HOW AND WHY NOT TO BE AFRAID OF VIRTUAL REALITY

or

This time a real **journey to other worlds,** and especially **how to get back from them**

A practical guide for all curious users, especially parents, guides and teachers

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We like to make fun of ostriches and wonder how in a world of ruthless natural selection they have managed to survive for so long.

Often, however, we prefer to stick our heads in the sand and hope that the storm, danger, or other change will simply pass, we'll get our heads out of the sand, and everything will be back to the way it was.

But just as we eventually escaped the effects of the printing press, radio, television, the internet and the smartphone, so too will the wave of virtual reality technology roll over us - it's only a matter of time before it does, and how quickly and how intensely.

The printing press undoubtedly helped unleash national passions leading to the previously unimaginable horrors of the First World War. Radio and film undoubtedly helped to propagandistically exacerbate hatred against groups of people, leading to the then even more unimaginable horrors of the Second World War. The mastery of the energy of the atomic nucleus led to the

whole world being minutes away from nuclear war. The Internet gave birth to social networking and targeted information campaigns that eroded the very foundations of democracy based on the free, informed choice of self-governing citizens. The smart phone allows for all-day intensive surveillance in addition to all the knowledge of humanity in your pocket. Even virtual reality hides great dangers and pitfalls in addition to its potentially breathtaking educational benefits. They can be prevented, but we need to be aware of them in the first place.

Thus, the book is for those who do not want to stick their heads in the sand in front of virtual reality. Thank you, and hopefully it will help you saddle virtual reality so that it serves you, and not the other way around.

I will be glad if you write me your ideas and thoughts on this topic, more heads know more - the ancients knew that without big data.

And a bonus for those who have read this far: ostriches don't really bury their heads in the sand when faced with a threat. They're not that stupid either. What's scary, though, is how many formally educated people believe it.

Fortunately, at least this can be changed - in virtual reality you can see an ostrich in its natural habitat up close, including how it handles real danger.

WHO

This book is for those who would like to experience the possibilities of the new virtual reality technology, especially for **educational and self-development purposes. It** can therefore serve **both curious users and teachers of** upper primary, secondary, vocational and higher education, as well as **parents** and other educators who would like to experience the wide potential of the pedagogical possibilities that the new virtual reality technology brings.

WHY

Virtual reality represents a huge opportunity for the education system, as it allows users to enter pre-prepared alternative worlds that have great pedagogical potential using appropriate methodologies. As part of the evocation of a given educational topic, it is possible, for example, to experience walking on the moon in virtual reality, to look out from Mt. Everest, to visit ancient Egypt or Rome directly, or to see the Louvre or the Prado in detail and in peace.

As with any new technology, this powerful new tool must be approached with respect and caution in order to maximize its undeniable benefits and minimize the risks that being in virtual space entails. To this end, this basic methodology is written.

The basic premise for working with virtual reality in an educational environment is that students should enter an interesting different world to **learn something and take their new knowledge and experiences back to the real world.** In the same way that Honza went into the world to come back home from it more experienced and richer, virtual reality visits should be primarily for enrichment and subsequent return and application in the real world.

Virtual reality can serve as a powerful evocative tool for a wide range of important educational topics, but it requires responsible preparation before entry and sufficient reflection after exit. Without these steps, it can easily become just a carnival attraction with shooting galleries, haunted castles and roller coasters.

