 Mark Hammons and Lainie Rowell

Help Me, **Augmented Reality**... You're My Only Hope!

The idea of a video Princess Leia appearing out of R2-D2's projector was something Luke couldn't fathom...it was a meshing of the digital and real worlds that left him speechless.

If you look around your desk and/or classroom right now, you might not know that virtually everything around you is an Easter egg just waiting to be hatched.... All it takes is an augmented view on the reality that surrounds you. Augmented Reality (AR) uses a computer, smartphone, or a tablet to morph the real world with video, audio, or a graphic overlay of some type. It takes boring, static objects and brings them to life—which is something it can also do to learning.

Increased engagement, personalization, and giving new life to static content such as paper textbooks are all reasons teachers are excited about AR.

You Can't See the Invisible Ink Without These Special Glasses

Much like 3D movies, it takes the 3D film paired with the glasses in order for the full effect to take shape. The most common form of AR requires two elements in order for it to work. The first is a marker (think QR Code or a unique picture) that is a unique identifier that tells the Augmented Reality app that there's a hidden message if viewed through the app. The second element is the piece of hardware (tablet, computer, or phone) with a camera that can view the marker, which allows for the app to do its magic.

Above all else, AR can bring fresh life (literally) to any existing curriculum. It offers a level of engagement that catches the eye of the beholder. To help with learning the alphabet, teachers can use an app like AR Flashcards to have an alligator appear in 3D to help reinforce the content knowledge. With an app like Augment, you can download models of real world locations (such as the Eiffel Tower and Globe Theatre) from the Trimble 3D Warehouse and actually walk through and explore these in as real of an experience possible. It's better than a video because users are in control of the story. Augmented Reality is even making its way into the workforce with companies such as Boeing using AR to help mechanics as they work on engines.

Aurasma for Education

Increased engagement, personalization, and giving new life to static content such as paper textbooks are all reasons teachers are excited about AR. Educators already exploring AR are having great success with a free app called Aurasma. This app allows teachers to choose "Auras" (videos, links to a web page, or 3D animations) that students will experience based on "Triggers" (real world images, objects, or places).

The Heritage Elementary School in Texas has a creative example of AR with their "augmented garden," where students can use their mobile device and the Aurasma app to tour their teaching garden and get digital information for different points around it (www.youtube.com/watch?v=1Wsxiw4FUTA).

One of the most inspiring things we have seen with AR is the Aurasma app being used to leverage students as content creators. Here are just a few examples:

Language Arts

Trigger	Word card on classroom bulletin board
Aura	Student-created video demonstrating the meaning of academic vocabulary

Social Studies

Trigger	Map of ancient Greece
Aura	Student-created 3D animation of Greek architecture

Science

Trigger	Worksheet with science experiment procedure
Aura	Student-created video of hypothesis, science experiment in action, and findings (especially helpful for those absent and/or when the lab is not repeatable for all students)

Math

Trigger	Math equation in a traditional paper textbook
Aura	Student-created video tutorial explaining how to solve the equation, including tips and tricks

Open House

Trigger	Self-portrait (student artwork)
Aura	Student-created video welcoming their family to open house and asking them to make sure to see some of their favorite projects as they reflect on their learning throughout the year

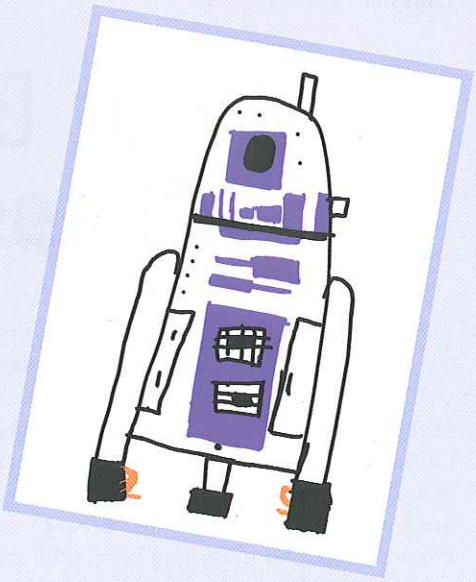
Ready to give this a try?

