institutes for Research, "Today, most researchers have come to understand child development and the learning process as articulated by the constructivists. However, this view has not been widely translated into practice" (Theories of Child Development and Learning). A makerspace is one way to change that. Students are natural constructionists and in a makerspace the child is at the center of the learning process. It is a place where students learn, invent, explore, teach, collaborate, and share.

Seymour Papert's idea of constructionism in relations to technology brings a lot of new ideas to the table. Papert's 1972 paper "Teaching Children to be

Mathematicians vs. Teaching About Mathematics” advocates for student to have real experiences rather than being taught just a subject. By applying Papert’s theory we can use gaming, programing, robotics, media making and much more to create mathematicians. Why not teach true computer science in primary. Why not teach students to code and program? Why not let students learn by making, tinkering and engineering? Every student is a maker.

## Description of Makerspace

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### Objectives

To bring the Maker Movement to Keet Gooshi Heen Elementary School.

### Mission Statement

To create and use a makerspace at Keet Gooshi Heen Elementary school to educate children to realize their potential and contribute in a connected global society. The makerspace will assist the Sitka School District and their goal of closing the digital divide so that all of the students can learn through engagement in the curriculum and access to information and resources.

### Location

The Keet Gooshi Heen Makerspace will begin in the fall of 2015. It will be housed in room 6.

### Start-up

The Keet Gooshi Heen Makerspace will begin in August of 2015. It will beginning with the 2<sup>nd</sup> grade students in my classroom and will continue to grow with the goal of establishing a school-wide makerspace lab by year 2.

## Goals for Makerspace

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### Year One

- Goal 1 – Makerspace Mondays with the students of room 6. Every Monday 60 minutes will be dedicated to tinkering, making, and problem-solving. Throughout the week students will be given opportunities to continue their work.
- Goal 2 – Work on a joint project with Sitka High Fab Lab, Sitka Tribe of Alaska and others in the community
- Goal 3 – All 2<sup>nd</sup> grade classroom will rotate through the Makerspaces at least 2 times a year.
- Goal 4 – Offer professional development to other Educators
- Goal 5 – Share makerspace opportunities with other grades and do a joint project with at least 1 upper elementary class.

### Year Two

- Goal 6 – Establish an afterschool Makerspace Club at Keet Gooshi Heen
- Goals 7- Hold makerspace fair
- Goal 8 – Establish a makerspace lab

## Makerspace Partnerships & Collaborations

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### Local Partnerships & Collaborations

The Sitka School District has staff, administrators and school board members that recognize the importance of 21<sup>st</sup> century learn and there are many opportunities to partner with others in the district. There are also many local resources and organizations that can enrich the makerspace.

Fab Lab Partnership - Sitka School District has one of the best high school Fab Labs in the Northwest. Mike Vieira is the district's CTE grant contact and runs the Fab Lab and is interested in collaborating next year.

Local Robotics Club – Sitka High School has a great robotics club and the teacher has expressed interest in doing some collaboration. The afterschool robotic club has Lego Robotic kits that they are willing to let me explore.

Sitka Tribe of Alaska - Local master weaver, Dr. Teri Rofkar is currently working on a STEAM project (she just presented her project at the White House at a Maker Movement). She is partnering with the school and the Tribe to do a cool XRF scanning project next year with students.

Other District Maker Educators – I'm very fortunate to have educators in my district who are experienced in makerspaces.

Amanda Duvall who chairs the district's Tech Committee has experience teaching makerspace classes. She will be attending ISTE and has offered to keep her eyes out for information that might be helpful to me.

Keet Gooshi Heen's Librarian is interested in establishing a makerspace and would be a great person to partner with.

Sitka Sound Science Center – The Sitka School District and Sitka Science Center have a program called Scientists in the Schools project. The Sitka Science Center is a wealth of resources for educators. I have taken STEM workshops from them in the past and they have been a great resource for me. They have expressed interest in seeing a community makerspace.

## Makerspace to Makerspace Collaboration & Growth

One of the best ways for the makerspace to stay current and grow is through collaboration with other makerspaces. The Keet Gooshi Heen Makerspace will meet online with and stay connected to other makerspaces including those that were created through the UAS Mechanical Technology course. The makerspace will register and belong to online communities such as Makerspace.com.

