



“Virtual Reality: 360-degree Immersive Video in Life, Classroom, and Today’s Uses”

Migration from the Information Age to the Experience Age

****VR doesn’t take the place of anything; it gives individuals an immersive experience.**

<https://kculpepper.weebly.com> (Culpepper Website)



Examples of VR Emersion – I was always told at school that a picture speaks a thousand words, so 360VR must speak infinity...

Virtual Roller Coaster: <https://youtu.be/QKm-SOOMC4c>

Virtual Nature: <https://www.youtube.com/watch?v=7AkbUfZjS5k>

Hammerhead Encounter: https://www.youtube.com/watch?v=rG4jSz_2HDY

Quotes: Both Quotes from the book: Easy Ways to Make Technology Work For You

“a great discovery, almost equal to the art of printing and the steam engine.” (Common School Journal, 1844; V 6, n. 1, pg 56-59)

“A new innovation that will revolutionize education, produce a major shift in pedagogy, and offer a true visualization of teaching and eliminate mediocre instructional techniques. It is here we will witness the processes of analytical and inductive teaching. “

*(combination of several statements)

“On entering the instructor’s room, we were struck at the appearance of an ample blackboard suspended on the wall, with lumps of chalk on a ledge below, and cloths hanging at either side. I have never heard of such a thing before....saw what now I trust is conserved indispensable in every school – the blackboard.”
(Rev. Samuel J. May, 1866)

Bringing the best of the best to everyone, anywhere, anytime. Programs like [Engage](#) and [Rumii](#) offer educator-focused collaborative VR learning environments. Imagine a lecture hall where all of the participants and the presenter are in VR. Think back to “Ready Player One,” a futuristic novel set in 2045, where nearly everyone constantly lives in VR. In the book, there is a planet within VR called Ludus, where all of the schools are located.

- It began in 1801, with a large piece of slate hung on the wall in a school in Scotland to provide information to a large audience at one time. In the US by mid-19th century, every class room had a blackboard to teach students. The ‘Hyalotype’, a transparent image of a photograph using actual black and white photographs on a glass slide that could be projected was invented in 1851. By 1916, the German company Agfa started producing colored lantern slides. The first version of PowerPoint was released by Microsoft in the year 1990.
- **“The motion picture is destined to revolutionize our educational system and that in a few years, it will supplant largely, if not entirely, the use of textbooks.” Thomas Edison, 1922**
- Technology is useful, it’s only useful insofar as it promotes engagement with clear learning goals within a well-designed process.

If you're a teacher, should you follow the trend and look into getting a VR viewer for your classroom? Will this actually be useful to your teaching and helpful to your students? And if so, how can you get started easily and without the hassle of having to go through technical difficulties?

A recent study by [Foundry10](#) (10.9.17 - [link](#)) analyzed how students perceived the usage of VR in their education and in what subjects they saw it being the most useful. According to the report, 44% of students were interested in using VR for science education, 38% for history education, 12% for English education, 3% for math education, and 3% for art education.

Time Magazine, August 6, 2015 Article: Why Virtual Reality Is About to Change the World

"...just as with cell phones, everyone else will mock the early adopters for mindlessly embracing unnecessary technology with no useful purpose. At first."

What exactly does VR offer us?

Virtual Field Trips, campus tours, Content Creation, medical training (UCLA-neurosurgeons) & uses, student recruiting (Univ. of Michigan football), new pedagogies, professional development & training, and more as the trend continues developing ([link](#)). The Jackson School in Victoria, Australia uses the Oculus Rift for/with students with special needs.

Case studies can be found online at ClassVR ([link](#)) for Education and many include grant and funding information for schools and school systems.



360 Experiences for the Classroom ([Edutopia](#)) - [No Equipment Needed]

Character Day (Sept. 27-28, 2019) [5-minute film festival] ([Official Website](#) for Character Day)

ARE KIDS/STUDENTS Ready?

(EX.) Administrators at other area school districts also are beginning to experiment with virtual reality, but some have said the developing technology may not quite be ready to use in their classrooms. ([link](#)) Throughout the one-day visit, classes at Tripp Elementary in District 102 spent a period in the library, wearing Google's equipment on their heads. With their peripheries blocked out, the kids looked straight into the screens that hung about six inches in front of their eyes.

