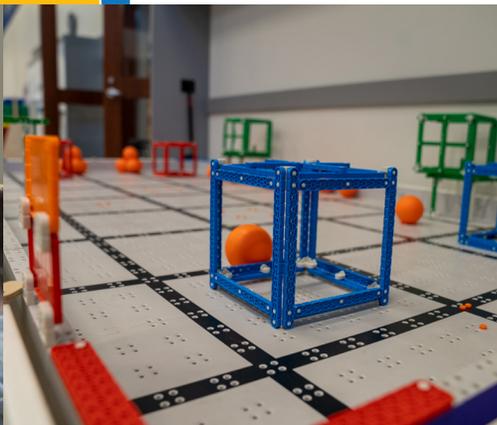




HOW  
TO  
START  
A  
MAKERSPACE

**1<sup>ST</sup>**  
**MAKER**  
**SPACE**  
Design.  
Build.  
Sustain.



# WHAT IS A MAKERSPACE?

## Have you ever made something? Have you ever shared your gift with another?

*Making and sharing is part of what makes us human. A makerspace is a facility where people share resources and collaborate to build and innovate products. Makerspaces make tools available to people who want to design and create something new. The maker movement has allowed ideas to be turned into inventions by giving people access to the tools and collaborative space that they need to prototype a design.*

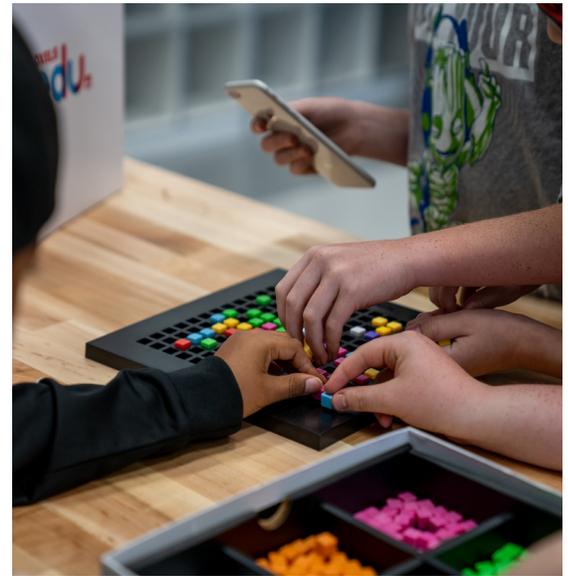
### FORMS OF A MAKERSPACE

Just like teachers and classrooms, makerspaces take many forms. What is more important than the physical space is the learning that is enabled through the makerspace that is created.



**Dedicated Space** – When most people think of a makerspace in an educational setting, they are thinking of a dedicated space. This may also be called a STEM Lab, Innovation Hub, Collaboratory, or another name decided by the educational community.

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**Media Center Makerspaces** – Many schools have introduced making into the building through the media center, which are often a hub of rich activity and innovation. The benefit of having a makerspace within the media center is that it can be maintained by the staff and items can be checked out to teachers in addition to having teachers bring students into the makerspace.

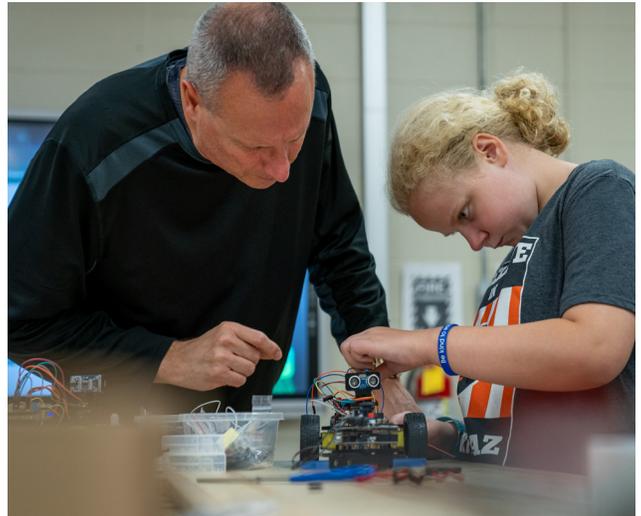


**Maker Carts** – Sometimes space is not available in a building or the space that is available is not quite right for a maker environment. In that case you might consider “maker carts”. On a maker cart, maker activities are included on carts in bins or boxes that can be easily organized. The ease of a cart is that it can be easily moved from one classroom to another without the students moving.