### #UASRobotics Collaboration Group

- Scott Roleff Anchorage School District <https://sroleffmakerspace.wordpress.com/>
- Theresa Mercurief Anchorage School District <https://tmerculief.wordpress.com/category/about/>
- Ali Gryga Fairbanks School District <http://clubmakerspace.weebly.com/>
- Cherie Lindquist Fairbanks School District <http://clindqui1.wix.com/arc-makerspace>

## Online Resources

- Makerspace.com – online community of makers
- Instructables.com – collection of ideas and tips
- Invent to Learn – makerspace resources
- Super Sylvia's Awesome Maker Show – project ideas

## Supplies

Below is a detailed list of the supplies I hope to include in my makerspace. Utilizing partnerships, resources and materials that I already have I feel confident that I can start the year off strong. I would love to have a 3D printer and scanner for the makerspace. However until I can acquire funds for a 3D printer and other cool machines I will utilize partnerships with those that have the machines.

### List of Supplies

Hardware & Software			
<input checked="" type="checkbox"/>	<b>Laptops</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Laptop cart in my classroom but shared with other classes
<input checked="" type="checkbox"/>	<b>Headphones</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Microphones</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Digital Cameras</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>SD Memory Cards</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Software</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will utilize free software such as Tinkercad
<input checked="" type="checkbox"/>	<b>MinecraftEdu Server &amp; Licenses</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>3-D Printer</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Partnership with SSD Fab Lab & Seek Donation
<input type="checkbox"/>	<b>3-D Scanner</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Partnership with SSD Fab Lab & Seek Donation
<input type="checkbox"/>	<b>Cutting machine (laser, water jet, etc.)</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Partnership with SSD Fab Lab
<input type="checkbox"/>	<b>Milling and routing machines</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Partnership with SSD Fab Lab
Electronic Parts & Tools			
<input type="checkbox"/>	<b>Arduino Uno Kit</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Makey Makey</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	I have one but will borrow others if more are needed for a project

<input checked="" type="checkbox"/>	<b>Paper Circuit Sticker Book Kit</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	I have one to use as an example but I prefer to just buy components
<input type="checkbox"/>	<b>Lilypad</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>LEDs</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Switches</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Buzzers</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Motors</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Assortment of Batteries</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Battery Holders &amp; Clips</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Conductive Foil Tape</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Wire Cutter, Stripper, &amp; Crimper</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Vise</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Solder Iron &amp; Supplies (Adult)</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Resistors, Capacitors etc.</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Bread Boards</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Sensor Kits</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Shield Kits</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Magnifying glasses</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Conductive Paint/Pen</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Voltmeter</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Wires, Jumper Wires,</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>LED Tape, Neon Wiring</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<b>Building Materials &amp; Traditional Tools</b>			
<input type="checkbox"/>	<b>Hammers &amp; Mallets</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Clamps</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Vise</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Measuring Tape</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Screws, nails, bolts, etc.</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Staple Gun &amp; Staple (Adult)</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Power Drill (Adult)</b>	<input checked="" type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership	Will need to purchase or seek donation but could borrow one from home

		<input checked="" type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Hand Crank Drill</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Saws</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Screw Driver Kits</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Pliers, Tweezers &amp; Wrenches</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Heat Gun</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Levels &amp; Squares</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Sanding Block and Sand Paper</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Cutting Mat</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<b>Recycled Materials</b>			
<input type="checkbox"/>	<b>Scrap Wood</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will seek donations
<input type="checkbox"/>	<b>Cardboard</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will seek donation
<input type="checkbox"/>	<b>Scrap tiles, vinyl, carpet, glass, etc.</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will seek donations from businesses
<input type="checkbox"/>	<b>Junk for Deconstructing and Recycling</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<b>Craft and Art Supplies</b>			
<input checked="" type="checkbox"/>	<b>Glues and Spray Adhesive</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Hot Glue Guns &amp; Glue</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase low temp glue guns
<input checked="" type="checkbox"/>	<b>Materials such as felt, fabric, foam, plastic, etc.</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Pipe Cleaners &amp; Wires</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Rubber bands</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Recycled containers</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Paperclips, clips</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>String, rope, thread, yarn, fishing line, etc.</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Velcro</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	May need to purchase more
<input checked="" type="checkbox"/>	<b>Various Tape including duct Tape</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Will need to purchase Duct Tape
<input checked="" type="checkbox"/>	<b>Scissors</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Popsicle sticks, Toothpicks Wooden Dowels</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Modeling clay</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Squishy Circuit Doughs</b>	<input type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	Will make in class work with donated ingredients

