# School Vs. Fortnite: The Emergence of 3D Learning

Student Engagement in the

New World of 3D Learning
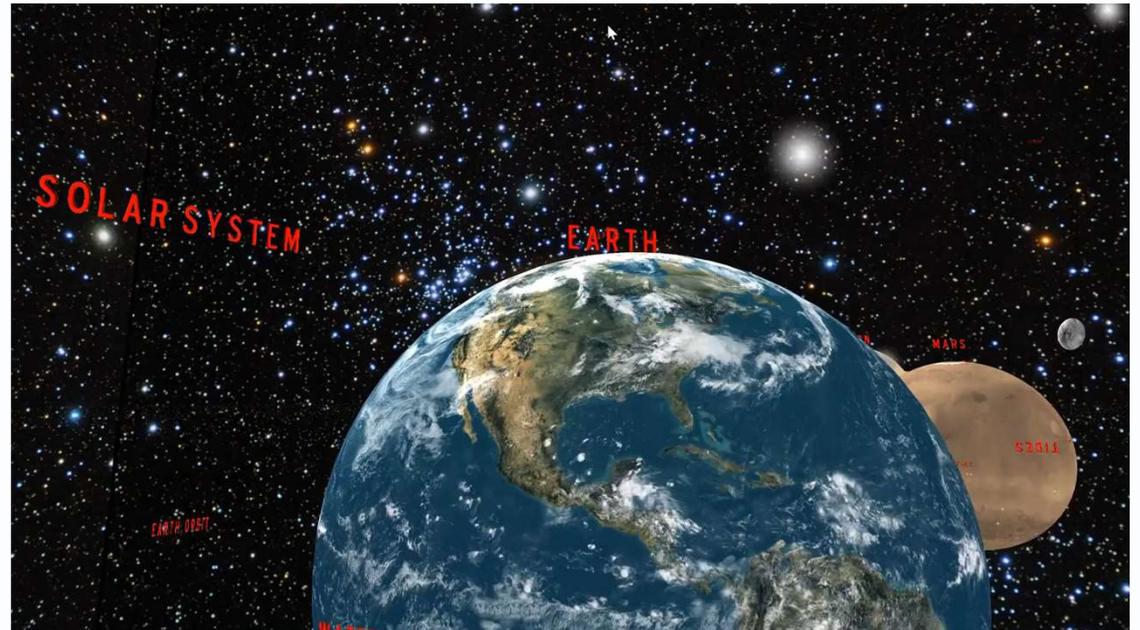
What is it about Fortnite?

Kids have total control in Fortnite

- Immersive
- Interactive
- Connected
- High Engagement
- Immediate Feedback

About SUNRISE VR

SUNRISE

SUNRISE VR (www.sunrisevr.com) was founded by MIT researcher Brett Reid, who saw the potential in virtual technologies to help underserved Chicago students learn by introducing powerful new tools into the educational process.

SUNRISE has created more virtual learning programs than any other company in the world, primarily used in controlled environments.

Today SUNRISE offers everyone the chance to use virtual learning.

Operation SAFE CHILD — A New Solution for Communities in Crisis

Operation Safe Child is a collaboration between the Village of Maywood (Illinois) and the Maywood-Melrose Park-Broadview School District #89.

The primary mission of Operation Safe Child is to keep children safe by teaching them what to do in dangerous situations such as abduction attempts, illegal drug activity, gang activity, and when they are home alone.

Operation Safe Child also teaches children good character habits and to think critically about the ultimate end results of criminal activity.

The purposes are to reduce crime in the community and to encourage the students to grow to become productive citizens.

Operation Safe Child works with technology providers to promote learning focused on the needs of underserved children.

About Operation Safe Child

What is 3D
Learning?

What is 3D Learning?

3D Learning is learning that allows students to step into 3D interactive environments based on schoolwork.

- 3D Learning puts students inside of their subjects. From a PC, Tablet, or phone, students have a first person, self-guided experience with their studies.

- They step inside of the atom to understand its structure. They travel through an iPhone to learn how it operates.

- They become a part of a subject or complex idea; this is the magic of 3D Learning.

The New World of 3D Learning
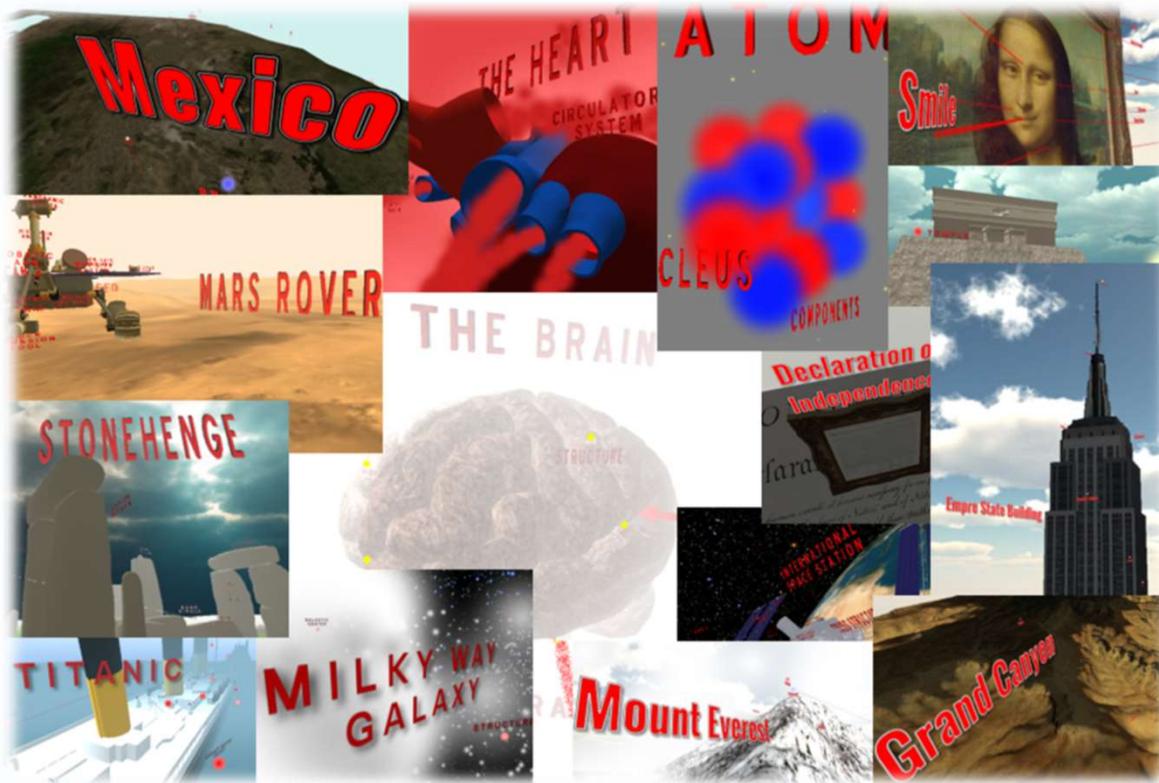
The potential of virtual learning in education is limitless.