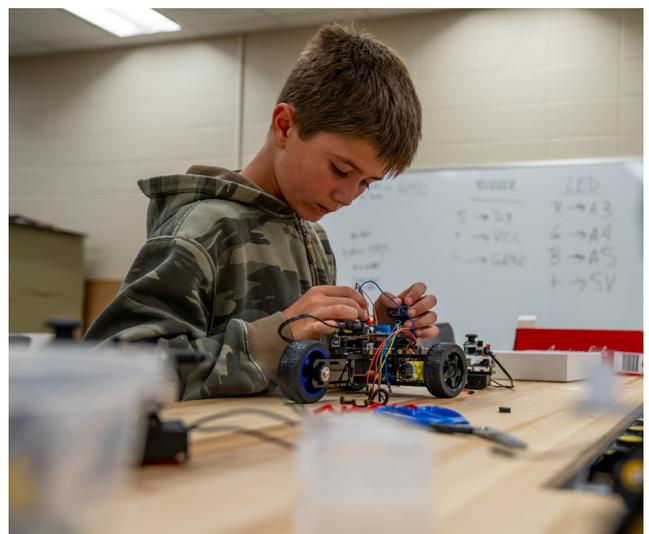


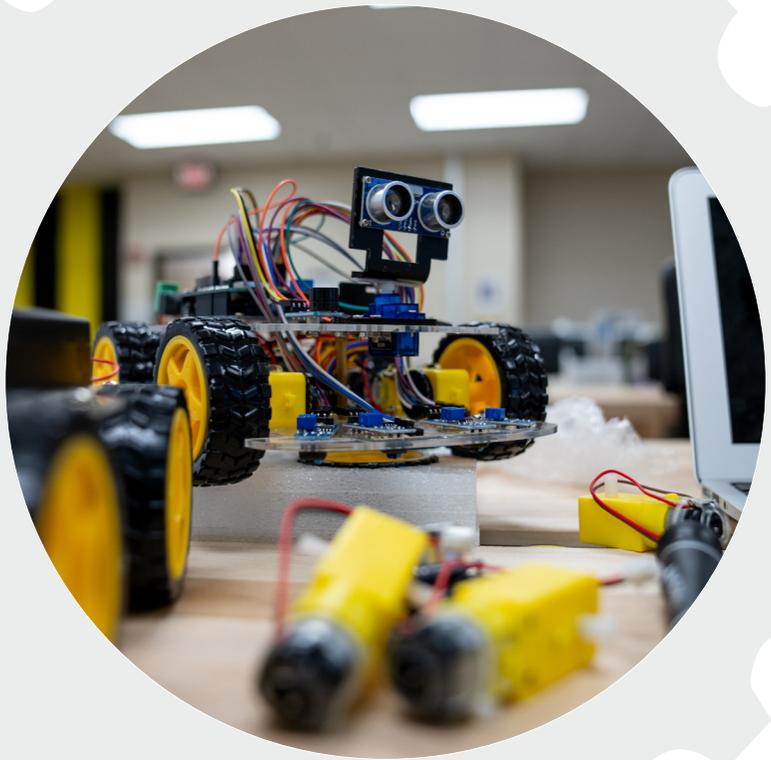
# WHY MAKE?



## **Students like to make, and they learn more when they do!**

*Why create a makerspace in your school, library, or learning environment? The answer is simple; students like to make, and they learn more when they do! The need has never been greater for students that have critical thinking and problem-solving skills. Maker education develops these employability skills. Learning comes to life and students are reminded that learning is fun!*





The Gallup Student Poll measures what matters most for students success - hope, engagement, entrepreneurial enthusiasm, and financial literacy. According the Gallup Student Report, over half of students K-12 were disengaged and feeling hopeless (2017). We believe that makerspaces engage students and restore hope by allowing students to make, explore, and connect content to what they are learning in the classroom!

