

Martha Holden Jennings Foundation Grant-To-Educators Application

Date: 12/1/19

Amount: \$ 3000.00

Project Title: iPads for math and science engagement and learning

Grant Category: Improving learning in math, science & technology

Grant Use: 9 Classrooms

School: Litchfield Middle School, 470 Castle Blvd, Akron, OH 44313, 330-761-2775

Grades: 6-8

Subjects: Math and Science

Name: Kelly Guthrie

Education: University of Akron – BA in Middle School Math and Science Education. Currently pursuing a masters degree in Instructional Technology at the University of Akron

Years of Experience: 5 years from 2014-2019

1. Description-

For this proposed project, I am requesting iPads and protective cases for use in math and science classrooms. iPads will increase student engagement, provide many differentiating learning opportunities for teachers, and support student creativity in math and science. Also, “By bringing together science, technology, engineering, and math, STEM helps students see the relevance of what they’re learning and lets them apply their learning to problems in the real world. iPad is ideal for teaching STEM topics because it supports the whole learning journey—from data collection and mathematical analysis to design thinking, prototyping, collaboration, content creation, and coding” (*Learning With*, 2018). iPads help students visualize science concepts and create visuals to demonstrate their learning with graphs, apps, and videos. In math, iPads can help teachers differentiate instruction using apps for fluency such as flashcards/games. They also can use apps with math manipulatives to increase conceptual understanding. According to Al-Mashaqbeh, “First, Mathematics classes become more enjoyable for students by using different visuals and animations to practice math. Second, the new math concepts and topics become more understandable and clear. ‘The best practice in teaching of using the iPad is to choose the applications in a way that help approach teaching in a supportive and easy way’. It allowed teachers to design teaching process in a way that personalized learning activities to meet students learning needs” (2016, p.

48). Since our schools plan included differentiating for 100% of our students on a daily basis, iPads will help provide resources that teachers can use in stations and centers to support all of our students learning needs.

2. Timeline

- Dates: August 2020-June 2021. Teachers will be given iPads with cases at the beginning of the school year. Teachers can begin implementing lessons with Ipad's but the professional development with be given throughout the year.
- Professional Development Dates:
 - August 26, 2020
 - October 15, 2020
 - January 8, 2021
- Number of students involved in the project: About 300
- Educators involved in the project: All Litchfield Math and Science teachers

3. Qualifications

I have my teaching license in math and science for grades 4-9. I have been teaching math for 5 years. I have seen how technology can increase student engagement and be an effective tool for differentiating instruction. I also have participated in the school improvement process and have participated in many professional development sessions involving implementing technology to effectively teach students in math. I also teach all gifted students in math for grades 6-8 at my middle school.

4. Effectiveness

I am seeking to increase my teaching effectiveness in the area of improving learning in math, science and technology. This will be done through effective differentiation through technology resources on the Ipad's apps and creating real-world activities that students will need to complete while using the iPads in math and science. They will use critical thinking skills and creativity to demonstrate their learning with the iPads as the teacher is monitoring the student's progress and providing feedback.

5. Objectives and Plan of Action

Student achievement and enhancing student development is the two main goals that I want to accomplish by getting the iPads for my students. Students will enjoy using their critical thinking skills and creativity to solve real-world problems using the apps on the iPad to demonstrate learning. Also, student development will be impacted heavily in math classrooms through differentiation using the apps available on the Ipad.

Objectives for teachers:

-100% of math and science teachers will participate in iPad teaching and learning PD by December 2020.

-100% of math and science teachers will have the opportunity to use the iPads in their classrooms monthly for projects and differentiation by August 2020.

-100% of math and science teachers will collaborate on project ideas that iPads can be used for and also how to differentiate instruction using the iPads.

6.Assessment-

- Students will be given pre-assessments before unit and they will be compared to post-assessment at the end of the unit
- Student's math OST scores will be used as evidence of student achievement and analyzed for growth
- Students semester DAP tests will also be analyzed for growth

7.Sustainability

There are many ways that I will sustain the effective practices after the funding period ends. First of all, throughout the year, student assessment data will be evaluated to see if implementing differentiation and projects with the iPads improved the student's scores. Also, teachers and students will be surveyed on their learning and student engagement. Based on the results, the implementations of the lessons/projects with the iPad will be adjusted. Secondly, professional development about instructional strategies using the iPads will continue through 2021-2022.

8.Dissemination

During instructional improvement days and professional development, the results and strategies will be shared with colleagues. Colleagues will be surveyed on feedback for improvement and provide additional strategies to support using the iPads for science and math concepts.

9.Alignment

Our main goal for 2019-2020 school year is to increase the rigor of our standards based instruction and aligning to the rigor of the Ohio State Test (OST), using OST blueprints and state standards, Litchfield will decrease the gap with all subgroups by 10% (stretch goal 15%) by June 2020. This will be done using many teaching strategies such as differentiation on a daily basis, writing prompts that align to the standards assessed on the OST, and by using Depth of Knowledge (DOK) questions during the lessons. The iPads will help provide differentiation when used in stations/centers and for math manipulatives. It will also help increase the rigor of our teaching by providing

students more opportunities to solve real-world problems and use technology to display and present their solutions to these problems.

10. **Budget- Itemized List of Costs**

- 8 iPads (\$329.00 each) Total: \$2632.00

<https://www.apple.com/shop/buy-ipad/ipad-10-2/32gb-space-gray-wifi>

- 8 iPad Cases (14.99 each) Total: \$119.92

https://www.amazon.com/AVAWO-Generation-Convertible-Friendly-Release/dp/B07W7YH8QM/ref=sr_1_3?keywords=ipad+case+for+kids+2019&qid=1575225278&s=electronics&sr=1-3

Total: \$2751.92

11. **Endorsement-** The Superintendent of Schools MUST complete the endorsement section prior to consideration of the proposal by the Foundation. Evidence of district in-kind and financial support are critical factors in assessing

References

Al-Mashaqbeh, I. F. (2016). iPad in Elementary School Math Learning Setting. *Ijet*, 11(2), 48-52.
<http://dx.doi.org/10.3991/ijet.v11i02.5053>.

Learning with iPad Supporting STEM Learners. (2018). Retrieved December 1, 2019, from
<https://education-static.apple.com/product/Supporting-STEM-Learners-with-iPad.pdf>