Download the free Aurasma app from Google Play or Apple's App Store.

Open the Aurasma app and click on the big A at the bottom of the screen. Then select the magnifying glass towards the bottom right.To search, type in ARforEd to find our channel and select it. Select "Follow" to access this Aura.

Finally, click the square to the left of the magnifying glass to go back to the normal Aurasma capture screen. Frame the image in this article in the viewfinder of your device and prepare to be amazed as Matt Mills explains in his TED Talk how "this is the next step on from simply browsing the Internet because now the digital content we discover, create, and share can be woven seamlessly in to the world around us."

Note: double tap on the TED Talk video to run it full screen so that when you move the device away from the Aura, you can still see the TED Talk.



Here are the three steps to create an "Aura" after you have downloaded and opened the free Aurasma app.

Step 1 Pick content from the Aurasma library or from your own device (e.g. video or image). This is the "Aura" that you want students to see/experience when they hold the app over the "Trigger."

Step 2 Take a clear picture of the "Trigger" image, object, or place.

Step 3 Get your content into position and scale it (optional) and then tap the arrow.

Note: Auras must be public and connected to a channel students are following for this to work on multiple devices. Students do not need to create an account to follow a channel.

The Future of AR

Today most of us experience AR using our smartphones or other mobile devices. Visiting a new city? Using the Yelp app on your phone, go to Nearby and select Monocle. The Yelp app uses your phone's camera allowing you to turn 360 degrees and get an overlay of all the restaurants in relation to where you are standing. This is a really nice feature in an app that many are already using, but imagine not even having to pull out your mobile device. Imagine the ability to get this experience through the glasses you are already wearing! It may sound like science fiction, but this is already happening with Google Glass.

Educator and Glass Explorer Andrew Vanden Heuvel took physics students on a virtual field trip to CERN to teach a class live from the Large Hadron Collider (LHC). Just outside of Geneva, Switzerland, LHC is in a tunnel 17 miles in circumference. Fewer people have ridden a bike there than have climbed Mt. Everest, yet Andrew is able to bring students from Michigan along for the ride to ask questions and get a once-in-a-lifetime learning opportunity. Go to youtu.be/yRrdeFh5-io to see the experience. CUE

Lainie Rowell works with educators on innovative ways to improve teaching and learning. Her client list ranges from Fortune 100 companies like Google to school districts and independent schools. She is also a part of Alan November's November Learning team and a presenter at local, regional and international conferences including TEDxManhattanBeach, Building Learning Communities (BLC), Macworld, ISTE, and the Annual CUE conference. In 2010, Lainie became the Program Coordinator for Leading Edge Certification, a national certification program in educational technology and curriculum innovation created by an Alliance of nonprofits, universities, and educational agencies, including CUE. Lainie is honored to be an Apple Distinguished Educator, Google Certified Teacher, Google Apps for Education Certified Trainer, and STAR Discovery Educator. She has also been featured in OC Family Magazine as one of 10 Teachers Making a Difference. Lainie currently serves as Secretary for the CUE Board of Directors. *@lainierowell lainie@me.com*

Mark Hammons is an Educational Technology Consultant for the Instructional Technology Services team at the Fresno County Office of Education, and serves as an advisor to educational organizations throughout California. Mark regularly spends his time working with teachers by conducting hands-on workshops and speaking at conferences about the power of technology and how best to integrate and effectively use it the classroom. Mark also serves as a technology coach for school districts, as well as providing media production and mobile solutions for educators throughout the United States that can be viewed at *its.fcoe.org*. *Mark is an Apple Distinguished Educator, Google Certified Teacher, Google Apps Certified Trainer, and travels the country as a Lead Learner for CUE Professional Learning. Prior to his arrival at FCOE, Mark spent three years as a Consultant for Accenture, a global management consulting firm. Mark lives in Fresno, California with his wife and two children, and is involved with pageantry and the performing arts throughout California. As former director of percussion for Clovis East High School, Mark now consults with various programs, and is a sought-out adjudicator for numerous events.* *mark.hammons@gmail.com*