Research and workforce development data supports the need for makerspaces. According to the US Department of Commerce, job growth in STEM fields is expected to be 17% over the next ten years, which is much higher than the average job growth rate of 10% (2014). Who are the students that are going to fill jobs that do not yet exist? This is where technological literacy and employability skills have a role to play in making a student college and career ready.

## Makerspace Benefits

- Create tangible things for a sense of pride and ownership.
- Gain newfound knowledge through hands-on experiences.
- Become producers instead of consumers.
- Feel safe to fail.

# 1 STEP ONE

## Plan Your Space

Makerspaces are like golf courses, no two are exactly alike! Your makerspace should reflect the unique culture and pride of your building. It should inspire students and teachers to create and invent.

1st Maker Space provides free consultations for educational makerspaces. We specialize in makerspace design and management, and we would be happy to come to your building to listen to your needs and create a proposal for a makerspace based on those



### Tips to Plan Your Space:

- Consider who the audience will be. The main users of the space will determine what type of furniture will be used.
- Consider storage. Will students be working on projects over multiple days? If so, open or clear storage needs to be considered for student projects as well as consumable materials.
- Ask for input. Create a committee or focus group to get input from teachers, students, and community members.
- Consider curriculum. Consider how the makerspace will be used to reach current educational goals, like developing a STEM pipeline.

# 2 STEPTWO

## Secure Funding

You have a vision. You have dreamed the dream of students making and creating rather than just doing what they have always done. You want a makerspace. The big question most of our clients' face is...how do we pay for one?

It can be difficult to find funding for something new and innovating in a school culture that doesn't support innovative spending. Navigating grants, donations, school budgets, and the changes that happen yearly is challenging. At 1st Maker Space, we want to make it easy to fund your makerspace by helping you find the funding you need to ignite your makerspace.



- Apply for local educational foundation grants. These grants are usually the easiest to get because the impact is on local students and teachers. Local educational foundations can fund anything from an entire makerspace to small pieces of equipment like a 3D printer or Dash and Dot Robots.
- Include your Makerspace in your Title IV, Part A Application. 1st Maker Space is a recommended vendor for Title IV purchases through IDOE. Makerspace items, especially that focus on incorporating STEM, fall into bucket "A" of the Title IV, Part A allocation.
- Ask for supply donations. Many community members are happy to donate specific recyclables and consumables (like markers, beads, and rulers) when engaged.

### INTERESTED IN FUNDING?

Are you interested in any of these funding sources? 1st Maker Space would be proud to partner with you to write any of these grants and more to make your vision come to life.

