

EDUCATION

littleBits™

LITTLEBITS EDUCATION COMMUNITY CASE STUDY

PROFESSIONAL DEVELOPMENT WITH LITTLEBITS

BY

Tim Hammill

TITLE

Supervisor of Educational Technology and Curriculum Services

ORGANIZATION

Westmoreland Intermediate Unit
Greensburg, PA

AGE LEVELS

Adult

LITTLEBITS PRODUCTS USED

Base Kit

DATE

May 2014

TIM HAMMILL

Supervisor of Educational Technology and Curriculum

Westmoreland Intermediate Unit



A 1988 graduate of Duquesne University in Pittsburgh, Pennsylvania, Tim Hammill began his career as a music educator and professional musician. During this time, he developed a love for music technology and began working to integrate technology into the music curriculum.

On the heels of this effort, as a teacher in the Greensburg Salem School District, he began assisting educators with the task of integrating technology into other areas of the curriculum. In 2002, Tim became the Technology Integration Specialist for the Greensburg Salem School District. In 2006, Tim moved to the Westmoreland Intermediate Unit as a Curriculum Specialist with a focus on Technology Integration.

Serving 17 school districts in Westmoreland County, this position afforded the opportunity to work with a larger community to support technology integration. In 2008, Tim became the Supervisor of Educational Technology at the WIU. Since that time, he has worked with districts on many large-scale programs that include online learning, video streaming technologies, utilization of high-speed wide-area-network resources and most recently STEAM initiatives. In 2014, Tim became supervisor of the WIU curriculum department. This opportunity is serving to better coordinate the efforts of the educational technology and curriculum departments to better serve the districts of Westmoreland County.

Tim currently resides in Irwin, Pennsylvania and is the proud father of two girls, Emma, age 16 and Ava, age 14.

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

Dr. Luanne Matta – Executive Director of Westmoreland IU

Dr. Matta has provided me with the latitude to explore new and innovative programs that will benefit our schools. This freedom grants me the ability to try new things and develop new programs. Innovation isn't always pretty, but I am fortunate to have a culture that embraces it with all of the success as well as the failures.

Tara Noftsier – Senior Manager of Education, littleBits

Tara has provided invaluable support to our efforts. Most importantly, her feedback on our work has allowed us to understand littleBits as a company and the philosophy that the company embraces. I have never felt so supported or encouraged by a company.

Building Custodians

It is amazing how many construction materials filter through our shipping and receiving department on a daily basis. My custodians (who are well aware of our needs for construction materials) are always watching out for packaging materials, cardboard, paper towel tubes and any other material that we can use for fabrication.

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

My first introduction to littleBits came from a chance viewing of Ayah's TED Talk where she was demonstrating and introducing the littleBits concept.

I immediately saw the impact that this could have in the schools that I work with. The inherent simplicity of littleBits takes away the technophobia that prohibits the average teacher from jumping into STEM related activities.

I saw littleBits as a doorway to STEM integration...regardless of the subject area or the level of expertise of the teacher and student.

As we strive to change the way teachers teach, in favor of a student centered, project based environment, littlebits is the perfect platform for exploration and creative expression of ideas. Allowing students to work as teams to problem solve and create solutions, teachers can serve as the facilitator and guide in a process that creates contextual learning.

We believe that this type of learning environment elevates the teacher to a much higher level of effectiveness and in turn, students are exposed to a process that utilizes higher-order thinking skills and learning that goes beyond the lesson!.

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

As a Pennsylvania Intermediate Unit, we are charged with the task providing services to the many school districts which we serve. In my role as Supervisor of Educational Technology and Curriculum Services I am constantly in search of innovative solutions for our districts. When I find these solutions the next step is Professional Development. Following this model, I began to formulate a workshop opportunity for teachers that would give them a hands on experience with littleBits and an understanding of how to integrate them into existing lessons.

Without exception, the workshops we have conducted so far, have been the most engaging experiences we have ever provided for our teachers. Their level of excitement and willingness to focus for a full-day workshop is astounding, further proof of the powerful ability of littleBits to captivate and challenge learners.

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We also give each workshop participant a Base Kit that they can take back to their classroom. What good is an exciting workshop if you can't go back to your classroom and immediately begin trying out what you have learned?

