

# VIRTUAL REALITY

A REVIEW OF THIS EMERGING TECHNOLOGY

OLTD 509  
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## VIRTUAL REALITY...

### A CONCEPT BORN LONG AGO...

The history of VR could be an entirely separate assignment, however, I thought it prudent to briefly touch on it. There seems to be some debate about who exactly 'invented' VR and regardless of that debate, it's been around for much longer than one would assume. "When virtual reality was first invented depends on your definition of when it was created as an idea, versus a basic VR image, versus the headsets, like the Oculus we use today" (VR. Space, 2022). The concept was discussed in the 1930s and the first VR headset was invented in the 1960s, and that was all before the term 'Virtual Reality' was coined in the 1980s. For the rest of this assignment, I will focus on VR as we've come to know, experience and understand it today, and how it's been used in some schools across the globe.

(Fun fact – while doing this research around when exactly VR was invented, I found out that Nintendo was founded in 1889 in Kyoto Japan and was originally a card game)

## WHAT IS VR?

Virtual Reality as we know it today is the use of computer technology to create a simulated environment which the user can explore in 360 degrees. The user puts on a headset which “removes vision of the real world and provides video to each eye allowing for depth of vision. This technology is then supported by head and body tracking to connect the virtual world to what the user is seeing” (Research Guides: Virtual Reality in the Classroom: Home, n.d.).





## IS VR EMERGING TECH?

Even though virtual reality has been around for the past few decades it's still considered to be an emerging technology because it's still in the process of being adopted by a wider audience. VR hasn't had the chance to be labelled a disruptive technology yet because it hasn't had the chance to 'disturb' the majority of the population, or companies, or industries like the education system. "Virtual reality technology is evolving and being implemented into everyday life at an incredibly fast pace. While its most accessible and popular application at the moment is to play video games, VR is quickly expanding into both the home and workplace for myriad different uses. Each day, VR developers are coming up with new and fascinating ideas about how to work virtual reality into our lives." (VR. Space, 2022). In many ways, VR is still on its breakaway, especially VR emerging into schools and being used in the classroom. Like any emerging technology as time passes the costs will improve and virtual reality and its content will be accessible to more and more people, thus improving the adoption rate.



# VR IN SCHOOLS

HOW WOULD A TEACHER IMPLEMENT  
THIS TECHNOLOGY IN THE CLASSROOM?

Diffusion of VR in the classroom  
according to Marlee...

**1.** Carefully research, compile evidence, and be familiar with how other schools are implementing VR in their classrooms

**2.** Create a brochure to be handed out to parents explaining potential uses for in-class use of VR. (benefits, opportunities and experiences available to students) – Admin approval.

**3.** Ask the Principal for permission/approval to create a survey that parents would complete anonymously. Possible questions would include:

- Are you familiar with VR and its potential uses for educational purposes?
- Have you or your child experienced VR?
- Would you be comfortable with your child using a VR headset in the classroom for educational purposes?
- Are you hesitant for any particular reason? Do you have any questions particular to your child using a VR headset in class? Please explain.
- Would it be helpful to you to have more information on the specific ways VR would be used in the classroom?
- Do you think VR has the potential to enhance your child's learning experience?
- Does your child have any health concerns that may restrict their ability to use VR?

**4.** Make an appointment with the principal to share and discuss the results of the survey and seek advice on how best to move forward. The principal may be on board, however, they may need district approval as a class set of Virtual Reality headsets would be very expensive. If I had to have a meeting with district board members, I would think very far in advance about the potential barriers and challenges that would come to the surface. I would be over-prepared to answer any and all questions about parental support, the safety of students, the security around storing the VR equipment and potential costs – assuming that would be one of the biggest I\$\$UES.

**5.** Getting the Green Light – After the district agrees to purchase a class set of 25 VR headsets and controllers (I would have even settled for 5 or 10) I would do a 'Pilot Test' year where I would take on the responsibility of securely storing the VR headsets, keeping them updated and keeping them safe.

**6.** Information Session for parents after school – encourage parents to come along with their curiosities, questions and willingness to put the headsets on themselves to give them a try. During this session, I would explain how the VR headsets would be used and I would also talk about how much time would be spent using them.

**7.** Pilot Test:

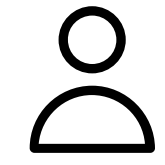
- Showing students how to handle the VR Headsets and how to properly use them in the classroom environment – make VR rules chart as a class)
- Virtual Field Trips (art galleries, historical sites, museum exhibits)
- Science Lessons (Dissections, observe microscopic organisms)
- supplement lessons with experiences and extension activities (learning about oceans – swimming with sharks in VR, learning about space – flying through the planets, learning about dinosaurs – walking with them, etc)
- Virtual Physical Education Activities
- Games – puzzles, mini-golf, etc.