Virtually, they were all in the same place, riding on a drone helicopter over the Grand Canyon, visiting the museum on Ellis Island or swimming underwater. But each child was free to turn his or her head, as individual screens could show views from all angles.

The technology doesn't involve computer graphics, Donovan said, just film of real places recorded by 360-degree cameras.

He acknowledged that the virtual-reality equipment amounts to the technological version of field trips to the zoo and other places. But he said he believed it could give the learner a degree of control.

Adobe Blog: How Virtual Reality Will Change How We Learn and How We Teach ([link](#))

WHAT INTERESTING EDUCATIONAL VIRTUAL REALITY APPLICATIONS OR PROGRAMS ARE OUT THERE?

- [CoSpaces.io](#) - Easy-to-use program that allows users to build their own VR environments.

- [Discovery VR](#) - Educational 360° video portfolio which allows you to explore new places, characters and ideas.
- [Augment](#) - A VR plugin for [SketchUp](#) which allows users to bring 3D designs to life in AR from your smartphone or tablet.
- [SketchFab](#) - Publish, share and discover 3D content online and in VR.
- [With.in](#) - A library of informative and entertaining VR stories.
- [Cardboard Camera](#) - Capture and share moments with a VR photos app.
- [Tilt Brush](#) - Paint and design in VR (see video below).

So what is going on with VR (Nintendo – March 22, 2019, releases its Labo: VR Kit which uses the Switch console) - [link](#)

Approaching the VR market with two concepts: engaging the youngest of 6 yrs. and up; testing the field for a greater immersion into VR market. Fortune magazine [states](#), “it’s a set of cardboard toys, aimed at letting young players assemble interactive Switch peripherals including a fishing rod, piano keyboard, periscope, or robot suit.”

Vanderbilt University: “Students as Producers” ([Link](#)) 25 student projects and digital pedagogy

Social media that integrates 360 video (Jan '19): (Native: YouTube, Facebook); 3rd Party: Snap, Twitter, Messenger, and Instagram.

Common Sense Education: Five research-based ways to use VR for learning.

What the Research Says About VR in Classrooms (article; Apr 3, 2018)

First things first, VR has yet to be widely adopted. Only 21% of households have a headset and one can assume this percentage is far lower for classrooms. Even so, VR continues to fascinate us with its possibility, and it's especially popular among kids, 70% of whom (ages 8 to 15) express interest in it. Since teachers are always looking for new ways to excite students, some innovative, well-supported educators have been experimenting with VR thanks to relatively low cost platforms like [Google Cardboard](#) or any of a number of sub-\$100 budget headsets.

If you're one of these path breaking educators, or just VR-curious, how can you make sure your lessons are grounded in best practices? Here are five key tips.

1. Be especially selective when it comes to what students play.

VR can provide students with experiences that feel very much like actual life, especially when it comes to young kids. This means that when it comes to content, you should choose experiences that you'd want your students to have in real life. The good news is that well-chosen, pro-social experiences might help students build key SEL skills.

2. Focus on giving students experiences vs. delivering content.

It's easy for students to get distracted by the novelty of being in VR, and that might mean they don't absorb as much information. This doesn't mean all is lost; try facilitating field trip-like experiences where the learning is more in the doing.

3. Think of it as an engagement tool, not a silver-bullet for learning.

In terms of learning outcomes, VR isn't much different than other EdTech-like digital games -- which isn't a bad thing. It does, however, seem to have an edge in terms of engagement. This means VR experiences might lend

themselves well to lesson or unit introductions that'll pique students' curiosity and lead to more in-depth activities that get learning to stick.

4. Use VR as an empathy-builder, but be wary when it comes to young kids.

While there's good reason to be suspicious of people who refer to VR as an "empathy machine," there's growing evidence that VR can help people with perspective-taking. However, when it comes to young kids, it's probably not going to work as well. For these kids -- who don't yet fully understand that others may feel differently from them -- it's best to work on perspective-taking in social situations.