The benefits of being able to transport a teacher, a student or a parent to any place and time on Earth (indeed, in the universe) and experience virtually any story there as a direct observer or even actor are potentially transformative. This is why it is good to recall the wave of optimism, even euphoria, in educational circles that the invention of television (children will watch interesting documentaries) or the Internet (children have information at their fingertips, interconnectedness will increase empathy) has generated. Without a responsible methodological approach, the potential of virtual reality may remain unfulfilled.
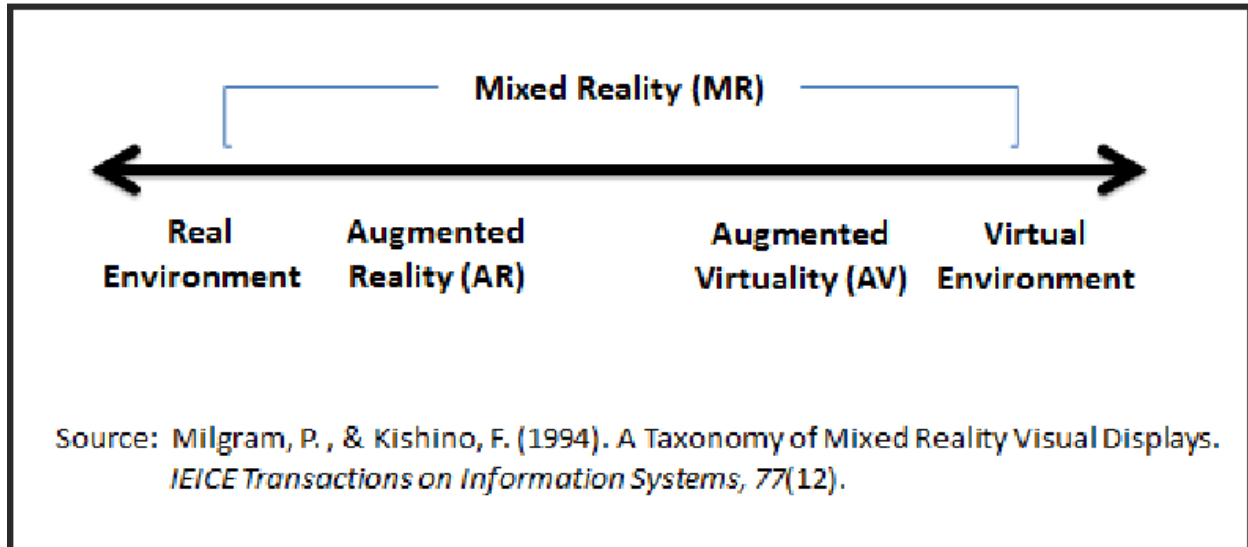
Conceptual and theoretical background

If you are primarily interested in the practical application of VR technologies in education, skip this section - it is intended primarily for those more interested in the transformative potential of VR and AR technologies in the context of the theoretical concept of the new renaissance.

Augmented reality (AR), virtual reality (VR) and mixed reality (MMR) are groundbreaking technologies whose educational potential remains untapped in schools. Existing international studies demonstrate that the use of AR, VR and MMR elements leads to better and deeper cognitive retention and memorization - in particular, 3D models of animals, personalities, monuments or landscapes are more memorable than 2D or text-only representations (Krokos et al., 2018). The coronavirus pandemic has further encouraged the rampant development of AR, VR and MMR technologies and related software, which will soon become a standard part of the technological equipment of companies, homes and schools.

From an educational point of view, it is crucial that, in addition to a more effective presentation of classical educational content, these technologies enable transformative immersive experiences of various kinds, from the spectacular in the form of the aforementioned moonwalk to the atmospheric in the form of a visit to ancient Egypt to the mathematical in the form of a flyby of a fractal field.

Within AR/VR/MMR, it is easy to create or use shared scenarios where a student can find themselves right next to their favorite K-pop star on stage, sitting next to the CEO of a large corporation, or experiencing what it is like to be a victim of bullying or torture. If this opportunity is seized, education has a unique chance to move towards modern learning technologies and processes that are and will be critical to success in the 21st century.

Source: Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. *IEICE Transactions on Information Systems, 77*(12).

With the rapid development of technology, the use of AR, VR and MMR elements will become more and more common, and we will be able to choose our position on the continuum between the real world and total virtuality according to different situations.

- **Augmented reality** on the continuum means any superstructure over perceived reality. It starts with classic sunglasses and loud headphones with a permanent soundtrack, and continues with glasses that allow you to instantly project information about the objects you're looking at onto the glass.

- **Augmented virtuality** is the next stage on the continuum, where you are primarily in a virtual world, but it is mapped to the real environment of a room with walls, doors or a table. So you can be in the virtual environment of a German bunker during WWII and actually pound your fist on a table or wall.

