

EDUCATION

littleBits™

LITTLEBITS EDUCATION COMMUNITY CASE STUDY

ELEMENTARY SCHOOL LIBRARY MAKERSPACE

BY
Collette J.

TITLE
Teacher-Librarian

ORGANIZATION
Elementary School
Eastern Pennsylvania

AGE LEVELS
3rd to 5th grade

LITTLEBITS PRODUCTS USED
Student Sets and extra modules

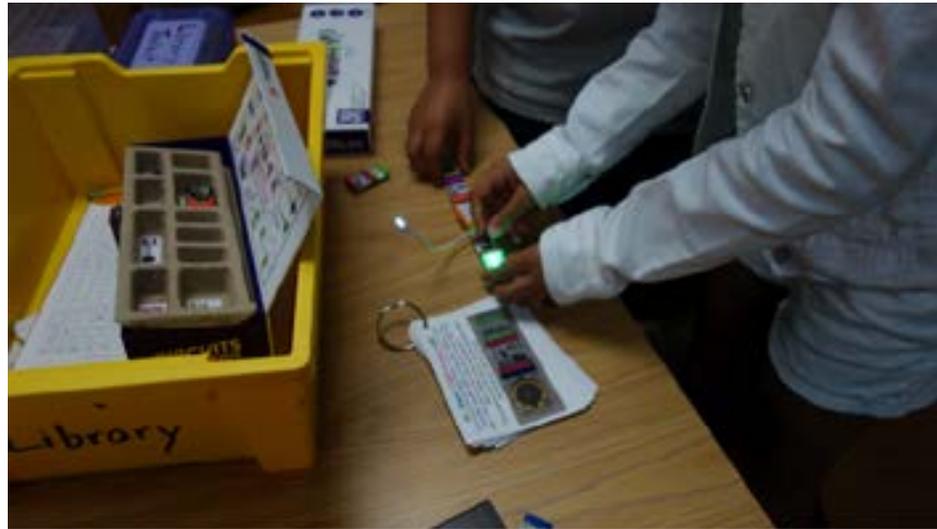
DATE
February 2015

TELL US ABOUT YOUR TEACHING EXPERIENCE.

Collette J. is a public school elementary teacher-librarian in Pennsylvania with 9 years teaching experience. She started her library center makerspace in 2013. She is also the author of the littleBits 101 Task Cards and other makerspace resources for teachers and librarians. Collette J. writes about makerspaces, eBooks, and other school library topics on her blog, A Wrinkle in Tech (<https://awrinkleintech.wordpress.com/>).

HOW DID YOU LEARN ABOUT LITTLEBITS AND WHAT MADE YOU DECIDE TO IMPLEMENT THEM IN YOUR CLASS/PROGRAM?

I don't remember exactly how I found out about littleBits, but when I found them, I was really excited. I had been researching the Maker Movement, and I loved the idea of students having the opportunity to create physical things in the library in addition to the many digital products they create as part of our curriculum. Since littleBits can't be connected the wrong way (my favorite feature), I thought they would be a safer way to add electronics to student creations without the risk of shock or the use of a soldering iron. My vision was to start a library makerspace that I would supervise some of the time, but wouldn't require adult supervision every moment of library class.



EXPLAIN HOW YOU INCORPORATED LITTLEBITS INTO YOUR PROGRAM/CLASS?

I started using Cari Young's "library centers" model in 2013, and I thought having one of the centers be devoted to making would help inspire students to think critically and creatively. littleBits are one part of our makerspace where students can design and work on projects from week to week. Once the project is finished, students write a how-to notebook entry which can then be published to the rest of the school. littleBits are also part of our school's Response to Instruction and Intervention (or RtII) program. The gifted support teacher and I take turns hosting students during RtII time, and the students in our 5th grade groups have the opportunity to create a project of their own design using littleBits and other materials.