5. Play-it-safe by limiting VR to shorter experiences.

VR is a bit of a wild west in terms of its effects, especially when it comes to kids and their brain development and health. Since VR has shown some significant impacts on adults, and kids are a different story in terms of their needs, it's best to use it in moderation (i.e. 20-minute chunks) until more research has been done. In addition to these research-based suggestions, there are some practical things to be mindful when using VR. First and foremost, make sure you have a large, open space for students to safely explore -- like a library or gym. Even if you're only using Google Cardboard, kids will want to spin around so they should each have more than an arm's length of space all around them. A lot of VR can also be done sitting down, so students could still be at their desks. There's also a risk of students finding VR to be disorienting or feeling sick. This is another reason why it's good to limit VR to short experiences, and to make sure to check in with students to see how they're feeling.

Items for discussion:

- Types of 360 Recorders & Audio Issues
 - 360 Audio Recording options
 - 360 Video Cameras (specs, memory cards, attachments, battery life, batteries, video resolution, photo resolution)
 - Vendors: Purchase Orders?
- Recording: Breakdown of a 360 Video Camera
- Stitching

BIG IDEA & QUESTION:

- Why should I use this? Why would I want to use this?
- Studies from Universities show....
- What are some of the things that are learned through creating and developing VR or AR
 - Instructional and Functional Hierarchy (step process – start at point 1, finish at point 9)
 - Video Development (storytelling, editing, production, application, marketing, etc.)
 - People Skills, Communication Skills, Team Building
 - Financial Budgeting, Profitability, Practical Business Experience (Production & Demand)
- *Higher order thinking skills
- When would I have time to do this, let alone, learn how to do this?
- Application Design: Allows user interaction and control of learning
- Immersive Video: Allows user to follow along
 - Drones (FAA Regulations), Drone Attachments

Equipment:

[#1 Rated-2019] **Insta360 One X** 5.7K (\$399), Insta 360 4K (\$249) Insta360 Nano 360 360 Fly4K
 Samsung Gear 360 15MP 4K Ultra HD CMOS **Go Pro Fusion** 5.2K (\$299) **Yi 360VR** (5.7k) \$199
 Kodak Pixpro SP360 4K (\$199) Ricoh Theta SC (\$179), Ricoh Theta V (\$429)

Software Systems for App Development:

***InstaVR:** [Case Study – [link](#)] – Free Version w/ overlay on media. Resources to bring VR into the Classroom
[link](#)], \$199 Year Unlimited Projects, Heatmapping, 2GB app size.

VIAR360 [link](#) Interactive 360 video production. 14-21 day free trial, education pricing.

Quick Overview – [YouTube [link](#)] | Full Tutorials [link](#)

***OmniVirt** [link](#) Free version (2GB file size, allows 10,000 views monthly, exports to iOS & Android). Site provides tutorials, case studies, etc. Includes 3-D Photo creator from a 2D image.

***Veer** [link](#) Create interactive VR experience in minutes. Allows use of hotspots, audio, photos, texts, and URL's for free to create virtual tours and other interactive experiences. Offers a "click and drag" environment. Can be viewed on the web, mobile, and all major VR and social media platforms.

***EEVO** [link: [Development/Creation](#)] Create interactive VR quickly and easily using EEVO's Composer, an online toolset that makes it simple to build the interactive, nonlinear VR experiences we call branching narratives, or "choose your own adventure" stories. The Composer requires no coding, simply upload 360° video and audio assets and add interactive elements with ease, creating new interactive experiences in minutes instead of days.

Three Easy Steps To Create INTERACTIVE VR [link](#)

WONDA VR [link](#) Pricing [link](#)

BRIO-VR – [Link](#); How It Works: [link](#) (Free [Hobbyist] version: posts your content online – 250mb of content.)
 Website also offers tutorials

EDITING SOFTWARE:

DAVINCI – [FREE Version](#) (Mac & PC) Professional software [Pro Version - \$299 (not needed-Free works same except a few plug-ins)]

Difference b/w Free & Pro Version: multiuser collaboration features that let editors, colorists, effects artists and sound engineers all work together on the same project at the same time, plus 3D tools, dozens of Resolve FX and more

Google Education ([Expeditions](#)) [link](#)-Beta Program] "For the beta program, educators who already use a 360-degree camera at school will be given access to the tools and instructions on how to create their own expeditions. Google will loan 360-degree cameras for the duration of the beta to schools that don't have cameras".