From the perspective of evocative and experiential pedagogy, AR and VR technology is transformative in terms of safety, where nothing can realistically happen to students, for example, during experiments in chemistry or physics.

From an environmental point of view, the use of AR, VR and MMR is appropriate as it saves material and resources in general.

In terms of equal access to education, freely available AR, VR and MMR teaching materials are important tools that can help to compare the level of knowledge among students.

<u>Basic references to concepts and theoretical background:</u>

Dejian Liu, Chris Dede, Ronghuai Huang, John Richards (eds.), *Virtual, Augmented, and Mixed Realities in Education*, Springer, London, Hamburg, 2017.

Zeynep Tacgin, *Virtual and Augmented Reality: An Educational Handbook,* Cambridge Scholars Publishing, Cambridge, 2020.

Mobile VR in Education: from the Fringe to the Mainstream
Thomas Cochrane (Centre for Learning and Teaching, Auckland University of Technology, Auckland, New Zealand), International Journal of Mobile and Blended Learning (IJMBL) Vol.8, (No.4)
https://www.igi-global.com/article/mobile-vr-ineducation/163900

Eric Krokos, Catherine Plaisant, Amitabh Varshney. Virtual memory palaces: immersion aids recall. *Virtual Reality*, 2018; DOI: 10.1007/s10055-018-0346-3

The Role of AR and VR Technologies in Education Developments: Opportunities and Challenges, IEEE, Hadi Ardiny; Esmaeel Khanmirza, 2018 6th RSI International Conference on Robotics and Mechatronics (IcRoM)
https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8657615

Using Augmented Reality in the Classroom
by Becton Loveless
https://www.educationcorner.com/augmented-reality-classroom-education.html

Practical part:

A)   Equipment

VR glasses and hand controllers

For the use of virtual reality in schools, I recommend using the standard **Oculus Quest 2** device, priced at CZK 13,000, available for example at www.heureka.cz. Included in the package are the virtual glasses, two hand controllers and a basic introductory software package pre-installed in the glasses.

The main advantage of this device is that it **doesn't need any computer to function, nor any cables or other interconnections** - just a connection to a wifi network and a standard USB-C mobile charging cable, which is included in the package.

All downloaded data is stored directly in the virtual goggles, which are easy to transfer anywhere. Once downloaded, most apps don't even require internet access. The goggles and controllers together weigh 0.5 kg, making them easy to carry and use outdoors in good weather.

For greater user comfort, it is advisable to purchase a better grip on the head, the so-called Elite Strap. Particularly in a school environment where pupils need to pass the glasses frequently, easier handling and a more secure hold on the pupils' heads is a great benefit.

If you will be using virtual reality for physical education, which is certainly recommended, you can also buy an inexpensive set of internal seals for the goggles for hygiene reasons, which students can replace at the same time as the goggles if they get too sweaty while using the set.

Connection to computer (for visual inspection, audience)

In a teaching context, it is useful for the teacher to see at least a cut-out of what the student sees in the glasses on the computer (for example, so that he or she can advise on the way forward).

On a given computer, just type www.oculus.com/casting **in Chrome**, and if the computer and the virtual glasses share the same wifi network, you will start to see on the computer what the student sees in the glasses.

There is a special screen sharing button in the virtual glasses menu (arrow button at the bottom of the bar in the main menu, then the Cast button at the top left, then the Computer button) - if it is turned on, you can see exactly what you see in the glasses on the linked computer.

Space

Since no cables are needed, any free space can be used - the gym, the school yard, a meadow in the park, a classroom with cleared desks.

At the start of the virtual glasses, everyone is asked to mark out a safe playing area around them. The app will then always warn the student or pupil if they leave this zone. It is advisable to ensure that no one else enters the safe play area.

Controls

Virtual helmet control:

On the right side of the helmet there is a button to turn on - you need to **hold** it down for **3 seconds to turn** on the goggles. To turn on the goggles, the Oculus logo appears and the software starts to load slowly.

There is a volume control at the bottom right of the helmet.