WHO WERE THE KEY PEOPLE IN YOUR ORGANIZATION THAT MADE THIS PROJECT POSSIBLE?

Our fantastic library technology assistant has been integral in making our makerspace possible. She takes care of many administrative tasks so I can concentrate on guiding students' learning and collaborating with the gifted support teacher. Though it is possible to run a library without administrative help, doing so really limits a teacher-librarian's effectiveness and that of the overall library media program. Two other supporters of the makerspace are our school principal and our gifted support teacher. The gifted support teacher and I enjoy collaborating because it gives student an opportunity to learn problem-solving and critical thinking skills as they work on a project. Learning those skills is seamlessly integrated into the project, and students stay engaged because they are personally invested in what they are making.



WHAT WORKED WELL?

- Keeping students focused by completing the littleBits 101 Task Cards before brainstorming ideas for their project.
- Browsing the littleBits projects online for inspiration, then letting students choose their own projects or design their own from scratch.
- Allowing students to bring their own materials in (like LEGO® or K'Nex) for their projects.
- Asking the school custodians to save the empty paper towel tubes and cardboard boxes for students to reuse in their projects.
- Writing grants for more littleBits and other supplies.

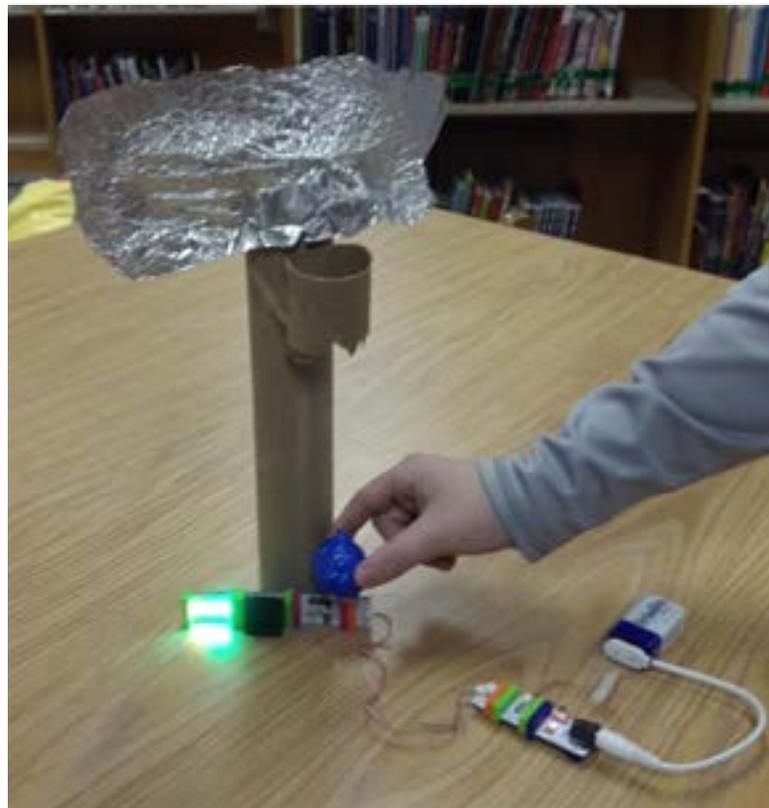
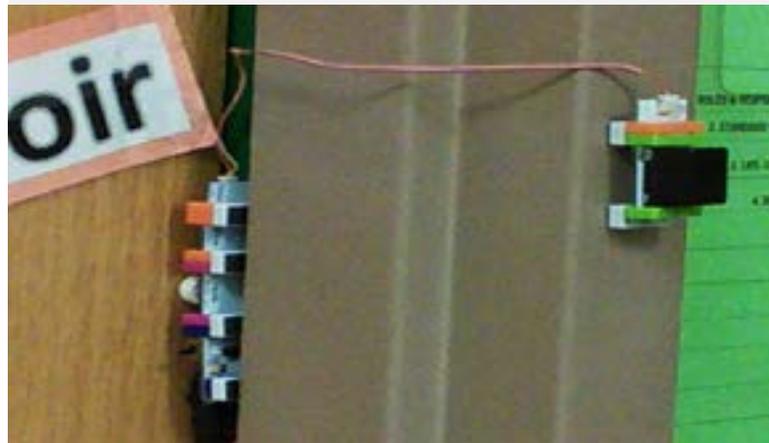


WHAT WAS A CHALLENGE?