Google Expeditions is a VR app for schools. The app enables teachers to take their classes on virtual field trips anywhere around the globe. Google piloted this app in hundreds of schools all over the world. The project was extremely successful, with Google taking more than 1 million students in 11 countries on expeditions.

***Cullman City Schools** – [link](#) Google Expeditions VR Classroom Kit 20-student pack (w/o rolling case)
 [Contact: Susan Boyd – [email](#)]

Storage | Uploading Content:

YouTube currently supports 360° videos with 24, 25, 30, 48, 50, or 60 frames per second. We recommend uploading 360 videos (equirectangular format with a 2:1 aspect ratio) at a resolution of 7168x3584 or



higher, up to 8192x4096.

**How to Upload VR Content to Facebook and YouTube: [A Step-by-Step Guide \(Link\)](#)

*Facebook Upload – How To.....[\(link\)](#)



*YouTube Upload – How To.....[\(link\)](#)

1. **Students Can Learn Terminology** — particularly using Hotspots, students can view objects in the scene (i.e. an info graphic) and learn about them through text boxes, images or videos. This incorporates course content in the VR multimedia application.
2. **Hotspots** – Hotspots allow you to view or hover over an object in the 360 media, triggering an overlaid image, video or text box. The forensic students, in particular, benefit from the learning opportunities afforded by this feature of InstaVR. They can learn both how to better investigate a crime scene, as well as some of the specific terminology used.
3. **Supplemental Audio** – Adding audio content (royalty free items) Sound Dog, YouTube Audio library, your own content/voice overs.
4. **Cross Platform Publishing** – 3D printer so they can create their own headsets. With InstaVR, they need to only author an application once in the platform, and then with one click publish to each of the different headsets. Career Tech academies can use WebVR to pitch local businesses on the benefits of VR.
5. **Drag and Drop Interface, with No Coding Required (w/InstaVR)** – With some teachers skeptical on the value of VR, and students having a busy schedule, it was imperative to select a technology partner that anyone can use, and that wouldn't take a long time to create VR apps.

How To Use It... [\(link\)](#)

Virtual Field Trips / Empathy Exploration / Global Awareness

300 Virtual Immersive Fieldtrips [\(LINK\)](#)

High Tech Training / Skills Training

Literature comes to life – VR Storytelling | First Person Documentaries

(Ex. [Clouds Over Sidra](#) - 2015 virtual reality film about the Syrian refugee crisis)

Career Expeditions? / Architecture and Design

Group Learning / Language Immersion

Distance Learning / Campus Visits

Fitness (Running Apps)

Field Trip Apps [\[link\]](#)

(Ex.) Discovery VR, Google Earth (Both Free)

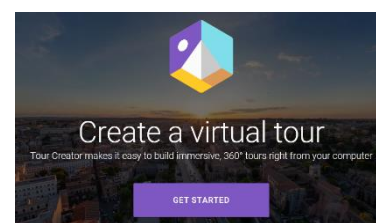
*NYT VR – New York Times (Immersive 360 degree videos taking users inside the headlines) - [link](#) (Free App)

Google:

Tour Creator: <https://vr.google.com/tourcreator/>

Tour Creator Hardware Loan Program: goo.gl/izNSov

Daydream Education Hardware Loan: goo.gl/JrRJ1u



5 key properties of good VR learning experiences

VR experiences in education should have following properties:

1. **Immersive.** Designers should strive to create the feeling that users are in an experience. For example, if you develop a history app, make history come alive for students.
2. **Easy to use.** Eliminate the need to have special skills to interact with a VR app.
3. **Meaningful.** Meaning is important for students. You can't create a good VR learning experience without a good story. That's why it so important to advance the art of storytelling. Stories quite simply provide the best vehicle for delivering messages that are not only heard and understood, but that also inspire and elicit action.
4. **Adaptable.** As Albert Einstein once said, "I never teach my pupils, I only attempt to provide the conditions in which they can learn." VR experiences should allow students to explore at their own pace. The app should provide complete control over the level of difficulty. Designers should establish how students learn and then use this knowledge to design VR products that allow effective learning.
5. **Measurable.** Each educational tool should provide measured impact. Teachers should be able to track the metrics of education so they can measure the resulting knowledge of a subject. When designing VR experiences, it's essential to choose appropriate metrics and make it clear what criterion will be used to measure success and failure.