On the left side of the helmet there is a hole for the charging cable. Through the same hole you can connect the helmet to your computer via the Oculus link cable.

Drivers

The controllers are made for the right and left hand **- it is very important not to confuse them!**

When gripping the remote control with the correct hand, the user should have their index finger on the top large button **(called the trigger)** and their middle finger on the second large button on the handle **(called the grip). The** thumb should rest on the small joystick **(called the joy stick)** at the top of the controller and should also reach the two larger buttons next to the joystick.

Most applications use a control where the user selects from a menu by pointing to the menu item and pressing the top **trigger** button**.** This acts as a sort of left-click equivalent of a mouse. The bottom "grip" button is then typically used to pick up and manipulate objects.

Very important is the inconspicuous **black button with the Oculus logo under the joystick.** Press this button to return to the main Oculus menu at any time, so you can, for example, immediately close the app you're currently running (the Quit button appears on the top right). Holding down this button will centre the screen.

B)   Examples of basic concrete applications in specific subjects:

IMPORTANT SAFETY NOTICES:

NEVER LEAVE STUDENTS IN VIRTUAL REALITY FOR MORE THAN 20 MINUTES.

AFTER SPENDING MORE THAN 20 MINUTES IN THE VIRTUAL SPACE, TEMPORAL MOTOR DISTORTION AND, IN EXTREME CASES, THE SENSATION OF GAGGING CAN OCCUR.

IF ANY SYMPTOMS OF NAUSEA OR MOTOR FAILURE APPEAR, THE VIRTUAL HELMET MUST BE REMOVED IMMEDIATELY!

FAILURE TO FOLLOW THESE GUIDELINES CAN LEAD TO SERIOUS HEALTH CONSEQUENCES.

ACCORDING TO RECENT RESEARCH, RESILIENCE TO THE NEGATIVE EFFECTS OF VIRTUAL REALITY INCREASES WITH TIME, MUCH LIKE THE RESILIENCE OF SAILORS TO SEASICKNESS. DIFFERENT PEOPLE HAVE DIFFERENT LEVELS OF SENSITIVITY AND RESILIENCE, THIS MUST BE RESPECTED AT ALL COSTS.

Download new apps

Applications can be downloaded directly from the virtual glasses environment (Shop button) or from www.oculus.com. The average price for a good quality app is about 25 EUR. If this amount is divided by the number of students or pupils (and potential hours spent in the app), it is a relatively negligible cost in contrast to the methodologically sound benefits of being in the virtual space.

Geography:

Wander app

This application is suitable for beginners as it is mostly static and does not cause a feeling of dizziness. However, it allows you to virtually walk around a real world map based on Google Maps - so you can easily look anywhere from Kabul, Havana, North Korea, Los Angeles or Kinshasa, all in HD quality with a 360 degree view.

The app allows for shared walking - so a teacher or parent can guide a student through the pre-prepared places and comment on them.

Older students can prepare a report for others in the form of a virtual tour of a place of their choice with expert commentary.

Design of a detailed lesson plan with the theme "Alps" with the Wander app

Homework before the project:

Each pupil or student chooses a place in the Alps and finds out as much information and curiosities about it as possible, so that they can guide the rest of the class through the place. You can use the Google Earth app or earth.google.com, where you just type in the name of the place. The Wikipedia page for the place in **English** is also a good initial source to get started.

Space requirements:

Each pupil or student involved needs a minimum of 4 square metres of free space around them, ideally 9 square metres.

Hardware requirements:

Each participating student needs a set of virtual goggles and Oculus Quest 2 controllers connected to a wifi network.

Software requirements:

Wonder app available directly from the Oculus store in virtual goggles.

0-10 minute:

Introductory motivational presentation by the guide (teacher, parents) about the historical importance of the Alps, their formation, their role in Europe today.

10-15 minutes:

Familiarity with virtual glasses, focusing. Familiarity with the controller and the different functions of the buttons. Launching the Wonder app.

15-20 minutes:

Familiarization with the application environment and its control. Testing the movement between locations, working with the map.