<input checked="" type="checkbox"/>	<b>Pencils, Colored Pencils, Crayons, Markers</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Paints &amp; Brushes</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Needles</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<b>Misc. Items</b>			
<input checked="" type="checkbox"/>	<b>Storage Cabinet</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Maker Table</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Storage Containers</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Magnet tool Holder Strip</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Paper &amp; Plastic Mixing Cups</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input checked="" type="checkbox"/>	<b>Measuring Utensils/Cups</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Zip Tie Assortment</b>	<input checked="" type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input checked="" type="checkbox"/>	<b>Measuring Utensils</b>	<input type="checkbox"/> Purchase <input type="checkbox"/> Borrow/Partnership <input type="checkbox"/> Seek Donation	
<input type="checkbox"/>	<b>Safety Glasses</b>	<input checked="" type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Heavy Duty Gloves</b>	<input checked="" type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Dusk Mask</b>	<input checked="" type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation
<input type="checkbox"/>	<b>Aprons</b>	<input checked="" type="checkbox"/> Purchase <input checked="" type="checkbox"/> Borrow/Partnership <input checked="" type="checkbox"/> Seek Donation	Will need to purchase or seek donation

<b>Purchase through Fundraisers</b>	<b>Garage Sales, Donations from Parents, Businesses &amp; Others</b>	<b>Partnership</b>	<b>Already Have</b>
<ul style="list-style-type: none"> <li>- Digital Cameras</li> <li>- SD Memory Cards</li> <li>- Lilypad</li> <li>- LEDs</li> <li>- Switches</li> <li>- Buzzers</li> <li>- Motors</li> <li>- Assortment of Batteries</li> <li>- Battery Holders &amp; Clips</li> <li>- Conductive Foil Tape</li> <li>- Bread Boards</li> <li>- Sensor Kits</li> <li>- Shield Kits</li> <li>- Resistors, Capacitors etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Vise</li> <li>- Wire Cutter, Stripper, &amp; Crimper</li> <li>- Solder Iron &amp; Supplies (Adult)</li> <li>- Hammers &amp; Mallets</li> <li>- Clamps</li> <li>- Vise</li> <li>- Screws, nails, bolts, etc.</li> <li>- Staple Gun &amp; Staple (Adult)</li> <li>- Power Drill (Adult)</li> <li>- Hand Crank Drill</li> <li>- Saws</li> <li>- Screw Driver Kits</li> </ul>	<ul style="list-style-type: none"> <li>- Laptops</li> <li>- 3-D Printer*</li> <li>- 3-D Scanner*</li> <li>- Cutting machine (laser, water jet, etc.)</li> <li>- Milling and routing machines</li> </ul>	<ul style="list-style-type: none"> <li>- Pipe Cleaners &amp; Wires</li> <li>- Rubber bands</li> <li>- Recycled containers</li> <li>- Paperclips, clips</li> <li>- String, rope, thread, yarn, fishing line, etc.</li> <li>- Velcro</li> <li>- Various Tape including duct Tape</li> <li>- Scissors</li> <li>- Popsicle sticks, Toothpicks Wooden Dowels</li> <li>- Modeling clay</li> <li>- Squishy Circuit Doughs</li> </ul>