**More #makerspaces = more Hoosier Makers!**

# 3 STEPTHREE

## Get Buy-in From Staff & Community Members

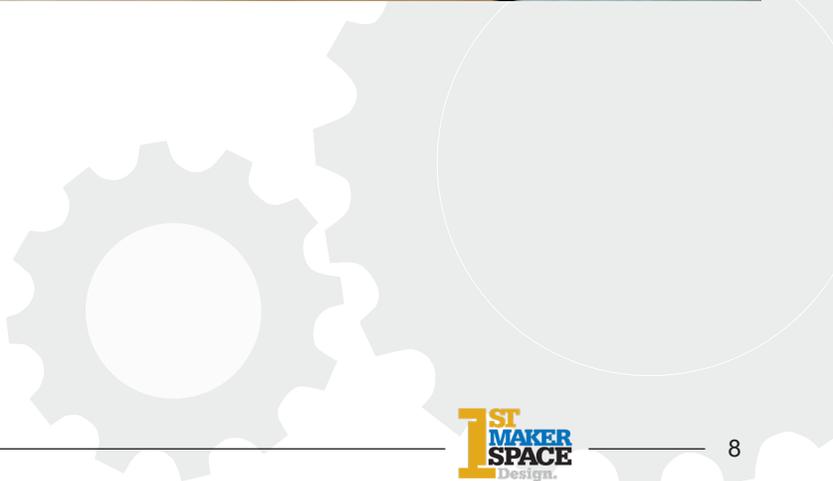
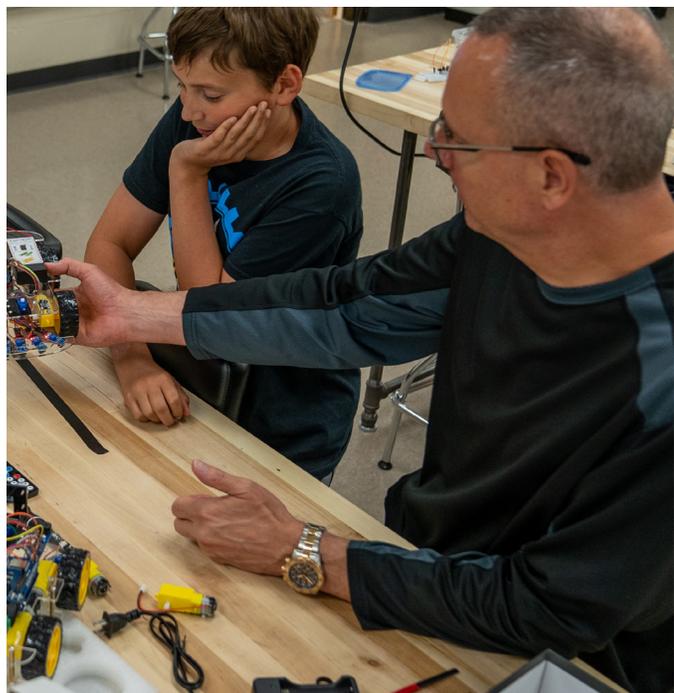


How can you get the staff excited about the new makerspace? Invite them to the new makerspace to tinker and play! Consider using a boxed kit like Bristlebots to create a fun tinkering experience that will allow teachers to see how making is both fun and can connect to the Indiana Academic Standards. Allow each person to take their gadget or gizmo back to their classroom and proudly display it as evidence that they are a MAKER!



### 3 Reasons to Invite the Staff to the Potential Makerspace

1. **It's fun.** Teaching has often lost its fun, and we need to restore that to keep both teachers and students engaged in active learning.
2. **Advocacy.** Take the time to share what you are doing with your staff and ask for their ideas. It will bring them into the project and create a culture of making.
3. **Marketing.** The staff can share the wonderful making happening in the makerspace and their classrooms if they know how and what to share. Give them a platform to share their ideas!



# 4

## STEP FOUR Build a Makerspace

Once you have worked with 1st Maker Space to design your ideal space, secured funding, and brought the staff along, leave the rest to us! This step can often be the toughest part when a school decides to create their own space. 20+ purchase orders later, they are not sure where things should go or why they decided to do this in the first place.

1st Maker Space handles the entire creation of the makerspace in once purchase order. We work with clients to order, deliver, and unpack the entire makerspace from start to finish for an easy and seamless process.



# 5 STEP FIVE

## Implement Making

The hard work of building is over, and the implementing is about to begin. The joy of making is that the creation of the makerspace is never really over. There is always more to learn and explore as the maker movement continues to evolve.