❋ It allows students to step into 3D interactive environments, putting them inside of their subjects

❋ It complements text with a 3D experience to truly engage students

❋ The abstract becomes real: students walk through magnetic fields, fly through the US Constitution, and cross underground magma chambers to understand plate tectonics

How Does 3D Learning Work?

3D Learning worlds complement text and pictures with a 3D experience to truly engage students. They supplement learning much like the old diagram- to display location, context, and supplementary information.

- 3D-based learning is a conduit, the mediator that bridges the gap between the powerful abstract world of ideas and the "tangible" world of the student.

- It gives students context to build mental models and better understand STEM ideas. They can see how light enters the human eye or how sound enters the human ear

- 3D Learning is the empirical medium that transforms ideas and theory into experience and understanding.

Immediate Understanding

In Virtual Learning, ideas become easily understood, no matter how abstract.
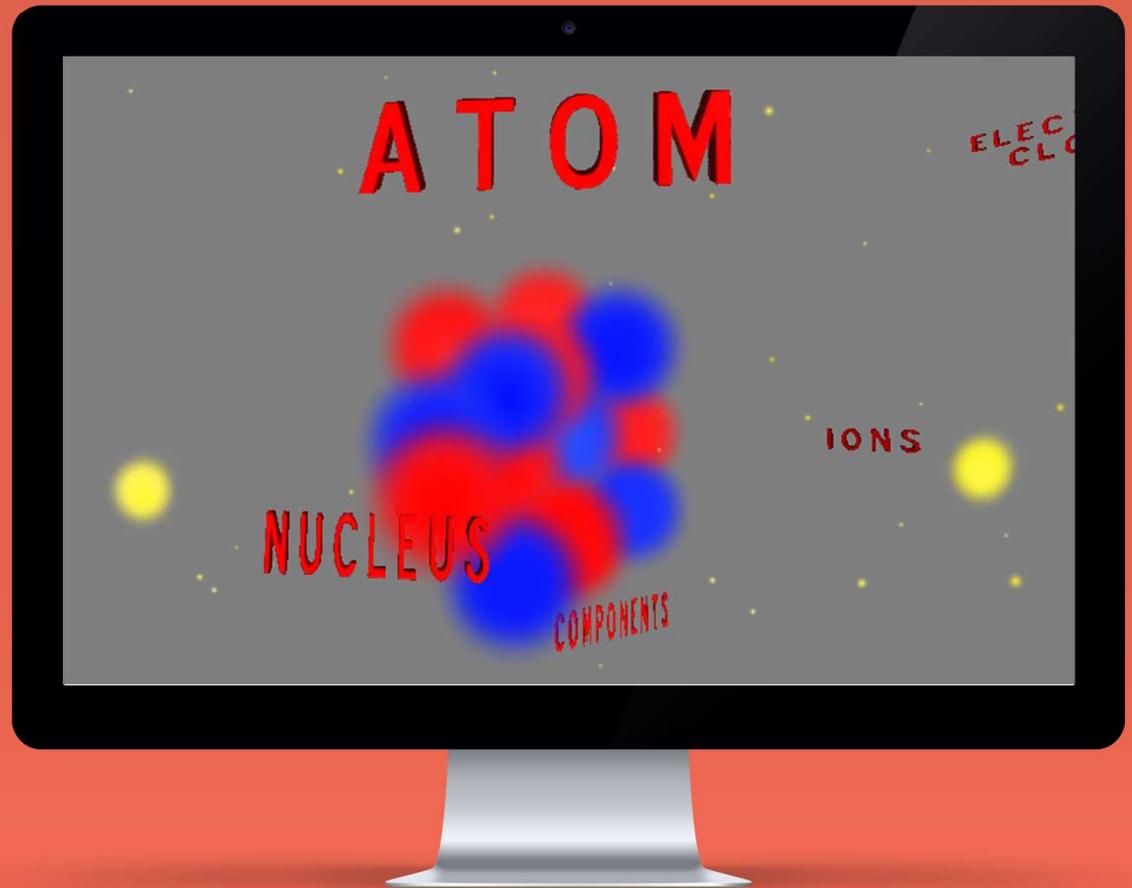
Increasing Student Engagement

- In today's digital world, finding new ways to engage tech-savvy students is difficult

- Educators face major challenges in keeping students engaged and interested

- Virtual Learning is an effort to make learning more relevant and engaging to today's 3D videogame-saturated kids

Student Engagement: *85% of Kids Prefer 3D*

- Research has found that students performed better when they were in control of their navigation through the virtual learning environment, just as in the videogames they love so much,

- A child can learn anything when they have full control over exploration in information-rich 3D environments.

