University of Maine Student Teachers Bring Lessons to Life With AR & VR

University of Maine at Farmington elementary education majors are learning how to use augmented reality (AR) and virtual reality (VR) to transform literacy instruction. Using Google Cardboard and Google Expeditions, these pre-service K-8 educators are designing new ways to engage students in learning with immersive experiences.

The University of Maine at Farmington (UMF) has a long history of preparing future teachers for the classroom. The ways teachers are taught have changed over the university's 150+ years, but perhaps never as dramatically as they are today, with the advent of engaging new educational technology.

Dr. Meredith Swallow, an Assistant Professor in Elementary Education and a technology integration specialist, wants to build bridges between what's taught about teaching in higher education and "what really works in the classroom." She's preparing her K-8 student teachers to support student-centered, experiential learning by introducing them to Google's AR and VR technology.

"Our pre-service teachers [are using] Google Cardboard and Google Expeditions to increase authentic exposure to the concepts in the books they were using," Dr. Swallow says. "Google's AR and VR tools are fun and user-friendly, and they worked with the resources we had."

UMF Education majors serve as student teachers in school field placements in and around tiny Farmington (pop. 7,760), working closely with their in-service mentor–teachers. "Our students wanted to model learning activities using tools that are accessible to schools that are already very limited in budget, and that are easy for students and teachers alike to explore."

Designing new ways to experience literature
In spring 2018, Dr. Swallow teamed up with Assistant Professor of Literacy Dr. Kathryn Will-Dubyak to integrate new technologies into her K-3-focused Literacy Methods class. They challenged their pre-service teachers to find new ways to use technology to create and share more engaging and immersive literacy instruction for their young students.

The literacy class chose Jeannette Winter's children's book, *The World Is Not a Rectangle: A Portrait of Architect Zaha Hadid*, for its first AR and VR project. Hadid, a visionary Baghdad architect, overcame obstacles as a Muslim woman to found an architectural firm that built 950 projects around the world. UMF students used the free Google Cardboard Camera app on their smartphones to create 360° images of local architecture reflecting the concepts in the book, and Google Cardboard headsets to view and share their creations.

"It was a personal way for our students to connect what they took from the content of the book and make it their own application," Dr. Swallow says.

Creating virtual reality experiences to explore literacy concepts

Bringing the world to rural classrooms

UMF pre-service teachers also experimented with using Google Expeditions—a free app that allows teachers to guide students on VR and AR tours—to incorporate virtual field trips into their lesson plans. "Students in our K-8 schools are in a very rural environment," Dr. Swallow explains. "With the Expeditions app, we can bring virtual experiences from outside the state of Maine here to our students—whether New York City or Antarctica."

Dr. Swallow's students also used Tour Creator, a free tool for creating VR tours, to create custom learning adventures that captured the wonder of living amid the deep forests and rugged mountains of western Maine. "It was as simple as walking outside and picking an element that represented, for example, 'fall,' and capturing the images and videos to create a biome for their young students to experience."

Dr. Swallow looks forward to exploring new ways of using AR and VR with her student teachers. "You don't need to be a VR expert to make this work," she shares. "Our pre-service teachers are very passionate about what they're doing. Just hand over the tools and let them explore. Let them go for it!"

Organization Profile

Located in the rural western part of the Pine Tree State, the University of Maine at Farmington (UMF) is a premier teacher education and public liberal arts college. UMF prepares students for engaged citizenship, enriching professional careers, and an enduring love of learning. UMF Education offers a range of programs for students seeking careers as K–12 educators. Several graduates have gone on to be named "Maine Teacher of the Year."

Products Used

Google Cardboard

Google Cardboard Camera

Google Expeditions

Tour Creator

Google AR & VR

Project Title	Transforming Literacy Instruction
Project Description	Pre-service K-8 educators enhanced and transformed educational activities by purposefully integrating accessible technologies into their lesson plans.

Project Development

What problem was your project designed to solve?	Using recently published award-winning children's literature as the foundation to engage young learners in developing their literacy practices, pre-service educators aimed to discover techniques to transform instruction, and support creativity and engagement in literacy education. The pre-service educators wanted to increase authentic exposure to the concepts in the books in which they were using.
What process did you go through to design your project?	Pre-service educators started with an idea that did not utilize technology, then considered how technology could make the content more accessible. That is, how technology (and in this case VR) could help create more realistic experiences for learners.
How did you secure funding for your project? How did you go about it and who did you work with?	No additional funding was needed for this project as the materials came from the publicly accessible curriculum center. This center is open to educators and community members with curriculum materials (e.g. the technology used) available for long term loan. Thus, the accessible technologies.

Logistics & Operations

What processes did you implement to manage the project?	Students used a Team Drive and Google Classroom to resource and idea share, as well as project sharing.

Measuring Success

How did you define success and when?	Pre-service educators shared their VR integration ideas with other university faculty at an open symposium and it was received with resounding positive encouragement. They were also invited to share their ideas with other in-service educators at a state conference.
What did you do to measure success and report on it?	We felt the engagement from other community members (university faculty and K-8 educators) was a good indicator of success. We shared through different social media channels as well as an educator conference.

Learnings

What is the one thing about this project that made it such a success?	We encouraged pre-service teachers to think about and support student centered/driven learning and experiences, and this approach of thinking about accessible technology to enhance learning allowed for better focus on teacher efficacy by modeling student creativity in a higher ed setting.
What is the one thing you wish you knew/considered starting the program?	Interestingly enough, not all students enjoyed the VR aspect. However, using Google Expeditions without the VR addressed to goals nearly (if not completely) as well.
What is the one thing you would change when doing this program again?	For this first project, students focused on one book. I wish we opened it up to more literature to explore through VR experiences to allow for even more creativity and perspective.