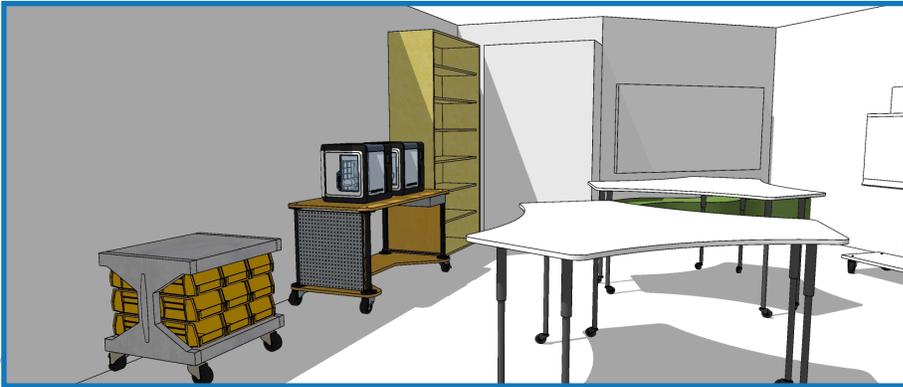
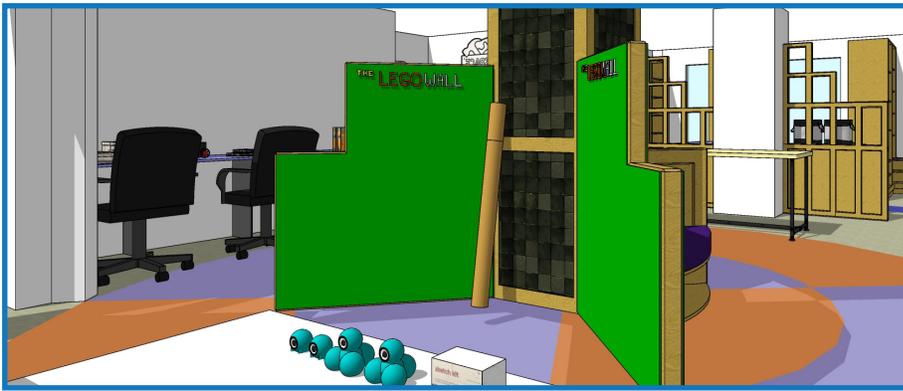
1st Maker Space offers curriculum for Elementary, Middle, and High School paired with STEM Programs and professional development to give maker managers the training they need to implement maker-centered learning.

### Continuing to Learn:

- Attend maker-related professional development. 1st Maker Space hosts at least one professional development event per month focused on a different tool, curriculum idea, or strategy.
- Consider e-coaching. All new maker managers would benefit from direct coaching from our Education Director, Mary Rinehart.
- Join our email list. Our team sends out weekly updates on the maker movement as well as equipment pricing specials.
- Follow us on social media @1stMakerSpace. We have curated an online community of makers that we invite you to join to share ideas, give feedback, and find inspiration.



# OUR PROJECTS

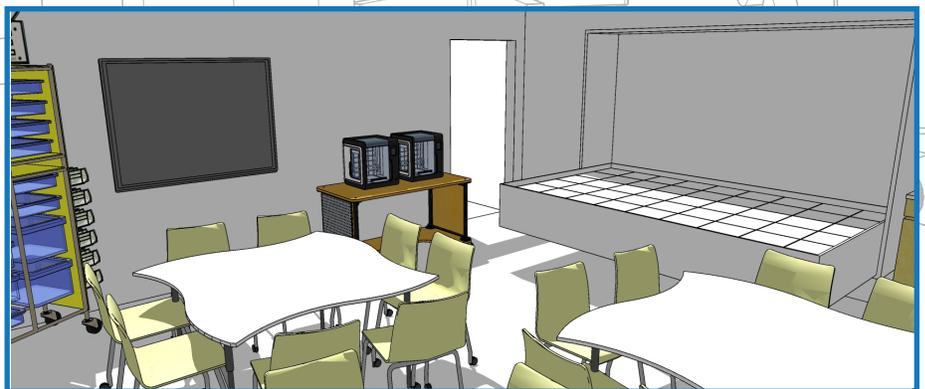
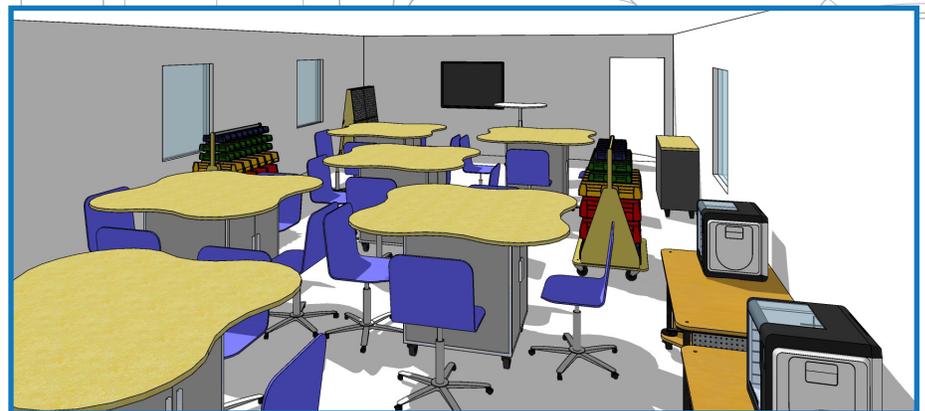