- Real-time 3D programs provide unlimited choices for students. They can fly, drive, swim, or walk anywhere, and the number of possible combinations of real-time interactive choices available are infinite.
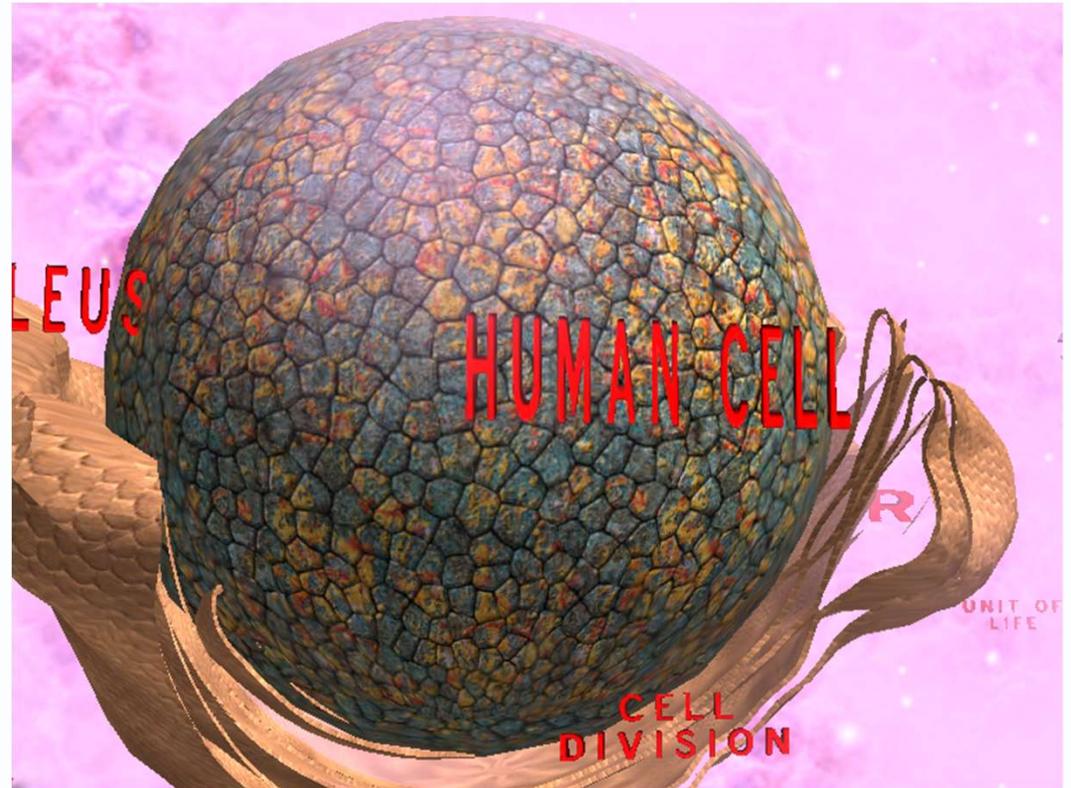
VR Technology
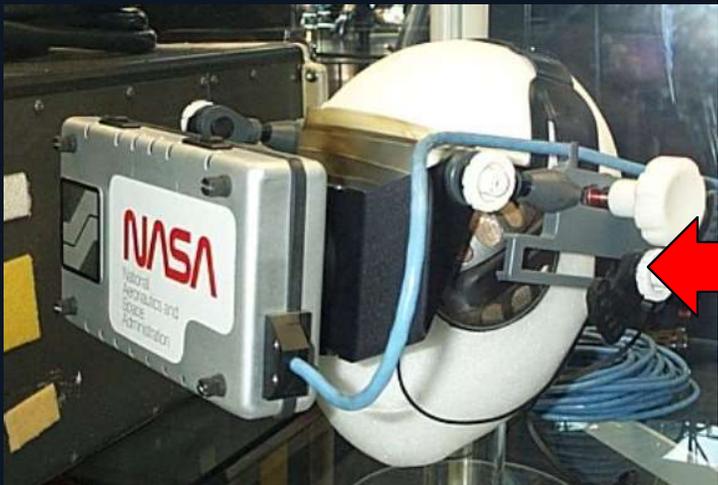
Virtual Reality (VR) was developed by NASA and the US Military to train people for situations that would be difficult to replicate in the real world.

- Space
- Submarines
- Unfamiliar Terrain

Government researchers found trainees learned and recalled more in VR environments than from traditional forms of learning.

The problem was that VR headsets cost $100,000+ dollars each, required a significant amount of technical knowledge for set up/maintenance, and was cost prohibitive.

This cost and complexity barrier prohibited use outside of expensive, controlled environments.
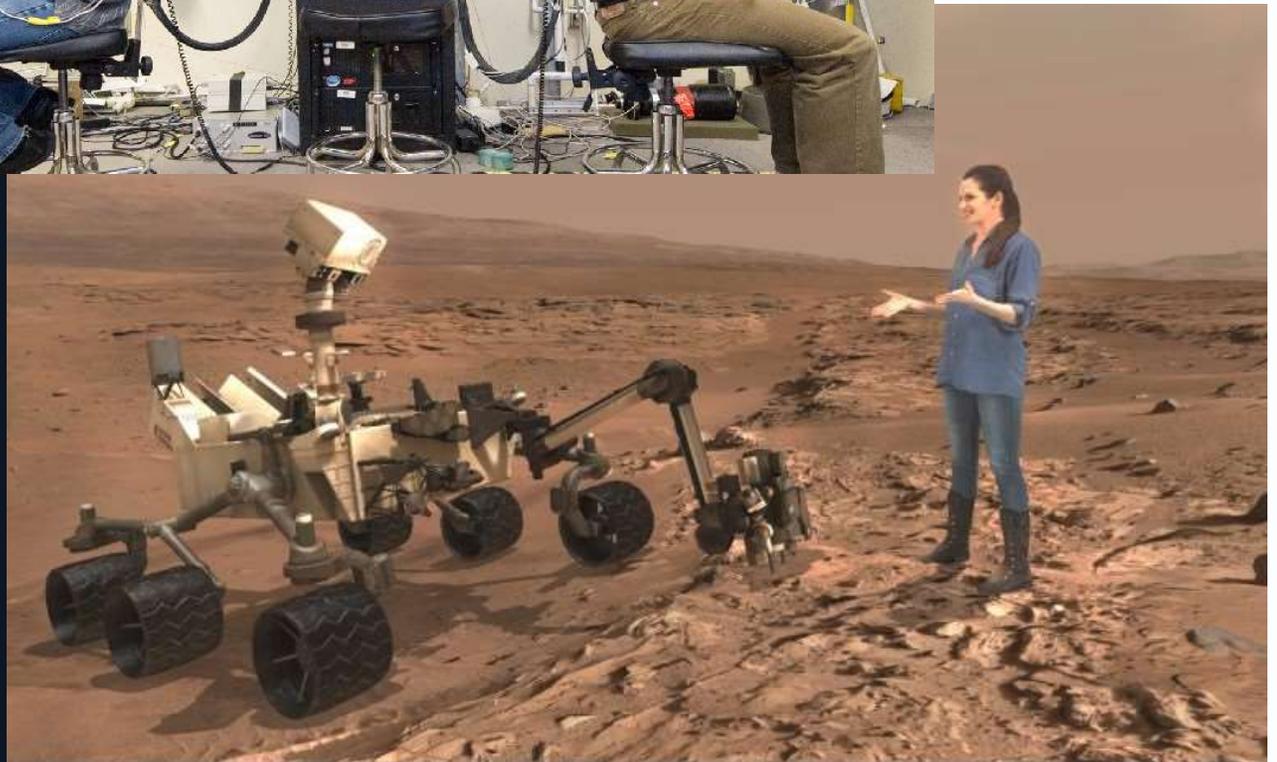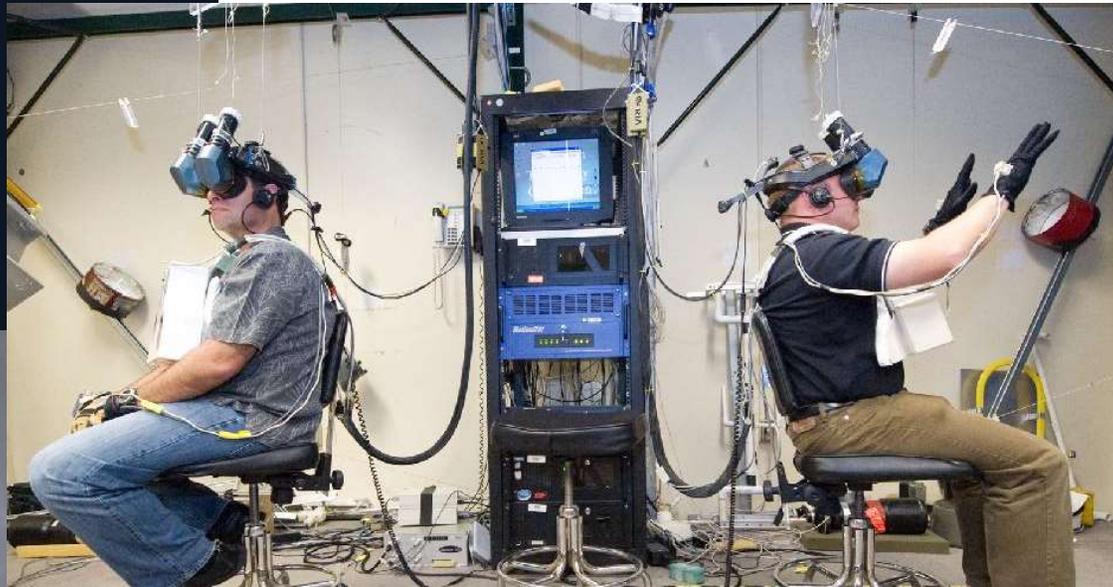
3D in Schools:
The Pilot