- Storage space was, and continues to be, an issue. Our library was built very traditionally, and I struggle to find the space to store unfinished student projects from week to week.
- We have a limited supply of littleBits, so we have to take the modules out of the project so other classes of students can use them. Making sure all of the Bits are back in the containers or tackle box is also a challenge.
- On a fixed library schedule, students only have approximately 30 minutes of work time. This disjointed time allotment isn't ideal for makerspace learning, but it can be done! In the future, I plan to circulate some littleBits kits so that students can take their projects home to work on in their free time.

WHAT HAS BEEN THE RESPONSE OF YOUR STUDENTS/COMMUNITY?

Students LOVE making things work, and littleBits provides one way for students to quickly get started with making. Even creating a simple circuit with just one LED empowers them and inspires them to create more complex circuits. The littleBits makerspace center continues to be one of the most popular centers during library class in addition to our other makerspace centers. I've also been encouraged by the teachers and parents that have commented on the creative thinking and problem-solving that students are doing. Though the comments are spoken in passing, they've all been positive and impressed with what students are doing in the library.



HOW WOULD YOU SUMMARIZE WHAT YOU'VE LEARNED IN IMPLEMENTING YOUR LITTLEBITS PROGRAM/CLASS?

Students surprise me with what they want to create. They are only limited by the supplies provided and our storage space. I'm still learning about the logistics of running and incorporating a makerspace program within the limits of a mostly fixed library schedule, but I've learned to work around those limitations. I've also learned that as a teacher and librarian, I can inspire and encourage "maker thinking" in many ways, and using littleBits is just one of them.



DO YOU HAVE SUPPORTING DOCUMENTS TO SHARE?

For the enrichment projects, the gifted support teacher and I require students to write a how-to document so that other students could re-create the projects. The Maker Notebook Entry is graded with a rubric, which can be accessed on Google Drive. Other resources I use for the littleBits library center and other components of our school makerspace are available in my TeachersPayTeachers store. The task cards I've created as an introduction to the Student Set are available FREE on TeachersPayTeachers and the littleBits education website.



**Makerspace
FREEBIE!**
**littleBits™ 101
Task Cards**

Designed and Created by
Collette J. aka Mrs. J in the Library

1 2
3 4

WHAT STANDARDS DID YOU INCORPORATE INTO YOUR LESSONS/PROGRAMS?

First of all, I don't think standards are needed to justify a lesson, activity, or program. With that said, I know that many teachers work in districts that require standards for every single activity in the school day. When students write their How-To Maker Notebook Entry, I cite these National Common Core Standards:

CCSS.ELA-Literacy.W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-Literacy.W.3.2a Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.

CCSS.ELA-Literacy.W.3.6 With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.

I also cite the Next Generation Science Standards to support the science content students are learning in our makerspace:

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

WHAT ARE YOUR FUTURE PLANS FOR LITTLEBITS USE?

The gifted support teacher and I won a \$500 grant from our district's education foundation to purchase a Base Kit, a Premium Kit, a Wireless Boost It pack, and bunch of extra modules to add to our existing littleBits collection. I'm excited for the new possibilities for students to use light wire, a motion trigger, UV LEDs, and multiple DC motors in their projects. I'm also planning to write another grant for maker kits that students can check out from the library and use at home to encourage connections between learning that occurs at home and at school.



The littleBits Pro Library and individual kits are available @demco.com Search: littlebits

Call 800.962.4463 or email custserv@demco.com