## Riley Hospital for Children Makerspace

Riley Hospital for Children was interested in developing a makerspace for children receiving treatment to boost their social, mental, and physical well-being. Many children continue to work on school projects during treatment, and the makerspace will serve as an updated student-focused center that will provide students with a place to tinker during their stay.

## Irvington Community Schools Elementary Makerspace

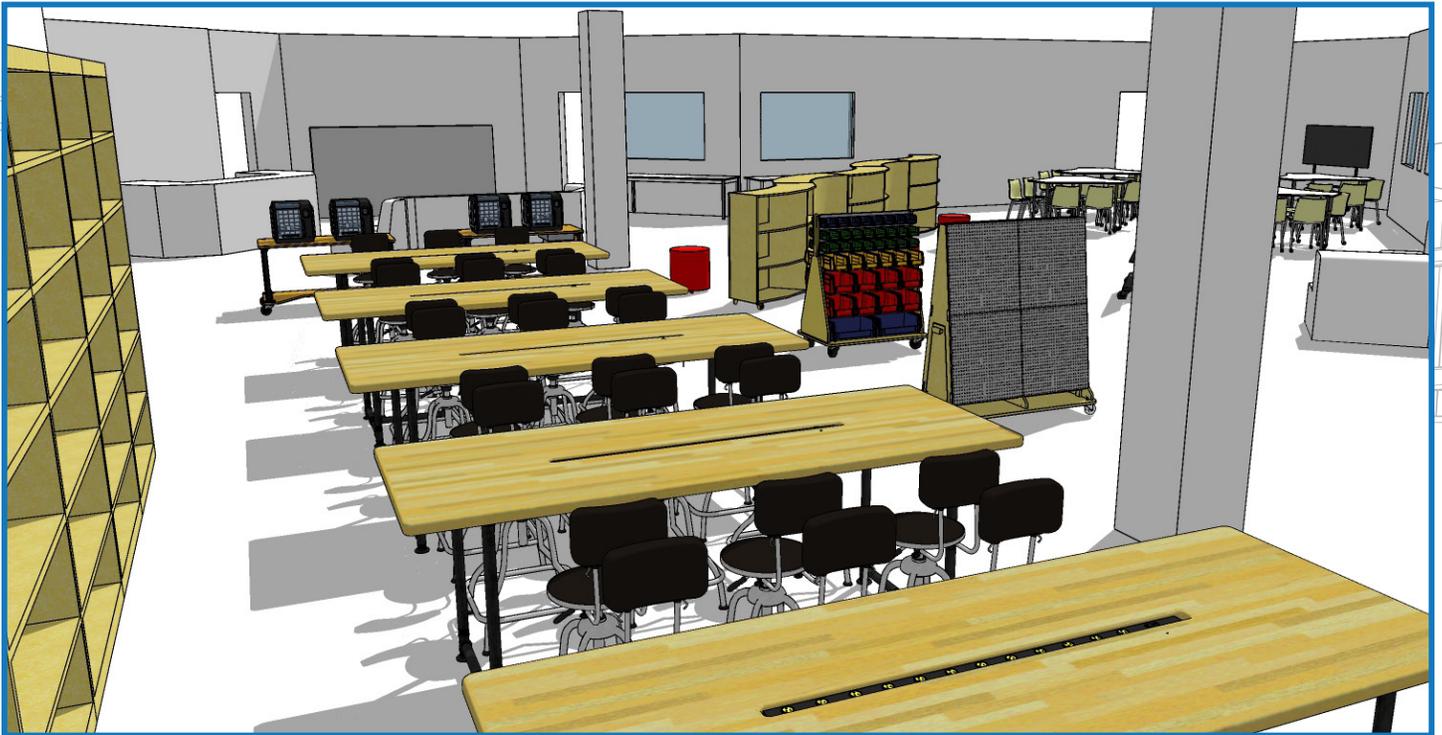
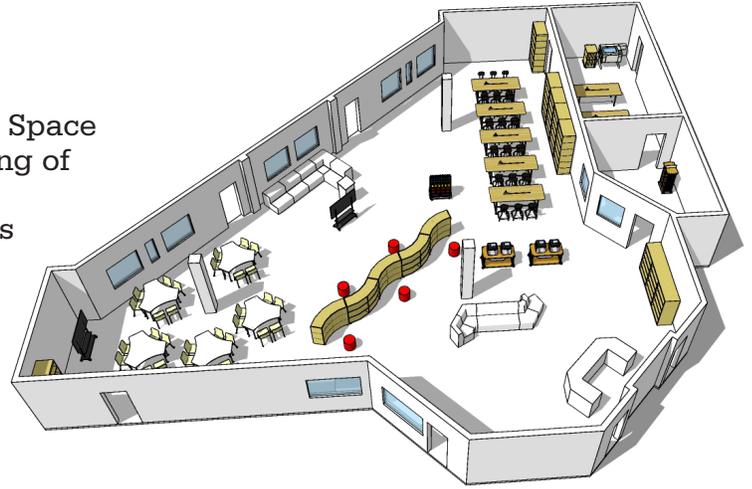
Irvington Community Schools is currently working on converting a computer lab to a modern makerspace as part of a district-wide makerspace project. The Elementary Makerspace will contain whiteboard tables, mobile chairs, maker storage solutions, a VEX IQ/ FIRST Lego League Murphy-Style Robotics Table, and more.