3D Pilot

- To challenge the significant cost, structural, financial, and technical limitations of using 3D and VR in schools, a framework was developed to port VR learning into 3D programs delivered via the Google Play store for use on Chrome/Android platforms.

- The deployment was a "proof of concept" model to deploy 3D visualization programs outside of expensive, complicated, and highly structured environments.
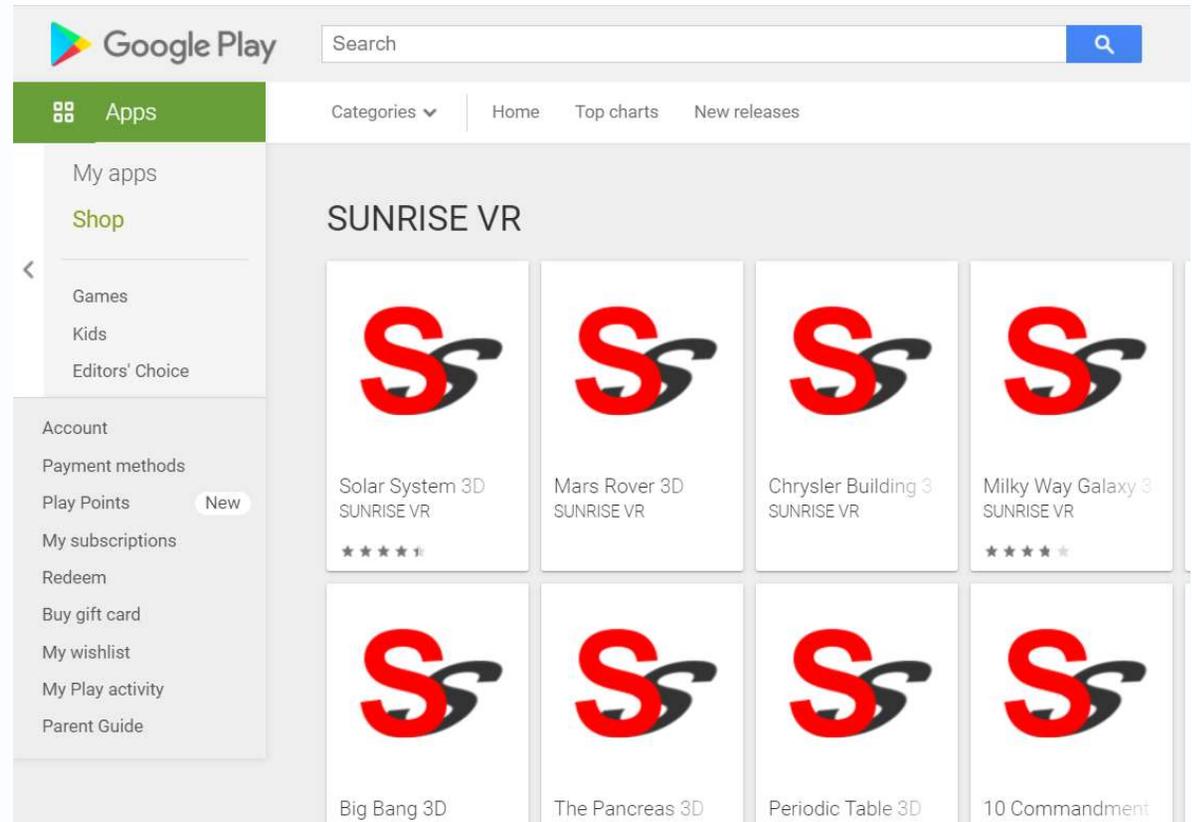
The project aim was to test 3D learning performance on Chrome/Android platforms with the objective of informing the coming era of 3D learning in school, and potential learning enhancements.

- Over 30 million Chromebooks are now used in education around the world

- Over 3 billion active Android devices can access 3D learning

Project Goal:

Create a 3D learning technology for use in schools.

Why Google Play Store?

The Google Play store provides a global platform with universal access and delivers an ideal environment to test 3D learning programs across a very, very ride range of users in highly varied technological environments.

- The initial platform for 3D-Based Learning is grounded on Chrome/Android.

- The platform was chosen for ubiquity and ease of access.

- The ubiquity, stability, and ease of use of the Chrome/Android technology and open-source logic provide a natural and inexpensive platform to deliver 3D learning.

Summary of Google Play Results

The largest ever use of 3D learning occurred from 2017-2020, and involved 1.7 million users in 27 countries, across 150 programs in 6 subject areas. The goal was to test 3D learning performance on Chrome/Android platforms.

The Ratings

Average Rating was 4.6 out of 5
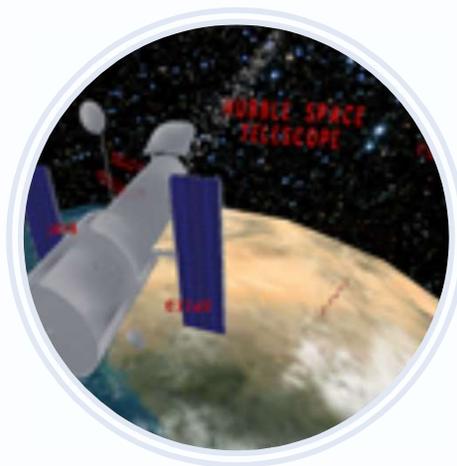
The Comments

