RH King Academy

OCULUS RIFT

Virtual Reality in the High School Setting

Introduction

In September 2017, RH King Academy in the TDSB brought Virtual Reality (VR) in form of the Oculus Rift as a next-generation educational tool. The goal is to provide students with immersive experiences that take both them and their learning beyond the realm of the physical classroom. The tools and applications for this technology are numerous and are currently being tested by both staff and students with the aim of helping new users find the best tools to use in their own classes or libraries. As the hardware and software is tested, the VR experience will expand to include new headsets, a dedicated computer lab, new peripherals, and software designed to appeal to all subjects and disciplines.

For more information, contact Brian Wilkinson (Library ACL at RH King Academy) at (416) 396-5550

The Hardware

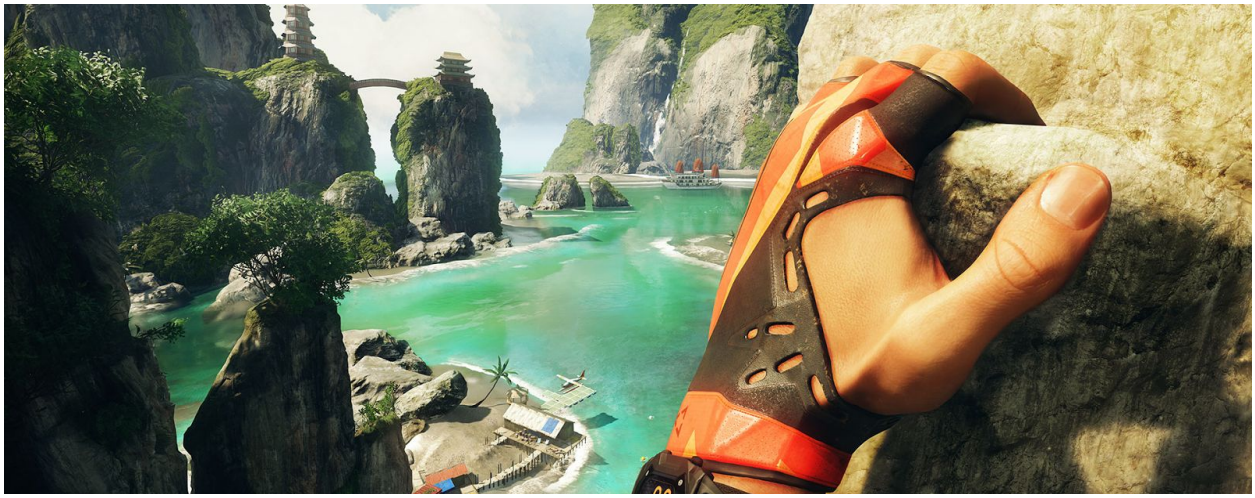
For the best Virtual Reality experience, the following specifications are encouraged:

- Oculus Rift/HTC Vive/Samsung Gear headset
- Oculus Touch Controllers
- At least two sensors
- A computer capable of running the software (**note, this means a custom built computer. Our school has the first of its kind, but it is TDSB imaged and sourced so should now be more readily available*)
- A dedicated space of at least 5x7 for best experience

The Software

So, what does it do? What does it offer?

Well, would you like to take a virtual tour of the White House with Barack Obama? That's available. Maybe you want to explore the International Space Station? You can do that as well. Create art in a 3D environment? Have at it! The experience is so realistic you'll actually feel as though you've been transported to a totally different place. Some students, standing on rooftops and cityscapes, have been worried they'll fall off even though they have both feet planted firmly in the library space. It feels *that* real.



With the purchase of the Oculus Rift and Touch, there comes a wide selection of free apps and experiences to get started. Additional apps and experiences may be purchased directly through the Oculus interface. It should be noted that there are frequent sales which will drive down the costs from time to time.

There is no average price app with a range from free to under ten dollars to a cap of around $57.99. The Oculus Store occasionally offers bundles of more desirable apps at a reduced cost.

See below for a description of all **tested** apps. Descriptions include possible applications, limitations, positives, negatives, and overall value in terms of a VR experience.

FREE:

First Contact - Short, average experience is about 10 minutes

This experience will welcome all new Oculus users the first time they get set up with their units. It's a short bit where a cute robot teaches you how to use your controllers to interact with a 3D environment. It's a great learning tool for those new to the tech and a great way to demo the capabilities of the software.