<ul style="list-style-type: none"> <li>- Conductive Paint/Pen</li> <li>- Wires, Jumper Wires,</li> <li>- LED Tape, Neon Wiring</li> <li>- Hot Glue Guns &amp; Glue</li> <li>- Zip Tie Assortment</li> <li>- Safety Glasses</li> <li>- Heavy Duty Gloves</li> <li>- Dusk Mask</li> <li>- Aprons</li> </ul>	<ul style="list-style-type: none"> <li>- Pliers, Tweezers &amp; Wrenches</li> <li>- Heat Gun</li> <li>- Sanding Block and Sand Paper</li> <li>- Cutting Mat</li> <li>- Scrap Wood</li> <li>- Cardboard</li> <li>- Scrap tiles, vinyl, carpet, glass, etc.</li> <li>- Junk for Deconstructing and Recycling</li> </ul>		<ul style="list-style-type: none"> <li>- Pencils, Colored Pencils, Crayons, Markers</li> <li>- Paints &amp; Brushes</li> <li>- Arduino Uno Kit</li> <li>- Makey Makey</li> <li>- Paper Circuit Sticker Book Kit</li> <li>- Voltmeter</li> <li>- Magnifying glasses</li> <li>- Measuring Tape</li> <li>- Levels &amp; Squares</li> <li>- Glues and Spray Adhesive</li> <li>- Materials such as felt, fabric, foam, plastic, etc.</li> <li>- Needles</li> <li>- Storage Cabinet</li> <li>- Maker Table</li> <li>- Storage Containers</li> <li>- Magnet tool Holder Strip</li> <li>- Paper &amp; Plastic Mixing Cups</li> <li>- Measuring Utensils/Cups</li> </ul>
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## Funding

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### Potential Funding Sources

Utilizing partnerships, resources and materials that I already have, I feel confident that I can start the year off strong.

### Donations

The makerspace will rely heavily on donations. A big expense for makerspace will be the tools and safety supplies but I hope to find those at garage sales and through parent and local donations. I live in a very caring community and people love to help

each other. To purchase those tools new in a kit could easily run upwards of \$2,000 but through donations I think I can supply those items at little or no cost.

## Grants & Donations

I plan to apply for grants and to partner with others to apply for larger grants. I plan to apply for STEAM grants through the Department of Education as well as smaller academic grants through corporations such as Microsoft. I plan to also seek funds from online donor programs such as DonorsChoose.org, adoptaclassroom.org, gofundme.org.

I would love to have a 3D printer and scanner for the makerspace. However until I can acquire funds for a 3D printer and other cool machines I will utilize partnerships with those that have the machines.

## Sustainability

Once the Maker Space is established I plan to sustain it through fundraising and sponsorship. My class could fundraise by making items that they could sell.

## Evaluation

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### Survey

The makerspace will be evaluated 3 times a year (Nov., March, May) by students via an online survey. The survey will also remain up year round on the makerspace website for general feedback. The focus of the survey will be on molding the makerspace to what students want and need. The makerspace will also track the number of students that participate in the makerspace.

## Makerspace Mondays Feedback

Which best describes you? \*

- Room 6 Student
- Room 6 Family Member
- KGH Student
- Other

If Other please specify:

Have you been a part of the maker movement in Room 6? \*

- Yes
- No
- No but would like to

Which tools you would be interested in using at a makerspace?  
(check all that apply) \*

- General tools (commonly used in all sorts of DIY projects)
- Computers (coding, hardware & software, design, fabrication)
- Digital Fabrication tools (3D Printers, laser cutters)
- Electronics (Arduino, Raspberry Pi, microcontrollers, robotics, etc.)
- Textiles equipment (soft circuit, sewing machines, etc.)
- Metalworking Tools
- Woodworking Tools
- Ceramic Equipment
- Other

If Other please specify:

What would you use a makerspace for? (check all that apply) \*

- Prototyping/Entrepreneurship
- Skills and Curriculum Acquisition
- Hobby/Recreation
- Making your own goods
- Other

If Other please specify:

Please provide any additional comments to help improve our Makerspace.

Submit

## Publicity

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### Website

The makerspace website can be found at [www.room6kgh.com/makerspace](http://www.room6kgh.com/makerspace). The makerspace will be used as a tool to share information about the makerspace. The website will also be used to document and publish projects.

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