- As a teaching tool, this app is a wonderful device...
- It helps to see it all in 3-D
- Cool!
- Confusing navigation.
- I love the graphics!!!
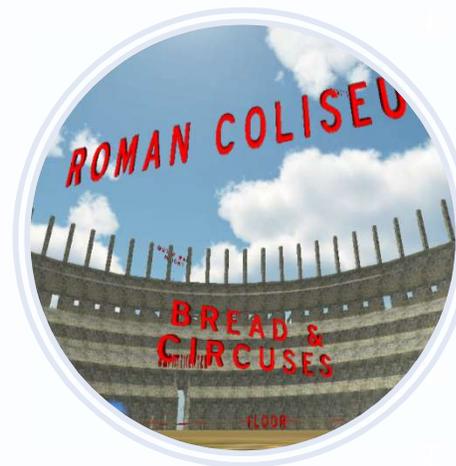
Usability

- No installation issues
- First VR learning app that didn't need tech staff
- Intuitive Interface
- Navigation issues with non-gamer users
- Reading text was difficult for some

The Future

- The project informed the coming era of 3D learning in school
- Google infrastructure delivers seamless experience for students
- Next Step is curriculum integration and iterative development

How it Works : 1 Click with Existing Equipment

3D learning programs are available on Android, Chrome, and PC devices, making 3D a new part of everyday learning with existing equipment.

No special equipment is needed; students simply use the touchscreen to navigate through the virtual environment.
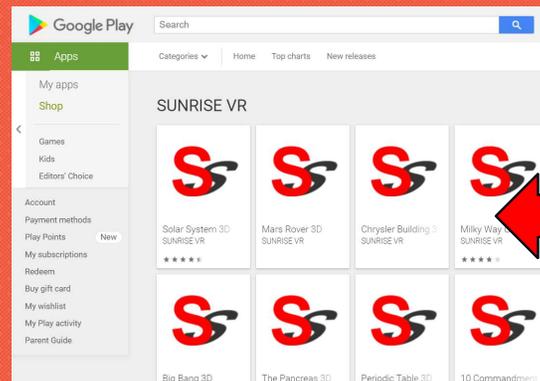
Teachers access programs through the Play Store, just like any other app.

Learning

Declaration of Independence
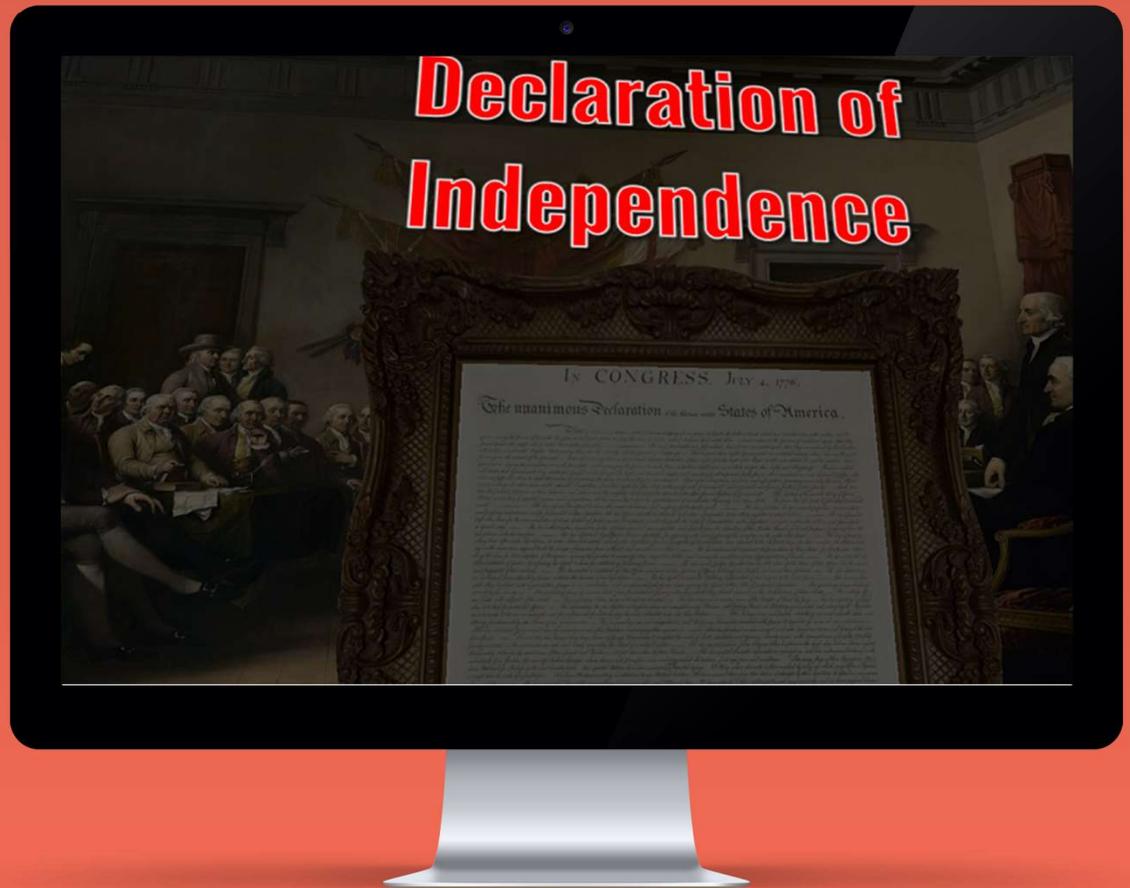
The Research

"VR can lead to increased student engagement; provide active, constructivist learning; increase frequency of authentic learning experiences; allow for empathetic experiences; enable students to exercise creativity; and provide an arena for visualizing abstract concepts concretely."

Virtual Reality in Education: A Tool for Learning in the Experience Age

Elliot Hu-Au and Joey J. Lee,

Columbia University, 2017

Researchers are Answering Questions

- How is it best embedded into education?

- How does it enable active and experiential learning?

- How does it encourage learning across a wide range of disciplines?

- What design elements and learning contents support VR-based learning?

- What learning theories have been applied to guide VR application design for education?

- What uses of 3D technologies hold the greatest potential for learning outcomes?

A systematic review of Virtual Reality in education

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Abstract. Virtual reality has existed in the realm of education for over half a century. However, its widespread adoption is still yet to occur. This is a result of a myriad of limitations to both the technologies themselves, and the costs and logistics required to deploy them. In order to g... it is that educators hope t... performed both a systema... two distinct thematic an... reported motivations pro... virtual reality educational... associated with doing so... virtual reality to increase t... of factors such as constru... of their experiences. Simil...