20-35 minutes:

Pupils or students take it in turns to guide others in virtual reality to their chosen location in the Alps from the homework. Along the way, they are introduced to the location. The guide (teacher) helps to guide the way in virtual space on a world map. After time has elapsed, everyone takes off their virtual helmets.

35-40 minutes:

Reflection on the activity, **why a real trip is better than a virtual one,** which of the places you visited you would like to see for real, which information was most interesting.

40-45 minutes:

Hardware cleaning, room cleaning, time reserve.

An alternative option in Wander:

The whole class flies in virtual space from their school to Venice, the teacher guides and comments on the journey according to a prepared plan. They can fly at different altitudes and comment on the physical geography of the Alps, the strategic importance of the Brenner Pass or the rising sea levels in the endangered Venice.

Brink Traveler app

The Brink Traveler app features 15 iconic US natural landmarks in very high resolution. A particular hit is the 12-metre-high Golden Arch in Monument Valley, Utah, which you can walk around. A commentary in English presents various interesting facts, especially from the field of geology or paleontology, related to each site.

The app is also suitable for beginners, there are no sudden movements or more dramatic actions.

National Geographic HD VR app

In this app you can visit Macchu Picchu with expert commentary and accompanying activities.

A hit is a visit to Antarctica, where you first kayak between the crags and then have to climb an ice wall - typical Antarctic fauna all around.

The theme of photography runs throughout the experience, with the app teaching you the basics and letting you try your hand at how best to photograph interesting subjects.

Natural Sciences

Jurassic World Aftermath app

In this app, users get to know the fascinating world of dinosaurs in high-end graphics. The app also includes a rather action-packed game, but it can also be used as a primarily educational app and showcase individual dinosaurs as in a kind of virtual zoo. The instinctive interest in dinosaurs should then be supported by related topics from the broader context of natural sciences, such as paleontology, geology, biology or chemistry.

Physical education

Thanks to its high evocative value, virtual reality has a great potential to arouse young people's interest in movement, be it sports or dance. As mentioned in the introduction, the goal is certainly not to get people to move primarily in virtual reality. It should be for them to try out different forms of movement that they can then pursue in the real world.

Particularly for at-risk youth who spend most of their time in front of a computer, virtual reality is one of the few ways to get this large segment of the population moving and sweating. Currently, a high percentage of young people spend hours a day on the computer playing games. In doing so, they are usually sitting curled up, drinking sugary carbonated or straight energy drinks, and their only physical caloric expenditure is a quick click with their right index finger.

Alarming statistics on childhood obesity and the incidence of carpal tunnel in youngsters clearly show how physically unhealthy the current way of playing is. Virtual reality represents a leap forward precisely because it allows for at least as good (and for many users much more intense) a full-body gaming experience. Unless you're moving fast and sharp, you don't stand a chance against other online gamers in apps like Beat Sabre, BlastOn or Eleven Table Tennis.

When used appropriately, students and pupils should be expected to engage in anaerobic respiration and sweat. Basic hygiene precautions (disinfection, wiping, cleaning of optics, drying) should be taken when changing glasses. As already mentioned, it is advisable to buy each pupil his/her own hygienic spectacle liner, easily available online.

ATTENTION! PHYSICAL EDUCATION APPLICATIONS USUALLY RESULT IN THE MOST SUDDEN AND SURPRISING MOVEMENTS OF USERS IN THE VIRTUAL ENVIRONMENT!

ALWAYS MAKE SURE THAT THERE IS ENOUGH SPACE AROUND THE HELMETED USER AND THAT NO ONE ENTERS THIS SPACE BY MISTAKE.

Beat Sabre app

In this app, students smash approaching virtual cubes with virtual lightsabers to the beat of pre-selected modern music while avoiding virtual obstacles.
The control of the app is intuitive and you can choose the difficulty level. Higher difficulty levels require considerable dexterity, brain-hand coordination and physical readiness

The app also allows for team play, i.e. pupils or students can see each other in virtual space and compare each other.

In terms of motor skills, the app exercises coordination, reflexes, perception and physical stamina.

