

## **2022 Greater Chambersburg Chamber Foundation**

*Technology Innovation Grant Challenge - funded*

### **The Mathematized Classroom: Building Math Resources through Technology Focused Project Based Learning**

Greencastle Antrim High School/Mathematics Department, Greencastle Antrim School District, Franklin County; Erica Hager

The nature of this project is flexible and adaptive to all learners. Students will be asked to demonstrate their understanding of key mathematical concepts by creating digital materials designed with high school peers in mind. After selecting a mathematical concept, students will plan for the digital materials using a Planning Guide Worksheet. This worksheet will ask students to plan the needed steps for developing the mathematical content application, planning the digital materials, designing the materials, a timeline for production, and a self-directed rubric. Students will be asked to conference with the teacher to ensure the production plan is on track and ready to proceed to the next step. The next step is production using the one to the one devices and the requested Logitech Crayons. Students are able to access apps that allow for screencast recording, videos, and other digital delivery methods. After production, students will edit and prepare for the review step. Student products will then be reviewed by the teacher (and potentially the class) before publication on the department page of the school website. Because this project aligns to any of the content within mathematics courses, students are provided freedom of choice with their selection. This cycle of project based learning will take place throughout the school year and materials will be published to the website as they are completed and approved.

Students enrolled in mathematics courses will be directly impacted with an average of 25-30 students per class. The focus will be on Ms. Hager's classes - Algebra, Algebra 3, and Geometry. Students, teachers, parents, and the public in general will be able to access student created resources through the department page located on the Greencastle-Antrim school website.

### **Digging Deeper: History Explored Through Recording and Production**

Greencastle Antrim High School/Social Studies Department, Greencastle Antrim School District, Franklin County; Karrie Hefner

This is a project that is fluid in time and opportunity; essentially, this will be adapted for any and all learners. As a starting point, we will work as a department to create resources for our students to be able to engage in inquiry-based learning. This document will be replicated and modified for each of the other Social Studies courses. Additional research method materials to help students plan for a product will be created and published. Students will have the opportunity to learn about the steps taken to plan, draft, create, edit, and publish their final product. These resources will be created by the department and shared using our online platform Schoology. The professional book "From Pencils to Podcasts" by Katie Stover and Lindsay Yearta and the Apple Teacher "Everyone Can Create" guides will be used to develop the appropriate resources for students and guide the department in implementation, production, and evaluation.

Once students have completed the research and plan for a product, they will have the opportunity to use the department recording resources to create their digital product. The audio shields are necessary as the space designated for recording can be noisy. High quality microphones with pop filters help to eliminate unnecessary background sound. The free app Audacity allows for students to record podcasts, video audio, lesson audio, and book reviews with seamless editing. Other free apps will be assessed for use and could potentially be a recording platform. Student products will then be reviewed by the teacher and the class before publication on the department page of the school website. We will work with the district technology staff to upload and organize the department website and student materials. Through the various methods of public exposure, we will direct the school and community to the newly produced materials. The requested materials will be available to the entire department and shared alongside resources, information, and additional materials.

When examining the impact data, there are two categories to consider: student exposure and public exposure. Students enrolled in social studies courses will be directly impacted with an average of 25-30 students per class. We offer the following Social Studies courses: United States History, United States History Honors, World History, World History Honors, Civics and Government, AP Government, Psychology, AP Psychology, AP European History, and Economics. Students in each of these courses will be able to use the requested equipment and department resources to create their interest driven, inquiry based productions.

The public will be able to access student created resources through the department page located on the Greencastle-Antrim school website. Through our various avenues of promotion, the community will continue to receive updates when student projects are published.

### **Sublimation Station for Primary Learners**

Greencastle Antrim Primary School, Greencastle Antrim School District, Franklin County; Brittany Bard, Amy Crider & Emily Trace

The sublimation unit will be a collaborative unit between art, library, and STEM classes. In our primary school, all students rotate between special classes on a six-day cycle. The sublimation project will span over several weeks for each grade level to complete. The process will include students creating artwork in art class and then spending time digitizing their artwork in STEM class. Finally, students will complete the final sublimation process (printing, cutting, and heat pressing) during library class where they will put their custom artwork onto keepsake keychains.

This unit will be taught to all students in grades K-2 during the second semester of the school year, starting first in art, then STEM class, and finally concluding in the library. It will take place over approximately one month, depending on the way that the six-day cycles fall in the school year. At the Primary School, we explore the design process through creating and building, but it is rare that students have the opportunity to create a permanent product. Most of their design work is disassembled at the end of a class period or unit. This project will allow students to experience the way the design process

works with technology to create a tangible product (a keychain) that they will be able to keep and take home as evidence of their learning. This grant would allow us to kickstart this unit to be taught on a yearly basis for all students coming through the Primary School. After teaching the unit for one year, we will be working to further differentiate for each grade level in years moving forward. Consumable supplies to continue the project would be funded through a combination of school supply budgets and other local grant opportunities, with the majority of the supplies purchased through this grant being used year after year for the benefit of all students in the school.

The Greencastle-Antrim Primary School serves approximately 625 students in grades K-2. Since every one of our students participates in Art, STEM and Library classes, this project will be able to reach each student in multiple content areas for the duration of the school year. Students participate in each class approximately 1 time every 6 days, in all grades K-2.

### **Fairview Elementary Anyone Can Code Project**

Fairview Elementary School, Waynesboro School District, Franklin County; Keith McCray

The goal of the Anyone Can Code project is to create a solid foundation of the fundamentals of computational thinking and computer science that early learners will be able to apply cross curricular and subsequently utilize to demonstrate deeper understanding of concepts and skills. This project will use Sphero INDI, a programmable robot vehicle that students can code in a completely screenless environment using an onboard color sensor and colored tiles that provide an introduction to the fundamentals of computational thinking and computer science. This project would serve as a direct enhancement to our Coding Experience Project by providing learners with earlier access to computer science and computational thinking principles allowing for them to more effectively, efficiently, and creatively use the Sphero Bolts. Since INDI is a Sphero product it will provide a consistent computer science platform for our students as they progress through elementary school. The project also includes professional development and coaching for teachers. Led by a certified Sphero Lead Educator who is the Director, the project will measure the increase in engagement and academic achievement through school attendance records, pre/post surveys of students, and test scores.

### **NUMBER OF STUDENTS AFFECTED:**

o 340 Fairview Elementary School students in grades K-2.

**Technology Innovation Challenge Grant - Rubric**

	1	2	3	4	5	Score
<b>Innovative</b>	Dated Program	A little behind the times	Standard Programming	Advanced Programming	Highly Innovative	
<b>Value Added to the Curriculum</b>	Not linked to Core Curriculum areas such as Math, English, Science, History, Art, Music, Etc.	Loosely linked to Core Curriculum areas such as Math, English, Science, History, Art, Music, Etc.	Somewhat linked to Core Curriculum areas such as Math, English, Science, History, Art, Music, Etc.	Linked to Core Curriculum areas such as Math, English, Science, History, Art, Music, Etc.	Strongly linked to Core Curriculum areas such as Math, English, Science, History, Art, Music, Etc.	
<b>Advanced Academic in Nature</b>	Program is general or remedial	Program loosely Advanced Academic for the subject area it adds value to	Program somewhat Advanced Academic for the subject area it adds value to	Program Advanced Academic for the subject area it adds value to	Program significantly Advanced Academic for the subject area it adds value to	
<b>Total</b>						