Virtual reality in education: a tool for learning in the experience age

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Abstract: Educators face major challenges as a result of the shift from the *Information Age* to the *Experience Age* (Wadhera, 2016). For example, students are passive and disengaged (Capps and Crawford, 2013) and may struggle to see the relevance of what they are learning to their lives (Gee, 2009); also, important skills needed for 21st century learners – such as empathy, systems thinking, creativity, computational literacy, and abstract reasoning – are difficult to teach (Smith and Hu, 2013). Virtual reality, an immersive, hands-on tool for learning, can play a unique role in addressing these educational challenges. In this paper, we present examples of how the affordances of virtual reality lead to new opportunities that support learners. We conclude with a

The Benefits

❋ Increased Student Engagement

❋ Increased Student Comprehension

❋ Increased Complex Conceptual Learning

❋ Preferred by 85% of Students

❋ Ease of Use

❋ Access Anywhere

❋ Proven Effectiveness

Foundations of Virtual Learning

Virtual Learning draws its power from three core learning principles: visual, experiential, and self-directed learning, the most effective ways to teach students.

It allows students to be fully involved in learning, instead of merely passive observers.

Learning is much more effective when it is an active discovery process.

Self-Directed Learning

Optimal learning takes place when the student works at her own pace, is actively involved in performing specific learning tasks, and experiences success in learning.

Experiential Learning

"I hear and I forget. I see and I understand. I do and I remember."

—Confucius

One of the basic ways we learn is though experience. Active rather than passive processes better encourage learning.

Visual Learning

Most of the information we receive come from visual images because it is simply the most effective and natural way for human being to process information. That is the way we are designed.

Immediate Understanding

GENETICS

COLOR

EYES

CORNEA

TEARS

THE EYE
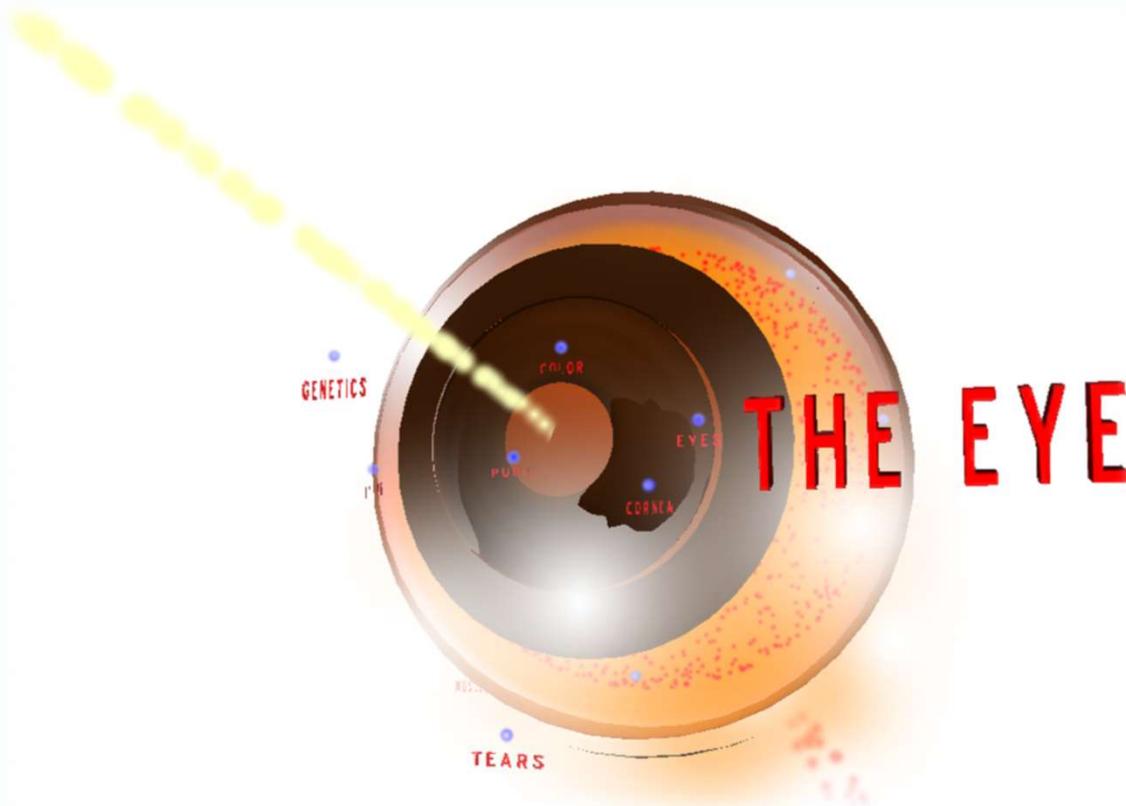
Through Virtual Learning the abstract becomes real.

❈ A consistent acknowledged flaw of learning is reliance on theory and lack of concrete experiences

❈ Virtual Learning transforms ideas and theory into understanding

❈ 3D bridges the gap between the abstract world of ideas and the "tangible" world of the student

❈ 3D brings ideas to life; abstract concepts like gravity and the Big Bang Theory become experiences to be explored

❈ 3D helps students build mental models and understand ideas; they see how light enters the human eye or how sound enters the human ear

STEM

- Virtual Learning literally opens up new worlds in STEM education, where the abstract becomes obvious

- Virtual Learning supports STEM learning by translating ideas into concrete experiences

- Students walk through magnetic fields, fly through cell phone touchscreens, and witness the elusive Higgs Boson
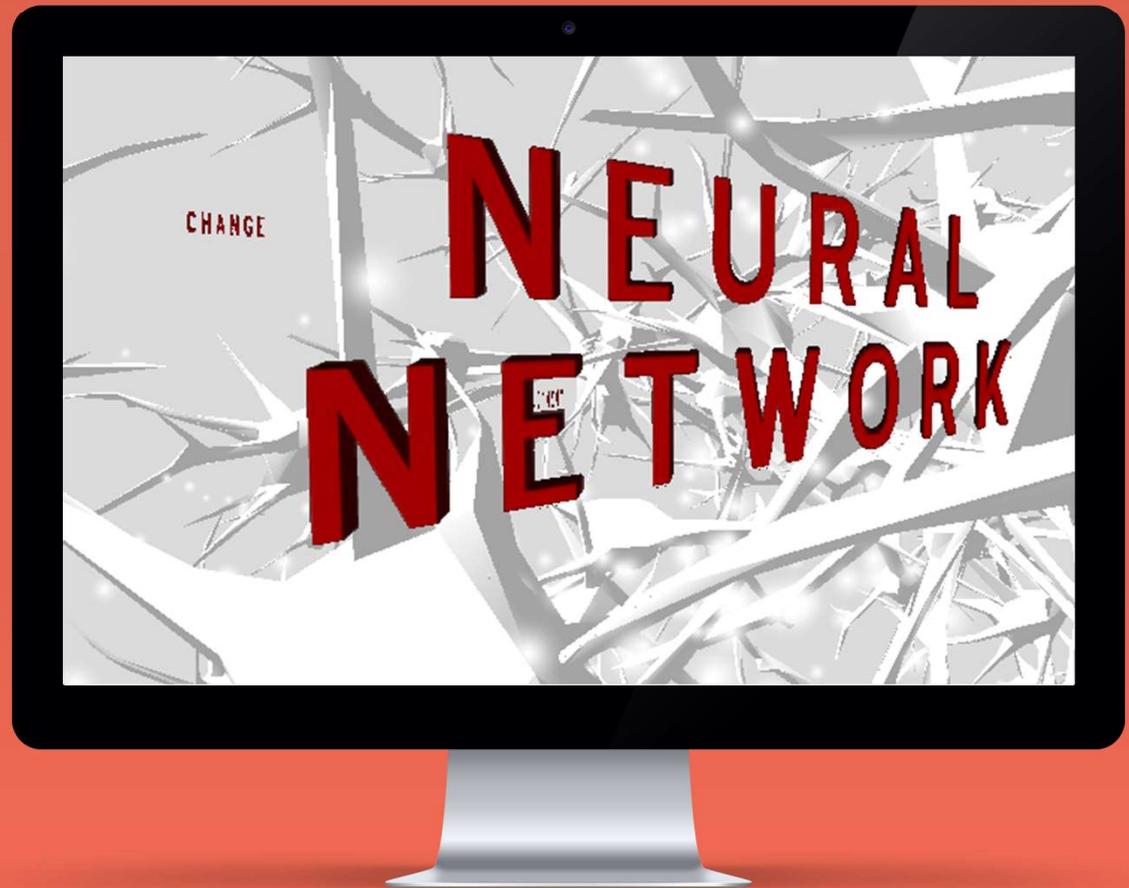
Immediate Understanding in STEM