Oculus Dreamdeck - short, average experience is about 5 - 10 minutes
Another introduction to the world of VR, this is a short series of passive vingettes. You begin in a submarine, meet some friendly animals, encounter an alien on a small planet, watch a small city made of paper, and even have a scary encounter with a t-rex from the Jurassic Park series. Great introduction to the world and possibilities of VR.

PAID:

Tilt Brush ($22.99) ***Must-have app!***

This app allows you to draw, paint, and design in a 3D digital environment. You have a wide selection of tools available that include a spectrum wheel, different brushes, special effects, and different environments in which to create your projects. Some of the environments are basic and include a table or pedestal to work on while others push the limits and let you draw and design in outer space.

USES: Art, English, Computers, Design
This is an amazing tool for art classes, especially those that deal in digital design. It teaches creative artistry as students need to move beyond the 2D plane to animate and draw. It's easy enough that beginners can quickly pick up on how to use it while offering enough depth for serious artists to get really creative.

For other classes, this can be a new take on how students create projects like dioramas, displays, or as an alternative way to present a theme or idea generated in studied texts.

The Climb - $57.99, often available as part of a bundle.
This interactive experience allows users to experience free climbing in different environments around the world. You are able to go hand over hand to scale objects and then take a look at the gorgeous scenery and backdrops. This isn't the app for you, however, if you're afraid of heights as it all looks very real.

USES: Geography, physics, phys ed
The ability to explore strange environments, assess how our bodies interact with it, and the chance to experience a very dangerous hobby from the safety of our schools has a great deal of appeal to it. Plus, it's *really* fun.

Google Cardboard

Many libraries may have already invested in VR technology that all falls under a banner or type similar to that of Google Cardboard. These are devices that are cheap (some of which

are made of actual cardboard) and simply take your smart phone or similarly sized device and have a user insert that into the headset. The phone itself then becomes a VR delivery service for cheap.

‘Cheap’ is the operative word here. The experience is great, and may even be thrilling, for first time or casual viewers. It’s even appealing as a Cardboard set-up may only run about $25. It has been used by various schools and groups as a way to do virtual field trips, look at panoramic photos, or even have passive VR experiences that have the user follow the path of a camera. All of these apps and experiences can still be had on a Oculus-type set-up, but the level of detail and immersion offered by Oculus can’t be replicated on a smaller scale.

For one, Oculus makes use of sensors to your position in space. You can walk around the environment, stand, sit, and move to have a fully 3D experience with the help of the sensors placed around the room. With the addition of Touch controllers, some apps allow you to have arms and hands that follow your movements. You can pick up objects, interact with them, rotate them, and even create new objects in a digital environment, unlike the kind of experience offered by Cardboard.

The final con against Cardboard would be the ability to provide devices to students who don't have smartphones capable of installing and running the software required. Some students may not have the memory space, others might lack parental permission, and others may have phones that are incompatible. There is also the likelihood that some simply don't own a phone. Several companies will sell you phones/devices for this purpose, but these quickly become even more expensive than a Rift set would be on its own. Research by King staff showed that Best Buy would sell a set of about 20 units for roughly $10 000 US using outdated smartphones with limited capabilities.

The Price

When we began the Oculus Project, the combined cost for the headset and controllers was approximately $850**.** The price has since dropped to **$550** though board vendor contracts may improve that price even further.

The cost of the computer is significant. We sourced the computer here for a cost of between **$1200-$1500**. Approximate total cost for complete set (Oculus, Touch, sensors, Xbox controler, remote, and computer): **$2000**

The Future of Education

After a short demo session, one of our teachers was so blown away by the experience that he constantly referred to it as 'the future of education'. He then insisted that his class be amongst the first to come down and try it out. Every single student, teacher, and administrator who has experienced the Rift and its possibilities asks the same question: how can we use this?

The honest answer is that in order to fully appreciate the scope of this technology, you need to try it for yourself and think about how it can be used to help the students at your school. The software guide above, created and generated by the staff and students at RH King, is a great beginning to see the possibilities of what it offers. That said, there are many new applications being created that make use of this technology and allowing your own staff and students to discover them will yield incredible results.

If you would like to try it out, you can contact Brian Wilkinson at RH King Academy at (416) 396-5550 x20020 or through email at brian.wilkinson2@tdsb.on.ca. Come prepared to be blown away!