## Decatur Middle School Media Center Makerspace

Decatur Middle School approached 1st Maker Space about updating their media center in the spring of 2019. Like many media centers, it had not been updated in over thirty years and was underutilized by both teachers and students.

The goal of the project was to revitalize the media center to be a gathering place for both students and teachers. While the focus would remain on literacy, there would be a new focus on collaboration, making, and design.



# The Research behind Maker Education

Interested in learning more about makerspaces? Below is a list of resources to get you started on your maker journey. Download our digital catalog to access links.

## Articles

- *Maker Mindset* - Dale Dougherty, Founder of Make Magazine
- *Agency by Design – Maker Centered Learning and the Development of Self: Preliminary Findings of the Agency by Design Project*, Harvard Graduate School of Education
- *District Administration – Meeting of the Mindsets*
- *Meaningful Making: Projects and Inspirations for Fab Labs + Makerspaces*, Stanford University
- Seven Makerspace Things You Should Know
- *8 Tips to Taking on Schoolwide Makerspace Leadership*
- *Makerspaces and Equal Access to Learning* – Laura Fleming and Billy Krakower
- *Novice Guide to 3D Printing* – Kim Brand

## Web Resources and Links

- 1st Maker Space Research Page - <http://www.1stmakerspace.com/research>
- What is a Makerspace? - <https://www.makerspaces.com/what-is-a-makerspace/>
- Make Magazine - <https://makezine.com/>
- MakerEd - <http://makered.org/>
- Instructables: Directions for how to build almost anything!  
<https://www.instructables.com/>
- Thingiverse – Free files for 3D Printing - <https://www.thingiverse.com/>
- Free web-based modeling software - <https://www.tinkercad.com/>
- Innovators supply house focused on electronics - <https://www.adafruit.com/>
- The BBC Micro:bit - <http://www.microbit.org/>
- Cardboard Challenge - <http://cainesarcade.com/cardboardchallenge/>

*“Put a young man in a workshop, his hands will work to the benefit of his brain and he will become a philosopher while thinking himself only a craftsman.”*