Below is an outline of a typical training :

Demonstration of the functions of each module

- Teachers get to see the functions of the many bits available and experience how they connect for complex circuits and functions.

Exploration of projects that are shown on the littleBits website

- We take advantage of the many posted projects on the littleBits website to gain understanding of the creative aspects and connections to curriculum.

Explore your shiny new Base Kit!!

- At this point, teachers are chomping at the bit to get their hands on their new kits! This is fun exploration time and so exciting to watch.

Design a Design Challenge

- At this point we work together to come up with a design challenge. It is a team effort and one that allows for very in-depth discussion on what aspects will produce the best challenge.

Fabrication Time

- Teachers team up and begin fabricating their design. Drawings ensue...experiments begin... and failures happen all over the place! It's beautiful! So much teamwork and problem solving makes for a dynamic environment.

Project Debriefing

- About half way through the design process, we stop and assess what has been happening. We talk about the challenges and the many learning moments that have transpired at this point and how this would impact a project in their own classroom.

Project Demonstration

- Teachers demonstrate what they have made (the moment of truth)!

WHAT WORKED WELL?

The inherent attractiveness of littleBits even to a novice teacher. As soon as they get their hands on the modules, they stop worrying about the technology. Even teachers with advanced technical skill recognize the simplicity and complexity of the modules. I have never done a workshop where teachers are more engaged and focused on accomplishing something by the end of the day. I have literally had teachers who do not want to leave the room for lunch!

These workshops are a great illustration of the iterative process. The failures spark discussion and problem solving that leads to solutions. There is an incredible amount of learning that happens during this time! As the teacher in these workshops, I get to be the facilitator, guiding my students through the process, encouraging them to explore deeper and find new solutions. What a powerful place to be as a teacher!

WHAT WAS A CHALLENGE?

The biggest challenge was in realizing that we didn't have enough resources to make what we wanted to make. The teachers quickly understood the potential but we don't have enough resources to produce the ideas that were being generated. We needed more materials to build the projects - especially when the teachers contemplated implementing littleBits in the classroom.

The other downside is that at the end of the workshop the projects have to be broken down. It seems almost criminal to destroy what we make. However, it is at that moment that the teachers realize that it is not the thing we made that is important...it is the learning that took place while we were making it!

WHAT HAS BEEN THE RESPONSE OF YOUR STUDENTS/COMMUNITY?

The feedback from participants has been positive. They are finding it very easy to see the possibilities for implementation in the classroom.

The affordability of littleBits is a plus. The current draw has been primarily elementary and middle school teachers, but I'd like to change that. I'd like to see higher level administrators and teachers discover that littleBits is applicable for all grade levels.

When you explore STEM applications, resources and the tools needed to support them, littleBits is a great option.

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

I think that littleBits is a great conduit to get students to the plane where they can be learning while utilizing higher-order thinking skills and teachers can open up a new learning environment for their students.

I see littleBits opening up the environment that facilitates that for us.

The ability to let students work out a concept and have the tools to do it. Playing off the flipped classroom approach where the teacher guides as the students explore - this is a unique experience for everyone.

DO YOU HAVE SUPPORTING DOCUMENTS TO SHARE?

Not yet, at this time I feel that sharing documents in the workshop would take away from the experience. If they need to learn anything it is that this is the student experience. This is a real shift from what teachers are used to.

DO YOU HAVE PHOTOS OR VIDEOS THAT YOU CAN SHARE?

A So proud of their new product "The Automatic Crumb Cleaner"

B Here is a new twist to the flashlight project... why not make it a lamp?

C Pipe cleaners...one of the most versatile creative tools on the planet!



A Who Knew that making a Flashlight could be so much fun?

B Raw materials and tools to spark creative ideas.



DID YOU UPLOAD PROJECTS OR LESSONS TO OUR WEBSITE?

Yes - [Interactive Holiday Display](#)

This project was created by a group of teachers working together in a littleBits professional development workshop. There was some serious engineering going on here and a whole bunch of fun!

WHAT STANDARDS (IF ANY) DID YOU INCORPORATE INTO YOUR LESSONS/PROGRAMS?

We focus on Bloom's Taxonomy and how the work that students do with littleBits takes them to the higher levels of the pyramid.