The abstract becomes obvious.
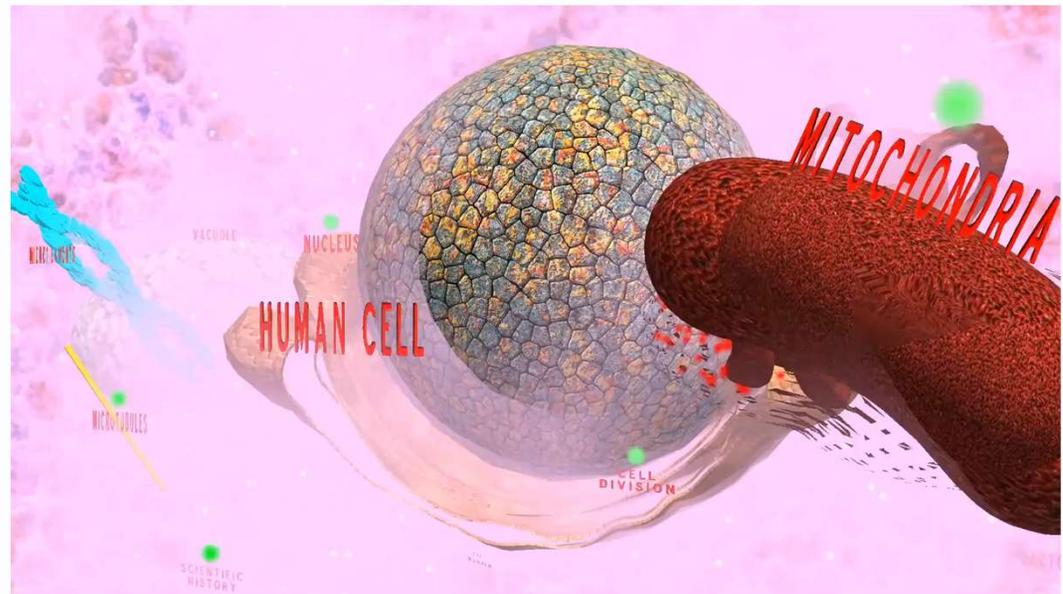
Immediate Understanding in STEM
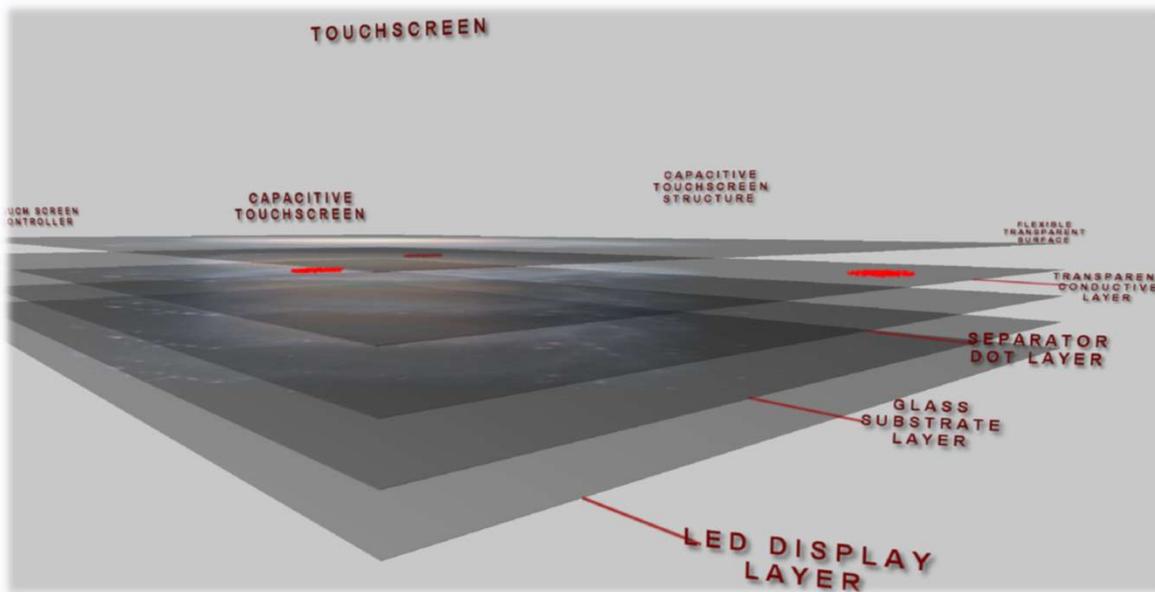
STEM: The abstract becomes obvious.

❋ Programs serve as an experiential learning reference across the STEM curriculum.

❋ It is intended to be a first stop, an engaging overview of a subject to create a cognitive map and initial understanding of STEM ideas.

❋ It helps students to see, experience, and understand abstract ideas.

❋ It provides an immediate understanding of complex ideas

❋ It inspires students to construct new STEM models and meaning.

Classroom

Use

Into the Classroom: The Next Step in 3D Learning

Virtual learning programs are available on Chrome, Android, and PC devices, making 3D an exciting new part of the everyday learning experience.

GET IT ON Google Play

Teachers access programs through the Play Store…

programs open seconds later to become a seamless part of the learning experience.

- Subscriptions Available by Class, School, or District
- Free Programs Available

No special equipment is needed; students simply use a keyboard and mouse or a touchscreen to navigate through the virtual environment.

