MEF Marshfield Education Foundation
Supporting Innovation & Excellence

2017-2018 Grant Proposal Cover Sheet

Primary applicant: Aimee McAlpine (Instructional Technology)

Co-applicants: Kate Tracey (Social Studies), Erin Palladino (Social Studies), Heather O'Neill (SPED), Christy Pitts (Science), Meg Dinsmore (Art), Karen Kronewitter (World Language) & Alyssa Gage (Mathematics).

Primary applicant's email: amcalpine@mpsd.org

Primary applicant's school: Marshfield High School

Primary applicant's position at the school: Instructional Technology Specialist

Primary applicant's phone: 781-894-5050 ext. 45900

Proposal name: Beyond Four Walls: Immersive Learning through Virtual Reality

Applicant signature(s): Aimee McAlpine

Principal signature(s): _____

Director of Technology signature if applicable: _____

Submission Instructions: Please send ONE paper copy of your completed application via interoffice mail to the Superintendent's Office and submit ONE electronic copy in PDF format to mefgrantcommittee@gmail.com. Document Naming Convention should be: MEF 17_PRIMARY APPLICANT LAST NAME.PDF. If you are primary applicant on more than one grant, please label 1,2,3... after last name. **The deadline for submitting applications is close of business April 12, 2017.** The Grants Committee will notify all applicants of the results in late May, 2017. Please direct all questions to mefgrantcommittee@gmail.com.

Applicant's and/or applicants' signature(s) grant permission to MEF to use the application as an exemplar on our website should an application receive funding. Applicant(s) also agrees to provide updates including narratives, photos and/or videos documenting implementation of the project and to complete a follow-up document upon completion of the project.

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2017-2018 Grant Proposal Data Sheet

Proposal name: Beyond Four Walls: Immersive Learning through Virtual Reality

One sentence description of the project:

With a headset, mobile device and turn of the head, students can be transported to other parts of the world, through time, and into otherwise untrodden domains, making all aspects of the curriculum come alive to enhance student learning.

Total dollar amount requested: $6527.41

Estimated number of students affected by this grant: 1370 (potentially all students)

Schools *and* grades affected by this proposal: MHS, grades 9-12

Would the school budget cover the costs of the project? Yes / No

Has this *project* received funding from MEF in the past? Yes/No

If yes, what year?

(Please note that we will *not* be able to fund projects for *more than two years*.)

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Proposal Name:

Beyond Four Walls: Immersive Learning through Virtual Reality

Project Budget: Supplies and Materials

	Description of Projected Purchase Vendor and Quantity	Amount of Purchase	Rationale
Instructional Materials	N/A	$0.00	We plan to use free VR content provided through YouTube and reputable organizations (BBC, Discovery, Google Expeditions, Google Cultural Institute). Any training materials will be developed by the Grant Team. Any training will be delivered by the MHS Instructional Technology Specialist.
Instructional Technology	• 28 iPod Touch 6, 16 GB	$5572.00	School provided devices allow for effective management of devices for use with VR headsets, can easily be added to the MHS wireless network & apps can be managed and pushed out with ease by the MHS Technology Team. In addition, using school provided devices removes barriers presented when requesting students provide a personal device and use their data to download apps and stream content.
	• 28 Mattel View-Master Deluxe VR Headset	$811.44	Mattel Viewers are plastic and sturdy, made to withstand regular use by the entire student body. The plastic viewers will securely protect the devices and can easily be cleaned.
Non-instructional supplies	N/A	$0.00	
Non-technology equipment	• (3) Sabrent 60 Watt (12 Amp) 10-Port Family Sized Desktop USB Rapid Chargers	$98.97	A class set of devices will require an efficient way to charge multiple devices all at once.
	• Blue Hills Studio	$45.00	Devices need to be stored in a

	SC3SM Storage Cart 3-Drawer		portable and secure cart.
Instructional speaker/guest	N/A	$0.00	
Additional items not described above	N/A	$0.00	
Total		**$6527.41**	

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Supporting Innovation & Excellence

Proposal Name:
Beyond Four Walls: Immersive Learning through Virtual Reality

2017-2018 Grant Application

This section should not exceed a **total of four pages**. You may increase or decrease the box sizes based on the information you choose to provide.

Project abstract: Briefly describe your project and include answers to the following questions:
What would you like to accomplish? How will you accomplish it? Please pay particular attention to describing how this project is innovative, and how it will enhance the curriculum in a new and creative way.