BlastOn app

In this app you represent a gunslinger who is in a duel with another gunslinger. In the space around you, guns with limited bullets appear, which you fire at each other. The bullets are slowed down, however, so they can be avoided with some skill. Duels between more experienced players are extremely physically demanding - you need to constantly collect new weapons, shoot, dodge shots, crouch, and jump when you need to.

The big attraction of this app is the possibility of a duel between two friends - in the virtual space you can see your friend's movements, which copy his real movements - before the duel you can, for example, bow ritually and after the duel perform a ritual victory dance.

The Climb app, The Climb 2

It is an app that has the potential to encourage students to love climbing mountains and rocks. There are nine detailed mountain areas with marked climbing routes to choose from. The controls themselves are easy to use - by pressing the trigger button, your virtual hand grabs hold of a hold on the rock and doesn't let go until you release the button. This way you can move around even on very steep walls.

The views of the surrounding scenery are breathtaking - in the Grand Canyon, just watch out for the rattlesnake lurking behind one rock edge (more than one player has screamed in panic).

Users will learn the basics of rock climbing in a safe way and see interesting places (for example, skyscrapers in Dubai can be climbed).

After gaining some skill and increasing resistance to vertigo, the application can be climbed professionally **(and on time!)**, which requires considerable physical training.

The app is not suitable as an initial app for those users who experience intense feelings of dizziness even in the real world.

CARVE VR app

This app simulates riding a snowboard, the left controller controls the front of the snowboard, the right controller controls the back of the snowboard. The game requires sharp reflexes, fine motor skills and a sense of orientation on the slope. High jumps with grips or flips are a matter of course.

As mentioned in the introduction, the purpose is to show pupils or students the possibilities of real snowboarding and motivate them to practice it. At higher levels, it also requires great physical preparedness (squats, jumps).

The goal is not to get users to abandon real snowboarding, but precisely because if they are looking forward to real snowboarding and can't afford it, either due to lack of money or snow, they can train in a safe (and cheap) environment.

Then once they are on a real slope with a real snowboard, the memories of what is possible in the virtual world will help them improve their real performance.

Echo VR app

This is a simulation of motion on a space station in a zero gravity environment. In addition, it is possible to play the space equivalent of football with disc and goals in teams of three against three. A blow to the head can virtually stun the opponent for three seconds. The advantage is the possibility of group play - it is therefore possible to form class or school teams and compete against each other.

ELEVEN Table Tennis app

In this app it is possible to play table tennis, even against each other in pairs. The great advantage is that beginners can train themselves against AI opponents and gain basic orientation and skill. After an initial control instruction, they don't need an adult to attend to them. There's also no need to tediously pick up balls off the ground *for the first time* - at the touch of a button, a new ball always magically appears intact in your hand.

In Death app

Don't be fooled by the medieval macabre backdrops, this is the most sophisticated archery simulator with top-notch graphics and fine motor skills. Various archery competitions and group competitions can be organised within the app. The advantage is unlimited virtual arrows and the ability to fire virtual targets.

Music education

Beat Arena app

This app contains several different simulators - dance, drum, guitar and bass. A virtual instrument appears in the user's hands, which they can control, as well as instructional music. Users can experience what it feels like to play the instruments for free. The app is tutorial, so one can gradually improve their skills.

A great benefit of the drum simulator is that only the user can hear the sound and thus there is no noise annoyance to the surroundings, which is a common problem for real beginner bands.

History:

Home After War

This app takes you to the Iraqi city of Fallujah, which has long been under the control of the Islamic State. This will give users a much more realistic picture of the problems that the inhabitants of this place face on a daily basis.

Warplanes: WWI Fighters

In this app, the user can experience what it was like in the cockpit of an aircraft during the First World War. In addition to gaining the skill and experience of controlling the first aircraft, the app is an excellent evocative method to open up the complex topic of World War I, which is useful to complement the VR documentaries available in the YouTube VR app.

Anne Frank´s House VR

In this app, you can view the Anne Frank House with expert audio commentary. The app also tries to evoke the atmosphere of the time with music and sounds.

