EDUCATION littleBits™

LITTLEBITS EDUCATION COMMUNITY CASE STUDY

# SCHOOL LIBRARY MAKERSPACE


BY
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TITLE
Library Media Specialist

ORGANIZATION
New Milford High School
New Milford, NJ


AGE LEVELS
9-12

LITTLEBITS PRODUCTS USED
Deluxe Kits

DATE
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# LAURA FLEMING

**Library Media Specialist**

**New Milford High School**

Laura has been an educator in the state of New Jersey for 16 years. She has been both a classroom teacher and media specialist in grades k-8 and currently as a Library Media Specialist for grades 9-12. Laura is a strong advocate of using New Media and Vanguard Techniques for interactive and Transmedia (multi-platform) Storytelling. She has played a prominent role in education as a writer and speaker for events that focus on next-generation teaching methods and tools. Laura has also consulted on Transmedia properties, working with producers to help maximize the value of their creations and toolsets for teachers and students.

Laura's goal is to create learning experiences that empower and equip students with necessary skills to effectively produce and consume content across multiple media platforms. She is also driven to enable educators and cohorts in applying these innovative methods and cutting-edge technology in their fields of expertise.

Recently, Laura created a digital badge based professional development platform which can be found at www.worlds-oflearning-nmhs.com. She is also a recipient of the National School Boards 20 to Watch Educational Technology Leadership for 2014.

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

I absolutely owe the success of this project as well as the success of our makerspace in general to my administration who does not stand in the way and has created a culture that allows for creativity and innovation to occur.

My principal, Mr. Eric Sheninger, has been a key component in this by giving me complete autonomy over my space, my programs, and my budget.

I also credit our innovative classroom teachers who have embraced this maker movement and who have adopted our principals/themes into their programs, including Mr. Fowler, our Physics teacher. And who can forget our students?

Their willingness to tinker, play, experiment and innovate has allowed us to blaze a trail in this space.

## HOW DID YOU LEARN ABOUT LITTLEBITS AND WHAT MADE YOU DECIDE TO IMPLEMENT THEM INTO YOUR PROGRAM?

During the summer, I represented Inanimate Alice at a Mozilla Maker Party at the Brooklyn Public Library.

Curious beeps filled the room and so I followed the crowd and discovered the littleBits table.

After seeing how engaged the children there were and how they were so easy to use, I decided then that they would be the perfect addition to our makerspace at New Milford High School.

## EXPLAIN HOW YOU INCORPORATED LITTLEBITS INTO YOUR PROGRAM? DO YOU HAVE AN OUTLINE OF YOUR PROCESS?

Through our littleBits activity, students were able to extend their invaluable hands-on experiences to simulated circuits which presented the conditions for deriving Kirchoff's Laws for Series and Parallel circuits. Without their first hand experience of power sources, current flow and activation of elements (buzzers, lights, motors, etc.), they would have struggled with the more abstract simulated circuits.

One of my favorite littleBits lessons from this school year involved a collaboration with our Physics class. The class was aware of our littleBits bar and their teacher asked if he could bring his students down for some hands-on experiences related to their electronics unit. Prior to their visit, students had worked with a pHET DC Circuit Simulator, which allowed them to explore current flows through light bulbs in circuits powered by batteries and controlled by switches.

...students were afforded a hands-on, authentic learning experience in the Makerspace...

Despite these experiences, the students missed the reality of low batteries, poor electrical connections, and other real-world experiences that impact circuits. This all changed dramatically when students were afforded a hands-on, authentic learning experience in the Makerspace that allowed them to create artifacts of learning to demonstrate conceptual mastery.

Once in the Makerspace, students began to create, tinker, and invent to learn concepts related to circuitry. When they made littleBits circuits that rotated paper hands and another that created light up shoes, they overcame initial impediments and experienced success. They had to troubleshoot to find a broken lead on a connection to the battery or find an open circuit because a connection that appeared to be made was electrically disconnected.

During this activity, as a formative assessment method, we had the students create an ‘exit slip’ in which they had to diagram and explain the flow of electricity through their circuit.

## WHAT WORKED WELL?

Our students' experiences with electricity changed dramatically when they were afforded a hands-on, authentic learning experience in the Makerspace that allowed them to create artifacts of learning to demonstrate conceptual mastery.

## WHAT WAS A CHALLENGE?

Our littleBits bar was designed for just a few students to sit and tinker upon collaborating with our Physics class on this project, we realized we needed more space and more kits.

As a result, our makerspace spilled out into a library. I now see our entire library as a space for making, rather than the originally designated corner. This will certainly impact my design and vision as we move forward.