**8.** Demonstration – Invite other teachers to the classroom to see how students are using and learning with VR. Teachers will have an opportunity to observe the classroom environment while VR headsets are being used, and have an opportunity to talk to students and ask questions about their experiences with VR.

**9.** Training Workshop – I would conduct an in-service workshop where I would show teachers the operational details of successfully implementing a VR experience in their classrooms.

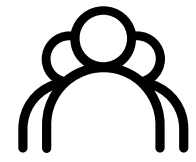
**10.** Collect feedback from students, parents, and colleagues. This is an important step because in order to get continued support from the district, whether it's to update the technology or replace a headset, the district usually wants to know that the technology is worth investing in and that there's positive feedback from students, parents and teachers in regards to the incredible learning opportunities students are experiencing with Virtual Reality. I might consider reaching out to the media if I thought it would be beneficial to the implementation and adoption operation.

## BENEFITS



### STUDENTS

Virtual field trips to museums and historical sites, special needs support, language learning, creative collaboration, and ability to experience the impossible.



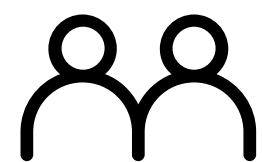
### TEACHERS

Student engagement, differentiated instruction, professional development and the opportunity to work with cutting-edge technology.



### ADMINISTRATION

Increased access to educational resources, staff development opportunities and savings in cost.



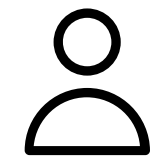
### PARENTS

Students' engagement and retention of educational material, safety and added costs of field trips ( VR eliminates transportation costs and safety) Parents enjoy that their child gets the opportunity and exposure to a new and innovative technology.



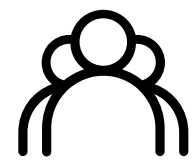


## COSTS/CHALLENGES



### STUDENTS

VR can sometimes cause eye strain, headaches or a feeling of dizziness so the teacher would have to closely monitor how the VR headsets are affecting their students (cyber sickness) There's also the safety of the VR equipment. There would need to be a plan to successfully implement this technology so that students feel comfortable handling and working with the VR equipment.



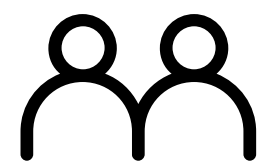
### TEACHERS

Time and effort are required to integrate VR in the classroom. Invest time in professional development in how to properly implement VR into the classroom, health and safety of students.



### ADMINISTRATION

VR equipment costs, teacher training and technical support, maintenance of VR headsets and controllers, equity issues ( is VR inclusive and accessible to all students regardless of learning styles or abilities?)



### PARENTS

Parents – monitor child's health and safety, screen time concerns, cost of home VR equipment if their child needs more practice or support.





**VR WITH BENEFITS**



There are so many incredible opportunities that students will be able to experience with Virtual Reality. “Beyond engagement, VR allows students to explore, experience, and become immersed in virtual environments”(Research Guides: Virtual Reality in the Classroom: Home, n.d.-b). VR in the classroom provides students with the opportunity to absorb the content in a different way, and by providing this innovative way of exploring content, students are able to better comprehend the material and in some cases retain the knowledge for longer periods of time. “By immersing students in a VR lesson, it creates more associations between subjects and environments than other teaching methods- helping them to better understand, engage with and remember concepts” (Developer, 2022).

Virtual field trips alone are an incredible feature. It would be amazing to take students to explore the Colosseum in Rome or to the Titanic at the bottom of the Atlantic ocean. Imagine going back in time to the end of the second World War to explore the secret annex of the Anne Frank house (available on the Oculus Quest) after reading her diary in a history class- it would be a memorable experience. There’s also the added benefit of districts saving money along with a worry-free day for teachers as they wouldn’t have to do the never-ending headcounts, making sure everyone is together and safe. “Virtual field trips are not limited by distance and are typically more cost-effective than traditional in-person field trips. They eliminate the need for transportation, decrease lost instructional time spent on travel, and involve fewer safety concerns”(Virtual Field Trips: Benefits and Resources for Schools | EBSCOpost, n.d.).



# VR WITH CHALLENGES

## COST

Investing in a class set of Virtual Reality headsets and controllers would be an expensive endeavour. “The best VR headsets for schools… can blow the roof off the physical learning environment to send students anywhere in the world …including inside the human body, underwater, to the moon, and so much more” (Edwards, 2022). However, those opportunities come at a very high cost. Luke Edwards wrote an article in the Tech and Learning Magazine, where he weighs the pros and cons of a few VR/AR headsets for schools. He mentions several VR companies including RedboxVR, ClassVR, OculusMetaQuestVR, and VR Sync, all of which have headsets ranging in price from \$329.00 to \$499.00 (per headset) So if I wanted a class set of 25 headsets, it would cost anywhere from \$8,000.00 to \$12,000.00 and that’s not including the charging cart I would need, nor the warranties which would also have to be considered or even the price of the lessons, content and activities.