Puzzling Places 3D app

In this app, users assemble 3D cubes of famous historical monuments or unique natural phenomena. This way they can practice both spatial imagination and fine motor skills. From the point of view of evocative pedagogy, it is crucial that the pupils get to know the monument (which also has a corresponding soundtrack) in an attractive 3D space where they can film and view it from all sides themselves. This engages wider centres of perception and makes the object more memorable (see introductory theoretical section). The control of the application is intuitive (only the "trigger" and "grip" buttons are needed) and is suitable even for complete beginners. A number of models are available for download, usually free of charge.

Math:

Cubism app
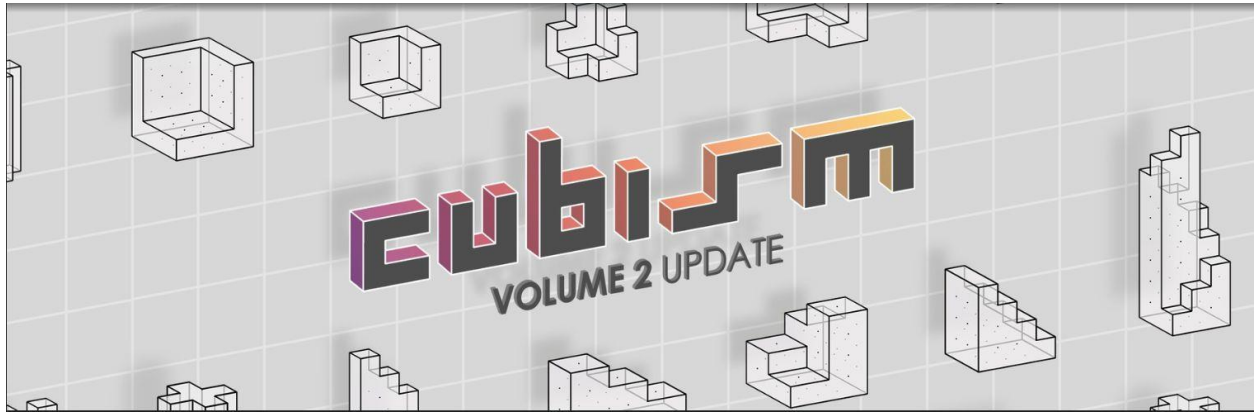
In this simple app, you stack cubes like in the famous Tetris game, only in 3D space. The app is suitable for the development of fine motor skills and spatial reasoning and can be easily mastered even by beginners.

Physics:

Apollo Quest

In this app from NASA, students can experience the entire 1969 trip to the moon, from Kennedy's speech to the rocket launch, space flight, landing maneuver, and the highlight of the app - walking on the moon itself with a view of Earth in the distance. The app is in English only, so students will also get a basic overview of vocabulary in the field. The experience can be used for reflection on a range of topics in physics, astronomy, chemistry and biology.

Mission.

In this app, you can visit the International Space Station and talk to the astronauts working there. The app contains a lot of educational material from different disciplines, which are explained in a visual way in the space station environment. As part of the reflection, you can apply the experience to a range of topics in physics, astronomy, chemistry and biology.

# Czech, English, German, Italian, Spanish, Russian, Chinese

The Mondly app

In this app, you can practice vocabulary and common conversational situations in the languages with virtual tutors. You can repeat and rehearse as much as you like. The cost of a virtual tutor is negligible compared to a real tutor, although it is not yet up to the same standard. Nevertheless, it is an excellent tool to supplement existing teaching.

The possibility of learning Czech in this app is very important - firstly, pupils can practice it, but most importantly, it can be very helpful for children who are at school and are just learning Czech as their second language.