*Jean-Jacques Rousseau*

## Books



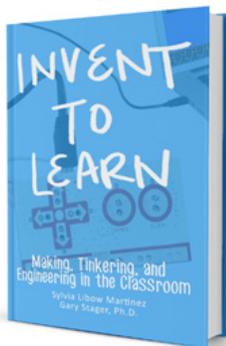
### **Makerspace Playbook School Edition**

Welcome to a community of people who have a passion for making things, and who want to share that with others by making with others by setting up a makerspace. The Makerspace Playbook will help you establish a wonderful new resource in your school, neighborhood, or wider local community. We know that the thought of getting a makerspace started can be daunting, whether it's finding a facility, engaging members or students, recruiting mentors, dealing with liability, etc. We want your makerspace to succeed, to expand the maker community and grow the maker movement, to share the maker mindset and DIY mentality, and to engage and stimulate your neighborhood, school, town or region.



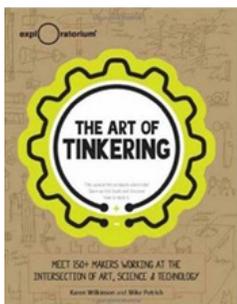
### **Worlds of Making**

Get the nuts and bolts on imagining, planning, creating, and managing a cutting-edge makerspace for your school community. Nationally recognized expert Laura Fleming provides all the answers. From inception through implementation, you'll find invaluable guidance for creating a vibrant makerspace on any budget.



### **Invent to Learn**

Hailed as the "bible of makerspace", Invent to Learn is the go to resource for all educators. This book offers pedagogical background for the maker movement, project ideas, and resources to explore. Even if you don't have access to expensive hardware, every classroom can become a makerspace where kids and teachers learn together through direct experience with an assortment of high and low-tech materials. In this practical guide, Sylvia Martinez and Gary Stager provide K-12 educators with the how, why, and cool stuff that supports classroom making.



### **The Art of Tinkering**

Brought to you by the Exploratorium's Tinkering Studio, The Art of Tinkering is an unprecedented celebration of what it means to tinker: to take things apart, explore tools and materials, and build wondrous, wild art that's part science and part technology. Join 150+ makers as they share the stories behind their beautiful and bold work and use this book to do some tinkering yourself.

## OUR TEAM

Left to right:

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President and CEO

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**Mary Rinehart**

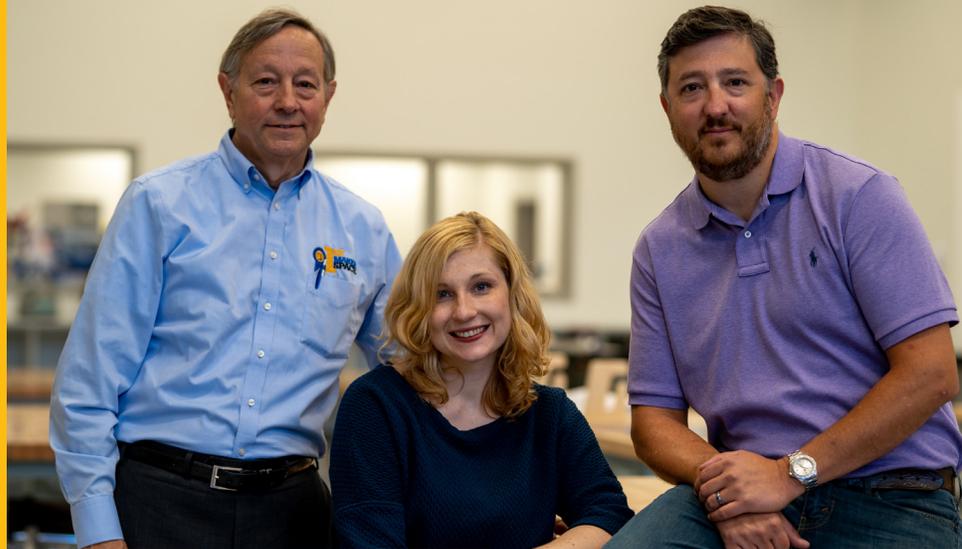
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