## CYBER SICKNESS

I came across this term while researching this topic and decided it's a term that's been coined to describe what happens when the user is exposed to too much screen time. "cyber sickness is a form of motion sickness that occurs as a result of exposure to immersive extended reality environments, such as virtual reality... Depending on the immersive content, 20%-95% of users typically experience some form of cybersickness, ranging from a slight headache to an emetic response. The most common symptoms include general discomfort, headache, eye strain, stomach awareness, nausea, sweating, and disorientation" (Cybersickness in Virtual Reality Versus Augmented Reality, n.d.). This would be a health and safety concern. I can understand parents being hesitant to have their children participate in VR activities if cybersickness could be a possibility, however, I would have to interject and point out that everything takes some getting used to, everything in moderation, along with the fact that we wouldn't be spending 'extended amounts of time' in VR. Again, I could see this being one of the biggest hurdles to overcome with parents. Many tech developers of VR companies are already solving some of these issues.

**FIELD TRIPS,  
ACTIVITIES & DANCING!  
OH MY!**



## EXPERIENCING THE TRENCHES

Class VR published a downloadable resource entitled “50 Creative Ways to use ClassVR” and within this resource was a History lesson geared towards grades 4 and 5. The lesson was called ‘Experiencing the Trenches’ where the learning outcomes were – to understand and explain some of the events during WWI and to write in first person from the perspective of a soldier. The context of this lesson along with the specific practical lesson details can be found in this resource, however, I wanted to share what the impact on learning was for these students according to the teacher Anthony Issac who expressed “As 10-11-year-olds, they really struggled to step into the footsteps of people that lived over 100 years ago. ClassVR helped the children to engage with the task and gave them inspiration for how to describe the sights, sounds and smells of the trenches. The children were astonished at what the soldiers had to go through even though we had already covered trench life as part of our World War topic and had a brand new understanding and empathy for the millions of courageous soldiers that gave their lives to fight for this country. This immersive nature of VR helped them think more creatively and their work was imaginative and detailed (50 Creative Ways to Use, 2022).







## VR LANGUAGE LEARNING

I came across many different VR language learning programs like ImmerseMe, Mondly VR, and Virtual Speech and most of these programs have the ability to launch [the user] into an environment where you have conversations with virtual characters ... which helps to boost [the users] self-confidence” when it comes to speaking in real life situations (Wesley, 2018). It would be so cool to go to a fancy restaurant somewhere in Europe and practice ordering off the menu, and practicing small talk with the server before actually setting foot into the country. I could have used any of these programs before spending a year abroad in China where I seriously struggled for the first few months.

## DANCING VR FITNESS GAMES

I bought the Oculus Quest 2 during the Covid lockdown in 2020 and to this day use it for physical activity and dancing! I work up an actual sweat playing BeatSaber when I'm after the Expert level wins. "Dancing is an expression that many people may find inconvenient or stressful to get involved in ... and virtual reality is a rising technology that is capable of giving people a fully immersive experience helping to solve some of the issues that they have with taking traditional dance lessons at a studio such as scheduling, accessibility, privacy and lack of confidence" (Beat, 2018) Now there are VR dance lessons available and my goal of getting my partner to properly slow dance is more attainable!