5 TIPS ON HOW TO AVOID PITFALLS USING VIRTUAL REALITY AT EVENTS

Not all of us have had a VR experience yet. It is advisable to give a brief, exciting introduction to VR. This information could be topics like:

-What is VR – a short info.

-VR – an individual experience. You can move 360 degrees in the room and will discover all corners of the room/landscape/setting. Each member of your audience is likely to come away with a different viewing experience.

-It is a virtual world, not a real one. The glasses can be removed at any time to come back to the real world.

-With VR, you can have experiences that you can't have otherwise, because you don't have access to it.

VR Pitfall 1: No introduction to the topic of VR

VR Pitfall 2: Not informing viewers on the large range of emotions

Virtual reality is immersive. The range of emotions is large and probably intense. The best uses of VR from Brands transport their audience somewhere in **entertaining, remote, inaccessible or perhaps even dangerous territory. An experience that you can't have normally.** In one moment, you are the drummer of Coldplay at a concert in Barcelona, the next moment you are on top of the snow-capped peak of the Himalayas. Without anticipating the storytelling, it is important to briefly demonstrate that the upcoming experience can be intense.

VR Pitfall 3: Fail to inform "don't disturb the person next to you"

Don't disturb your colleague if it is not your turn, and vice versa. If you disturb someone, the experience changes. Think, while you are experiencing VR, you want to feel safe too.

VR Pitfall 4: Fail to connect VR to the overall event

Connect the VR experience with the event and **incorporate it into the dramaturgy** (the theory and practice of dramatic composition) **of the event.**

Go through steps like:

Position VR in the overall event. Decide if VR is the highlight or just an intensification of what happens at the event.

Decide what happens after the VR experience. Let the story continue and keep your guests involved.

Create an emotional link to the brand. That is why big brands like to play in this technology sandbox.

VR Pitfall 5: No time for exchange

The VR experience will be immersive, and the guests will have the need to talk about it. Therefore, plan time after the VR experience to talk about it.

10 Reasons To Use Virtual Reality In The Classroom (by Ashley McCann)

Although still an emerging technology in terms of recognizing its full potential, virtual reality offers the opportunity to step into places, roles, and experiences that were previously impossible, or at the very least, inaccessible to most.

By suspending disbelief, the same way, we do when we read a novel or watch a movie, an artificial reality can be designed to enable experiential learning, scenario-based learning, social learning, workplace training, and more. Virtual reality can be used for pure entertainment—digital toys, video games, or to swim with whales.” [Sylvia Duckworth](#), sketchnoter extraordinaire, put together a graphic of ideas from Maria Galanis and Andrea Trudeau on Top 10 Reasons to Use Virtual Reality In The Classroom to help bring the world (and beyond) to your students with technology.

1. Travel to and explore places all over the world without leaving the classroom.

Virtual reality makes travel possible without the constraints of time and permission slips. Visit the Taj Majal with a virtual class tour or tour an art museum without stepping foot on a bus.

2. Develop empathy for communities in crisis by stepping into their shoes.

Bring the concept of empathy to life by giving students additional context with the sights and sounds of a setting or experience. (See [30 Of the Best Books To Teach Children Empathy](#) for additional inspiration)

3. Experience different careers first-hand.

Students can see life through the eyes of a surgeon, museum curator, soldier, or other professional fields for a better picture of what life in that role would look like.

4. Explore the depths of the ocean and the vastness of space.

Children have a natural love for adventure, and the immensity of the ocean and space and all both have to offer allows students to satisfy that curiosity without the need for a submarine or rocket ship.

5. Time travel to key events and places from the past.

Imagine being present at Martin Luther King’s “I Have A Dream Speech” or accompanying Neil Armstrong on the first moon walk — it would be a lot more memorable than reading about it, right?

6. Explore within the human body.

Anatomy takes on a new dimension of understanding when you can see organs, muscles, and skeletal structures in place and functioning; even dissections have gone digital.