Technology has the potential to transform student learning. The tools students have at their fingertips enable them to redefine what it means to learn in an ever changing technological world. As educators, we must harness the potential of technology to help students redefine learning in the 21st century and employ the power of technology as a learning tool. While MHS students have access to 1:1 devices regularly used to obtain curriculum materials, communicate with teachers and peers, collaborate, and demonstrate their learning, our proposed project will transform student learning by bringing the outside world into MHS across all content areas.

Through the use of virtual reality (VR) headsets paired with smart devices, students will be able to immerse themselves in the sights and sounds of locations around the world and throughout various historical periods, as well as journey to inaccessible places (inside the human body, Mars, the ocean floor).

When students don a virtual reality headset, a turn of the head transports them to another place and time, immersed in an environment where they can see the world from another perspective. Students learn by doing, and learning is maximized when multiple senses are engaged. The benefits of VR encounters in the classroom can be experienced across every discipline throughout the high school, engaging students in ways other tools cannot.

Professional background: What talents, resources, and/or experiences will you bring to this project?

MHS is fortunate to have many gifted teachers and access to a learning environment that supports the use of technology as a tool in teaching and learning. During the 2016-2017 academic year, Social Studies teachers Kate Tracey & Erin Palladino piloted the use of a set of six Google Cardboard viewers (cardboard virtual reality headsets purchased with personal funds) with students' personal phones to integrate VR into a unit of study. Through consultation with Aimee McAlpine, Instructional Technology Specialist, Kate and Erin evaluated the benefits and limitations of using this technology and the impact of VR on learning in their classrooms. The feedback about the VR experiences from students was overwhelmingly positive. The ability to see an area of the world being studied, and experience the human conditions facing others, enabled students to build empathy and genuine understanding of world issues. The technology itself was easy to

use, requiring minimal teacher training and limited student support. The robust wifi network at MHS supported access to the VR video content.

The success of the pilot was the impetus to seek funding for a full set of sturdy plastic viewers that can be used by multiple classes over the course of many years, as well as school owned devices that have access to the school wifi network. MPSD already has iOs devices managed by our Technology Department, so the purposeful selection of iOs devices as part of this project will not excessively burden the Technology Department in terms of adding devices to the network and managing the distribution of content. Teacher training and embedded support for finding quality curriculum aligned VR content and integrating VR experiences into classes will fall under the responsibilities of the existing MHS Instructional Technology Specialist.

Project Snapshot: Please provide any *or* all of the following: a "snapshot" of a moment you envision with your students and the new materials, technology or guest speaker OR an anecdotal story of seeing the materials, technology or guest speaker in the past.

Imagine:

- walking through a Syrian refugee camp to develop understanding of the refugee experience in a World Cultures class;
- touring a Google Data Center, seeing large scale servers up close while in a Computer Science lab;
- joining a Civil War soldier on the battlefield, experiencing the first-hand dialogue, decisions and actions of historical events covered in a US History class;
- attending a performance at the Globe Theater to build background knowledge for the reading of a Shakespeare play in an English class;
- Exploring Graph Theory with the NYC Transit System in an Algebra class to understand how graph theory is applied in the real world;
- traveling through the Human Respiratory System during an Anatomy & Physiology class;
- spending time examining works up close at the Smithsonian American Art Museum Renwick Gallery from the comfort of an MHS art studio;
- setting out on an expedition to experience Mexico's Day of the Dead festivities to learn about the history and culture in a Spanish class;
- walking around the campus of Arizona State University or Berklee College of Music for a preliminary college visit;
- acquiring language skills by visiting everyday locations such as a restaurant in an ELL session or language based classroom;
- starting a class with a mindful moment of relaxation as a way to address student social emotional learning needs; *and*
- lighting a fire in students to want to create their own VR experiences to demonstrate their learning and understanding, like this DNA example.

Imagine how these experiences could impact students' access to content, relatability to content, and understanding of different cultures, perspectives, and processes as part of their learning at MHS?