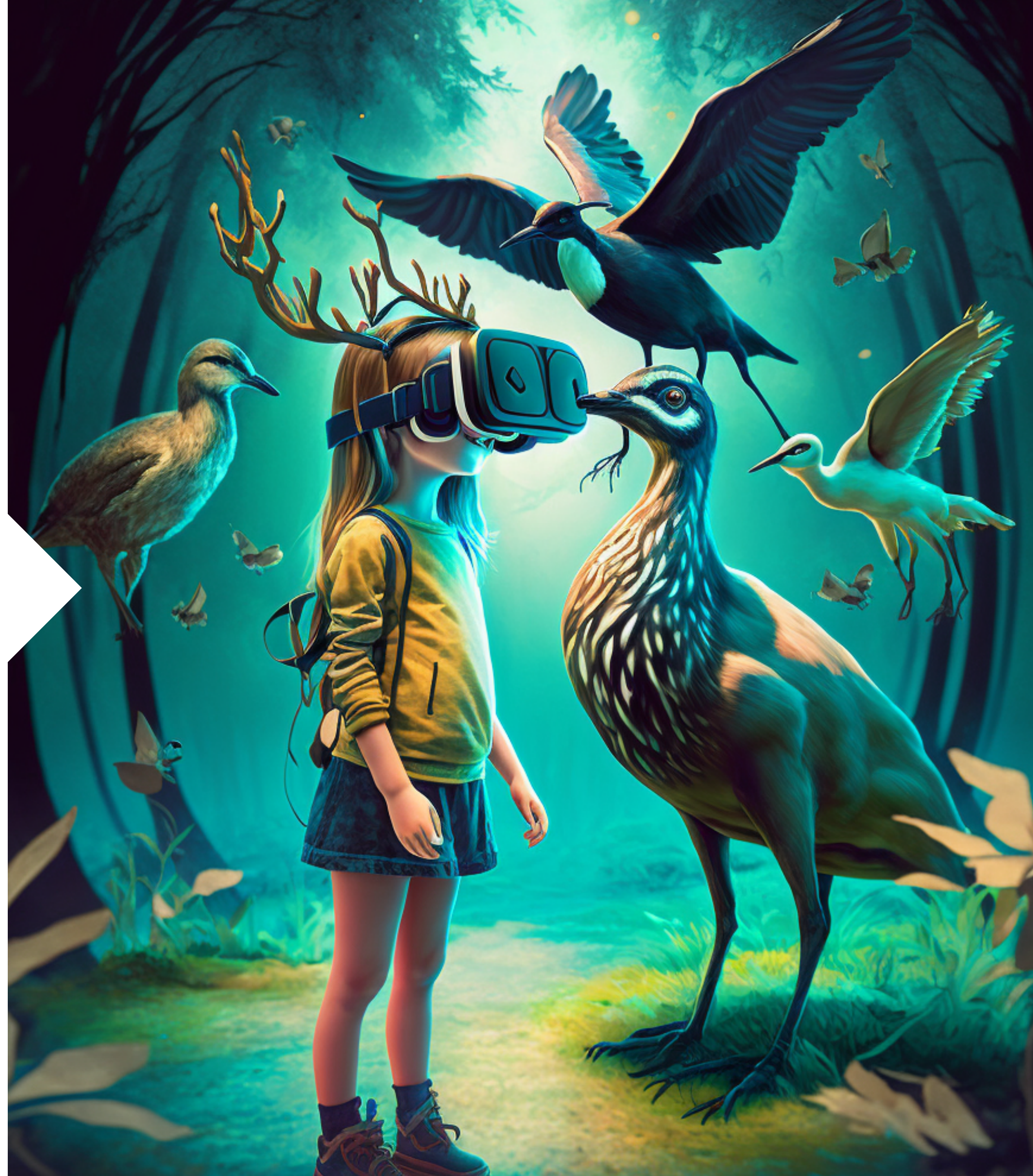
# OVERALL SYNOPSIS OF TECHNOLOGY

IS IT WORTH ATTEMPTING TO IMPLEMENT THIS TECH? ALL THINGS CONSIDERED?

## YES!!! 1000 TIMES YES!!!

Let's not forget, this is still cutting-edge technology. In my opinion, there aren't enough speed bumps and hurdles for school districts to give a definitive 'no' to this emerging technology. There's a whole lot of information to consider. The biggest challenges will be experienced by the teachers taking on the 'implementation process' and 'pilot tests' as there aren't a lot of 'go-to' people or safety nets on site when VR technical problems arise. The way in which those problems are solved will also drive how future teachers consider implementing VR into their own practices. So it's exciting – but it comes with added pressure for those individuals.

I don't think it's a matter of "if" VR is implemented in the classroom, but "when". Each school will have to decide for itself if they want to be on the cutting edge or late to the game.





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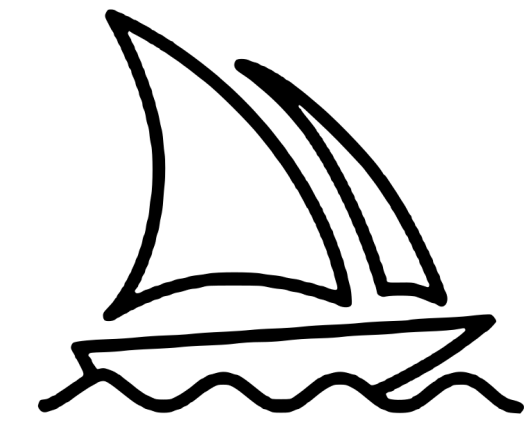
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## Imagery

All imagery created using Discord's Midjourney AI



MidJourney Bot

Prompts used in creating images from Midjourney:

Students, girl, boy, class, wearing virtual reality headsets, magical, forest, ocean, whales, pilot, bright colours, fun, smiling, Alice in wonderland, Titanic, outer space, flying, explore, museum, ancient times, aquarium, glow, dancing, creative brainstorm