

AweSTEM! 2018
Theme: *Diversity in STEM*

Implementing Google Expeditions and Virtual Reality in Fitchburg Schools STEM
Jessica Stodulski & Eileen Spinney

How This Lesson/Activity Connects to *Diversity in STEM*

Use of Virtual Reality to access Google Expeditions supports our diverse population of students by providing them opportunities to build their background knowledge and extensive content-rich vocabulary through virtual field trips. All students are able to share common experiences through Virtual Reality which can then be referenced in the lesson(s).

How Lesson/Activity Was Intentionally Designed to Impact an Element of *Diversity in STEM*

Using a Backwards Design approach to planning, teachers representing each grade level had the opportunity to use the equipment, engage in an Expedition and to review Expeditions to determine which best align with the 2016 MA STE frameworks. Those recommendations were included in the district's Science Year At Glance Planners. The teachers' strategic selections were driven by their understanding of diverse learner needs in language development and vocabulary. This is especially important for students with disabilities and second language learners.

Lesson Outcomes: How the Lesson/Activity Supported *Diversity in STEM*

For visual learners and individuals with learning challenges, VR provides an alternative medium to meet their needs. Hands-on learning techniques like VR education directly contribute to increased cognitive memory. The benefits of incorporating VR/AR tech into educational experiences include better, more immediate engagement and the opportunity for learners to "feel" the experiences and better remember and express what they learned. The more a learner is able to participate in life-like engagement, the easier it is to personally feel a connection to the subject material, making it easier for application and retention of the subject matter.

The impact on student engagement is easily observable. We are now working on assessing and documenting the impact on student learning.

Other Information Related to this Lesson/Activity and *Diversity in STEM*

Examples of the diversity of topics in which VR has been used within Fitchburg Public Schools include:

A math unit on the Iditarod in which students put on the VR headsets to "visit" Alaska to experience the parts of the ecosystem and the Northern Lights.

In ELA, Students read [A Long Walk to Water](#) then used headsets to connect to the book's character and experiences by watching a 360 video called Elephants on the Brink.

While participating in a blended learning book study on [The Sixth Extinction](#) students in a middle school Advanced Academic Learning Initiative used the VR equipment to "explore" a reef ecosystem and gain an understanding of the impact of coral bleaching.