Earlier this month in Teacher's Corner, we explored the 21st Century Skills, which encourage student creativity, problem solving, and collaboration as an approach to teaching and learning. In a traditional classroom space, it can be hard to give students the freedom to engage in these types of skills. As a result, there has been an increasing trend in education for schools to develop physical spaces in a school where students can have more open space to engage in project-based activities. These are called *makerspaces*. The projects can be entirely decided by the students or centered on a theme such as environmentally-friendly projects or projects that must serve the students' locally community.

However, a makerspace is not just a physical space for learning. Makerspaces bring with them a hands-on learning approach. In a makerspace environment, students are expected to engage in project-based learning and are encouraged to be self-directed in their learning. This learning approach pushes the students to become *makers*. Makers create new ideas and new products by exploring, experimenting, and learning by doing. This learning should be guided by the students' own natural creativity and problem-solving skills. To encourage students to make and build, makerspaces are built on five basic ideas:

1. Everyone is a maker – makerspace projects can be as simple as painting a picture to as complex as building a robot. What is important is making, even if what you make is messy and not perfect.

2. Our world is what we make it – makerspaces encourage students to be more than consumers. These spaces encourage them to reuse and recycle to make new things. Being environmentally friendly is at the heart of the makerspace movement.

3. If you can imagine it, you can make it – makerspaces use students' natural curiosity and imagination. If students can imagine it, they can build with enough energy, time, and support from teachers.

4. Do what you can, where you are, with what you have – a makerspace does not need to be technology-focused. A makerspace can be as simple as a table or room with paper, cardboard, and markers.

5. We share what we make, and help each other make what we share – makerspaces are collaborative and students are encouraged to learn from one another. Teachers and students are equal partners in the makerspace.

HOW DO I CREATE A MAKERSPACE?

Building a makerspace begins with the learning space. These spaces look more like workshops than classrooms. These spaces tend to have long rows of tables with only enough chairs for each student to have one. By working at long rows of tables, students can see the work being done by others and communicate freely. Also, keeping the number of chairs to a minimum helps by giving students room to get up and move around. In makerspaces, it is critical for students to be able to move freely around the room, so teachers should avoid requiring students to stay in their seats for long periods of time. If your school doesn't have a room to build a makerspace, a classroom can still be used; just move unnecessary tables and chairs into the hallway during makerspace times. Many makerspaces begin as an after-school club that meets once or twice a week. These less formal after-school clubs can be a great way to discover what makerspace ideas work best for your teaching context. If you provide the space, students will provide the creativity.

Next, a makerspace needs tools for students to build and create. These tools can be physical or digital. It is important to have materials that are widely available to you and your students. Some examples of materials to include in a makerspace are:

Physical Materials

- Paper and Cardboard – cheap and easy to find, these two materials should be in every makerspace. Students can use these two products to begin *rapid prototyping*. In rapid prototyping, the goal is to go from idea to product quickly. The first build can be messy and rough, but it should help students focus their ideas. Paper and cardboard are great for this.

- Two liter bottles – plastic bottles are another great makerspace resource. They can be used to make bottle gardens, or the plastic can be used to make new projects.

- Glue, string, and tape – makerspaces always need basic tools to help students build their projects. When starting a makerspace, don't forget basic tools that can help students combine cardboard, paper, and plastic.

Digital Materials

- Audio Recording – If you have musical students, have them use the makerspace to write and record their own songs. Students looking to make music can use tools such as Audacity, an open-source audio recording and editing tool. Open-source tools are software that can be downloaded and installed for free by users. Users of open-source tools can then change the software code to make changes or improvements to the original software. For more on using Audacity, check out the September 2015 Teacher's Corner.

- Game Design Tools – Encourage students who love video games to stop playing them and start making them. A variety of online tools can teach students how to make their own video games. In your makerspace, include such tools as [Gamestar Mechanic](#), [Kodu](#), and [Scratch](#).

- Programming – The 21st Century Skills are designed to prepare students for the jobs of the future and many of those jobs will require coding skills. Students can learn the basics of computer coding through a variety of websites such as [Code.org](#), [Hour of Code](#), and [App Inventor](#).

HOW CAN A MAKERSPACE BE USED FOR ENGLISH LANGUAGE LEARNING?

Makerspaces give students an opportunity to build and create. In the process of building and creating, students develop an ownership of their created materials and generate something they can talk about. This ownership of the materials invests students into the projects and can lead them to communicate more because they want to share their ideas with the makerspace community. As instructors, we can use this desire to share by creating opportunities for the students to use English. Makerspace activities in English can include:

- Project Instructions – Students can create written instructions on how to use their creation. For example, the makerspace could have as its focus student teams building a device or project that helps the environment. Once they complete their project, the teams must write instructions in English on how to use their device.

- Advertisements – For a fun writing and speaking activity, teams of students can create commercial advertisements for their project. The advertisements must show what their project is and how it can be used. These advertisements can then be shown in class for a student-created listening activity.

- Project Show-and-Tell – During the creation process students can share their progress in show-and-tell progress reports. In these presentations, teams of students can present their ideas to the other makerspace teams. The teams can discuss their successes and failures in developing their project and provide suggestions to other teams.

- Teacher Instructions – Another way to introduce English into the makerspace is to provide students with instructions entirely in English.

Using some, or all, of the ideas listed above can help get your makerspace started. As a makerspace instructor, it is important to create an atmosphere that encourages students to learn by doing, to communicate and collaborate with their classmates, and to learn from one another. So have fun and make something!

Want to learn more about makerspaces? Check out these resources:

[Create to Communicate](#) - This book provides ideas on how to use art to encourage students to use the English language. Many of the ideas presented can fit directly into a language-focused makerspace. The book can be downloaded by section or as a whole.

[Make it yourself – Casa Thomas Jefferson opens Makerspace](#) - Learn more about how a makerspace is being used for English education.

Makered.org - Maker Ed is home to the makerspace for education movement. On this website you can find materials on using makerspaces for learning.

[Makerspace Playbook School Edition](#) - This downloadable book can help you get started in creating a makerspace at your school.

[Youth Makerspace Playbook](#) – This is similar to the Makerspace Playbook listed above but with a focus on makerspaces for younger learners.

[Just make it! How makers are changing everything](#) - This article provides a brief overview of makerspaces and how people are using them to create new ideas and products.

[US College Libraries in the Digital Age](#) – Read this Voice of America article about how the digital age is changing libraries from a focus on books to a focus on creating.

[Will Technology Benefit Very Young Children?](#) - This is a Voice of America article on how even young learners are using makerspaces to interact with the digital world.