7. Allow students to share their world with others by creating their own VR content.

Engage students creatively by encouraging them to create their own three-dimensional experience to showcase their imagination.

8. Discover how VR can be used in other industries like medicine, engineering, entertainment and real estate.

Research how virtual reality is used as a tool in some industries to help students develop an understanding of the technology and its future in business.

9. Explore how VR can be integrated into every subject area and curriculum.

Since it’s relatively new in terms of accessibility, there’s untold potential in using virtual reality as an educational conduit, making it an exciting option for teachers and students alike.

10. Promote curiosity and wonder.

BECOME A CREATOR/DEVELOPER – CREATE YOUR OWN VIRTUAL TOUR

<https://vr.google.com/tourcreator/>

Tour Creator makes it easy to build immersive, 360° tours right from your computer

Google Expeditions - [link](#)

900 VR Expeditions - [link](#) – Constantly updated

100 AR Expeditions – [link](#) – Constantly updated



Project Ideas:

Google Arts and Culture Project(s) - <https://artsandculture.google.com/project/360-videos>

Project Ideas for students: <https://biteable.com/blog/inspiration/creative-video-project-ideas-for-students/>

Create an interactive 360 VR Tour (in 5 minutes): https://www.youtube.com/watch?v=wSj1p_NaNUM

- Uses **Vizor** (link: <https://site.vizor.io/products>)

What I learned filming a VR Immersive video 30 days straight:

<https://medium.com/@StanfordJournalism/what-i-learned-making-a-360-degree-video-every-day-for-a-month-82ea3771749>

***Learning the language of Virtual Reality**

- What works for 2D video does not work for VR. There are no pans, zooms, or isolated focus' to direct the viewers' attention.

A. **Proximity** – meaning, what is closer to the camera is most important. The farther away an object is, the less important it is.

B. **Centering** (is crucial) –

Viewer can look anywhere in 360-degree video/space.

Directing a viewer's attention

First shot of VR film is most important b/c it is the only time you must control where the viewer looks first.

C. **Sound** is 50% of the experience

Try closing your eyes in a room and have a friend throw something on the floor. You'll likely be able to place the origin of the sound just from hearing it. In VR, this means creating a binaural audio experience, which means we hear things just as if we were **really there**. Turn your head left, the sounds changes. Turn your head right, the sound changes accordingly.

D. **Ethics:** Know when and where you are recording

E. **Equipment:** Practical, Manageable, Best affordable quality.

**Helping Students Reflect on 360 Video and VR - [link](#)

Title: "Virtual Reality: 360-degree Immersive Video in Life, Classroom, and Today's Uses"
Migration from the Information Age to the Experience Age

Session Overview:

Can Virtual Reality (VR) or 360-degree video be a real-world classroom experience? Our goal and focus for this session will specifically focus on the development and creation of VR content by teachers, but more specifically by students. We will be addressing issues such as: Cost efficiency, equipment and needs, real-time examples and resources, how to's, guides to success, benefits of VR, application design, competitions for students/schools statewide, nationally and internationally.

Introduction for AETC 2019:

Dr. Kevin Culpepper has been in the educational field for the past 20 years in Alabama and has specialized in the technology field since 2001. He has 17 years of classroom teaching experience as a former Career Tech teacher. Dr. Culpepper has previously taught courses such as: Television Production, Multimedia, and App Development with a focus on design and gaming, Computer Applications, and other technology based and rich courses. He is also a previous district technology instructor, grant manager, technology conference presenter and workshop leader.

Dr. Culpepper's interest in virtual reality and augmented reality began while working with the Teaching and Learning Center of Air University at Maxwell Air Force Base in Montgomery, AL. Seeing how others are using "VR" for student and military recruitment, flight simulation, professional development, and war games training sparked his interest in learning 360-degree video development. As a content integrator, Dr. Culpepper has focused on practical and simple ways for educators, students, and those who are passionate about learning to create or effectively assimilate their own content. Although VR is still seen by many to be in its infancy, the opportunities seem only to be limited by the imagination. Involving and immersing others in a personalized learning experience, or new venue, allows individuals to experience things they may otherwise not ever do. VR puts your classroom anywhere you want it to be.

Original Title: Virtual Reality | Augmented Reality
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