# Programs

200+ virtual learning programs are available today.

- Anatomy
- Arts and Culture
- Astronomy
- Geography
- History
- Landmarks
- Natural Features
- Religion
- Science
- Technology
- Viruses

Classroom 3D Direct

A classroom where the world's most advanced 3D learning is delivered to you every week, hours after it was completed.

- A new way of delivering instructional content

- Instant access to 3D programs based on the most important topics of the week

- Each week subscribers receive a program via email, providing the classroom with the latest, timely programs

Covid 19 Vaccines are developed.
How do you teach your students?

Classroom 3D Direct Email

Covid 19 Vaccine

1. Genes

Follow the Vaccine Timeline

3. Ima...ion   2. Gene Tran

How Vaccines Work
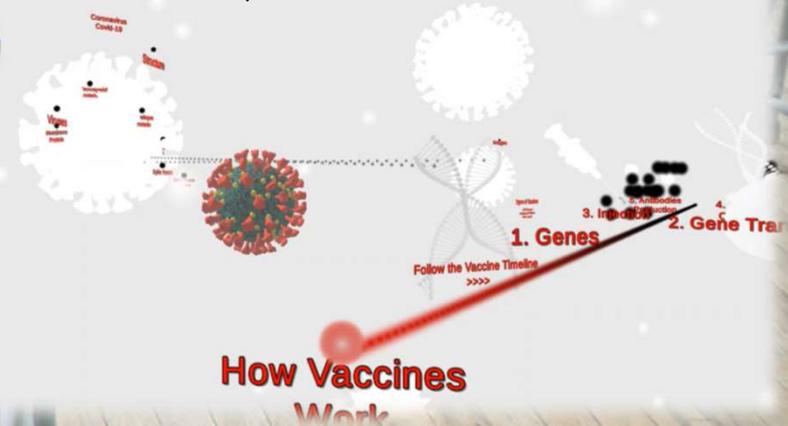
Programs Emailed Directly to Teachers

Learning takes on a new immediacy.
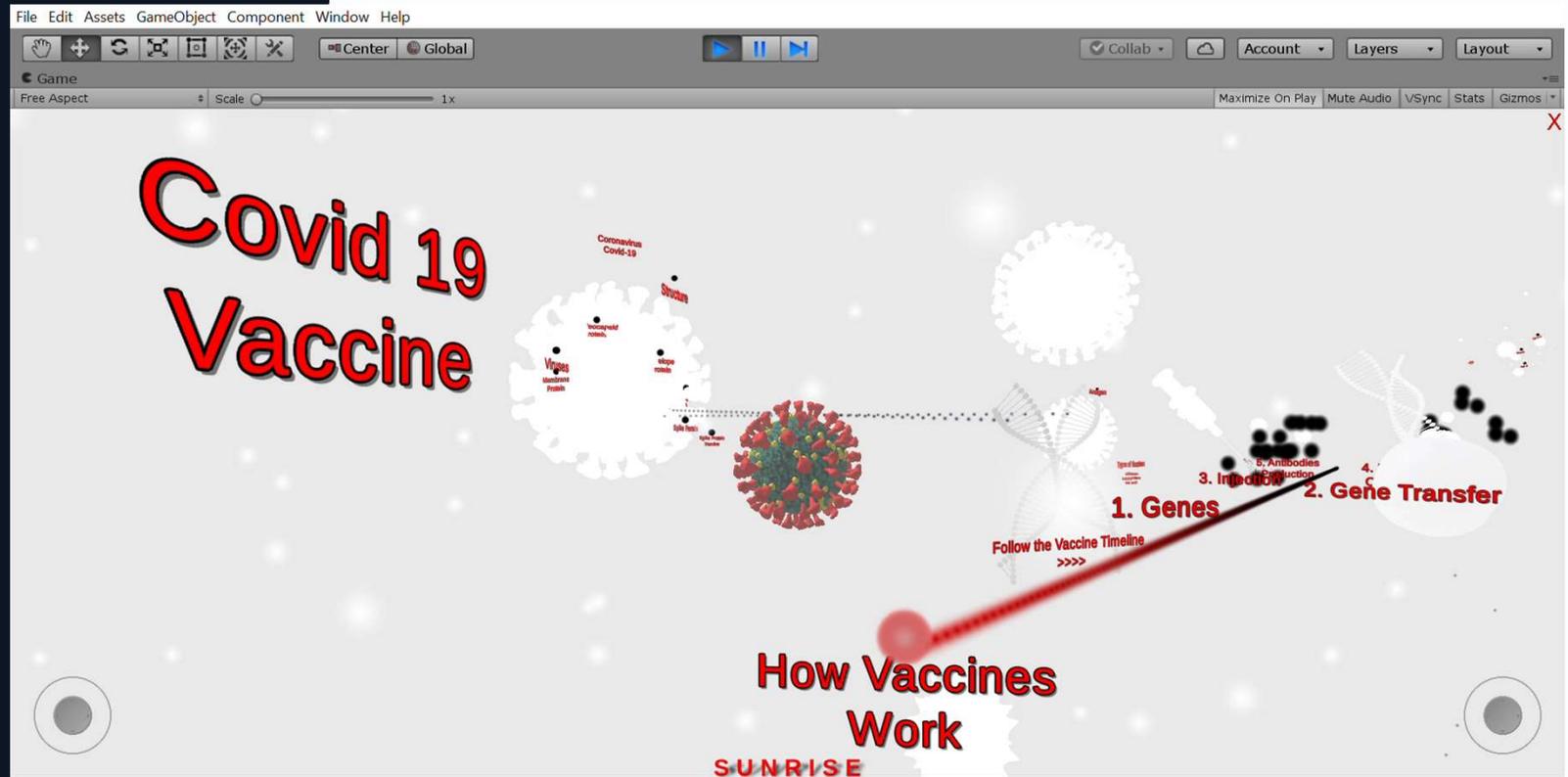
Programs Emailed Directly to Teachers

Learning takes on a new immediacy.

- In what circumstances do teachers realize the most success?

- Is it fully integrated into the curriculum, or is it just "technology?"

- In what context does it best enhance student understanding of subjects?

- Can a Just in Time model of education fit into a teacher's schedule as easily as a YouTube video, or does it just create more work like everything else?

A Work In Progress.

## The important classroom questions are still to be answered.

Main Challenges

- **Poor Curriculum Integration**

- Teacher technology comfort and professional development

- Technical rather than pedagogical focus

- Not relevant to teaching context

- Cost

- Wi-Fi Access

- Chromebook Versioning

Into the 3D Learning Future

3D learning is available to schools today.

- Subscription Basis
- 200+ Programs
- Hundreds more in progress to supplement curriculum
- Pilot Testing in Schools
- Curriculum Mapping
- Teacher Guides

www.sunrisevr.com