We have seen, through our pilot, the enthusiasm, engagement and deep student learning that takes place when VR experiences are woven into the existing curriculum. After engaging with a VR experience in

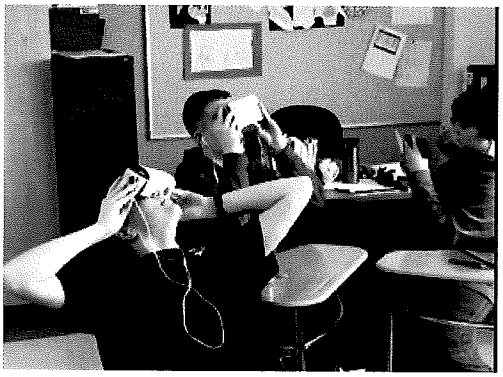
World Cultures, students reported the following:

"Before learning about the Syrian Civil War, I hardly knew any of the trouble that they were going through. I did not know exactly how bad everything was outside of America. In class, the 360 videos really helped me understand what was going on in Syria and it's neighboring countries. It showed me the war-torn areas of Syria and let me realize the harsh conditions they have to live in if they fled to refugee camps."

"This activity allowed me to feel as if I was actually a refugee, thus experiencing the difficulties and hardships those people have to go through every day."

The VR lesson was very helpful with understanding the current situation because it provided a better view of what is happening in the affected areas. Other than just showing us an article and expecting us to understand the lives of refugees, it allowed us to truly experience how the war affected people through their eyes.





Learning objectives: What do you expect the students to be able to do, say or think following the work of your project? How will this project advance the instructional goals of the school/school system? Please list all key learning objectives.

The use of VR tools in the classroom aligns with the mission set forth in the MPSD 2016-2019 Technology Plan:

The Marshfield Public School system acknowledges the importance of preparing students with the necessary skills to find success in society. Our goal is to use technology as a tool to improve teaching, academic learning, and lifelong learning. We are committed to providing access to varied technologies and instructional practices that will allow our teachers to transform classroom practices and students to prepare for their futures. In order to prepare students for the future, opportunities must be available for students to use a variety of technologies to engage with an integrated curriculum that provides opportunities to retrieve and process information, solve complex problems, work alone and collaboratively to communicate locally, nationally, and worldwide while developing higher-order thinking skills. MPSD recognizes the need to promote and support authentic and meaningful uses of technology which will empower our students to succeed in a complex and changing society.

More specifically, it is our belief that infusing VR experiences across the curriculum will enable our students to:

- build deep background knowledge to support curricular content;
- enhance their understanding of curricular content;
- engage all types of learners throughout all disciplines; *and*
- develop skills to use VR as a tool for learning.

Further, we believe that when classroom teachers integrate VR experiences into lessons and units, they will ensure students meet instructional goals through:

- providing students opportunities for multimodal exploration of real world content across the curriculum; *and*
- fostering student engagement and enthusiasm for learning content across the curriculum.

This lesson plan is an example of the rich learning that can take place in classrooms when VR headsets and devices are used as tools for learning.

Timeline: What is the timeline for this project? Please indicate approximate start and end dates and the dates for major milestones, activities, or events. Approximate dates are acceptable.

The project will be ongoing, commencing September 2017. The project team will share the acquisition of the VR headsets and devices with faculty at the start of the school year during a faculty or department meetings. Teachers will coordinate with the Instructional Technology Specialist for one-to-one training and planning around the integration of a VR experience into a lesson/unit. The VR headsets and devices will be used regularly in classrooms throughout the year and for the lifecycle of the headsets and devices.

Evaluation: How will you measure progress towards your learning objectives? What before and after data can the Marshfield Education Foundation expect to see?

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- A shared Google Calendar, documenting the frequency of use of devices as well as the classrooms in which the devices are being used can be shared.
- Teachers will be asked to complete pre- and post-lesson/unit survey about planned use and the impact of VR on content delivery and student learning
- Teachers will be asked to provide Anecdotal student reaction to use of VR devices as a tool in their learning

Community Education: How will you share the results of this project with the community? How will you share this project with colleagues for possible replication?

- During Back to School Night in September, the Instructional Technology Specialist will set up a VR Exploration Station for parents of MHS students to engage in a VR experience to learn about how VR can enhance student learning.
- The community will be able to learn about the use of VR at MHS through Twitter. We will tweet about the various ways VR is being used in classes under the WeRMarshfield hashtag.
- We will build a Resource Course in Canvas which will be available to all MPSD faculty. The course will include information on the VR headset and devices, tutorials for use, a repository of good VR content and sources as well as a place for lesson sharing.