## WHAT HAS BEEN THE RESPONSE OF YOUR STUDENTS/COMMUNITY?

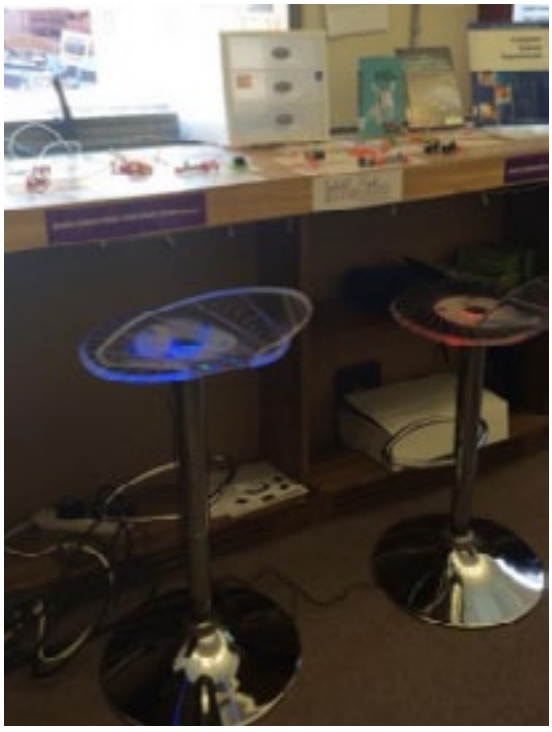
Our makerspace has transformed our library from a once desolate space into a high-traffic area that serves to inspire both students and staff to innovate and be creative.

Many of our students have taken it upon themselves to spend their nights and weekends continuing to learn about concepts they were introduced to in our makerspace, and then have come into the school excited about this learning and eager to share it with me, their teachers and their peers.

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

Since implementing littleBits into my library program, I have seen the library transform into a vibrant place for self-directed learning. We now are a space that provides opportunities for and celebrates both informal and formal learning.

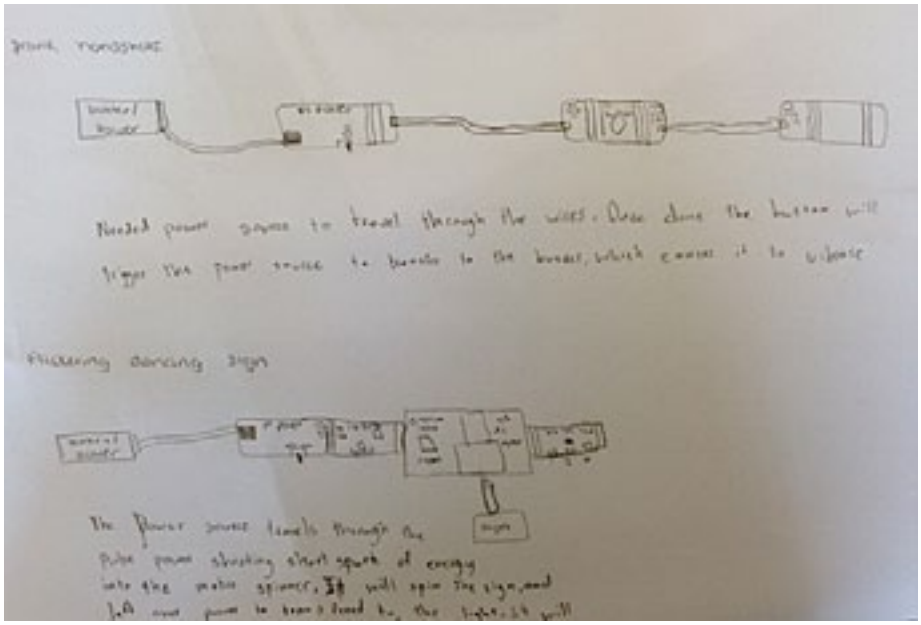
## DO YOU HAVE PHOTOS OR VIDEOS THAT YOU CAN SHARE?



**Video Link:** https://vine.co/v/hxjnainhXzM

## WHAT STANDARDS DID YOU INCORPORATE INTO YOUR LESSONS/PROGRAMS?

This is a photo of a student drawn circuit for the Physics lesson explained in the paragraph on how we implemented littlebits and which served as their exit slip.



The lesson I spoke about above was aligned with the NJ-CCCS (2009) standard WORK.9 12.1.12.A.1, Apply critical thinking and problem-solving strategies during structured learning experiences.

SCI.9-12.5.1.12.B.2, Build, refine and represent evidence-based models using mathematical, physical, and computational tools.

Through our littleBits activity, students were able to extend their invaluable hands-on experiences to simulated circuits which presented the conditions for deriving Kirchoff's Laws for Series and Parallel circuits.

Without their first hand experience of power sources, current flow and activation of elements (buzzers, lights, motors, etc.), they would have struggled with the more abstract simulated circuits.

## WHAT ARE YOUR FUTURE PLANS FOR LITTLEBITS USE?

Our makerspace is about creating a genuine and committed culture of innovation at our high school, encouraging tinkering, play and open-ended exploration for all students.

Our littleBits station in our makerspace is what I consider one of our fixed stations.We are excited to tinker and experiment with the new littleBits kits and to continue to invent and create and to continue to bring STEM related concepts to life.