English by play

Darth Vader Immortal app
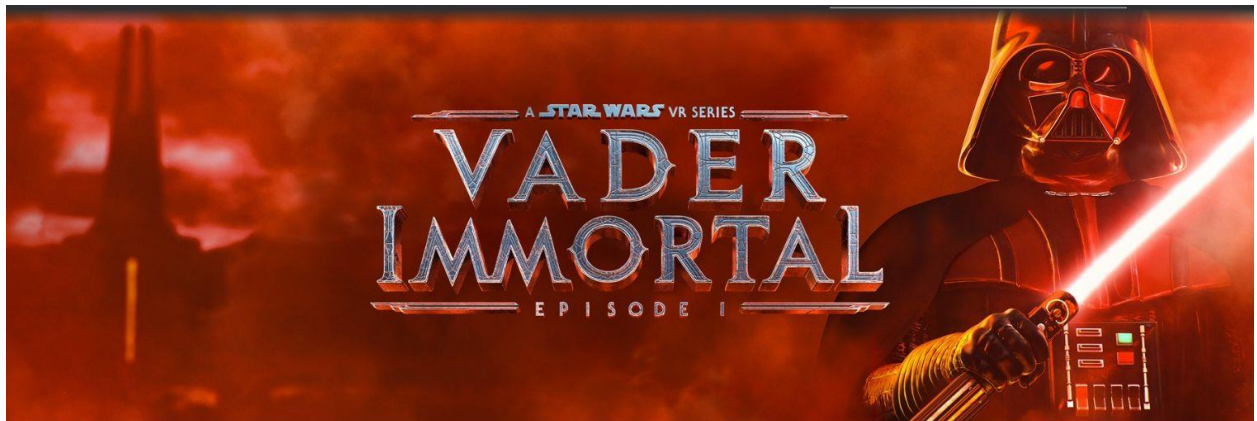
In this app, you navigate through the world of Star Wars and perform various tasks in different contexts that require at least a rudimentary knowledge of key English words (open, lock, resume, adjust, throttle, brake, sabre, force). The app is very variable and includes both puzzles unlocking coded doors and flying a space fighter, as well as dialogues with the main characters, and there is also a lightsaber duel to get you moving and sweating. Importantly, the app requires minimal English language skills to proceed and **does not exist in English.** At the same time, it is highly attractive for both male and female students; apart from the topic itself, the graphic design is of the highest standard.

Work education:

Jobs Simulator app

In this app, students can experience what it's like to work as a cook, car mechanic, salesperson or office rat. The app is only in English, so it develops vocabulary and basic conversational phrases in a simple and visual way.

Art education:

Tilt Brush app

The app allows users to draw and write in 3D space, using a variety of brushes, colours and a myriad of potential effects from glowing shooting stars to flashing neon.

Pottery HD app

In this app you can try your hand at pottery. The advantage is that technological processes that are difficult to access within standard constraints (e.g. large kiln, expensive glazes) can also be explored. Pupils and students can exhibit and evaluate their virtual products. Ensuring an absolutely clean and safe working environment is also a bonus.

The core competence of cooperation

Carly and the Reaperman app

This app has been named one of the best apps for two-player VR, although it can also be played alone. It is a story-based game full of 3D logic puzzles. When playing for two, one of the players controls the character Carly and tries to navigate her through a dangerous labyrinth. The other player (Reaperman) represents a kind spirit who tries to help Carla on her journey by subtle manipulations of the environment.

When playing in pairs, both players talk to each other in real time so they can agree on the best course of action. With an adequate methodological grasp, this application has the potential to develop the ability of both male and female students to communicate effectively with each other in order to achieve common goals.

Bonus for all subjects: the Youtube VR app

In this app, you can watch a number of historical or geographical documentaries or directly attend famous concerts or sporting events.

Bonuses when you connect Oculus Quest to your computer

Connecting the goggles to your computer expands the range of usable apps available either freely on the internet or via Steam and its Steam VR app (free download).

To connect the glasses to your computer, in addition to the USB-C x USB-C cable, you'll need to download the Oculus app (free) to your computer and set up Devices and Connection in the Settings menu.

Recommended apps on Steam include the following titles:

Car Mechanic 2

This is a high quality vehicle repair simulator. The user has a full range of virtual tools and a variety of vehicles at his disposal, which he can disassemble basically to the last screw. In addition, everything is completely safe. For automotive fans, this is an exceptional experience, especially if they can work with iconic cars like the 1963 Ford Mustang GT or Chevrolet Corvette.

Google Earth VR app (free!)
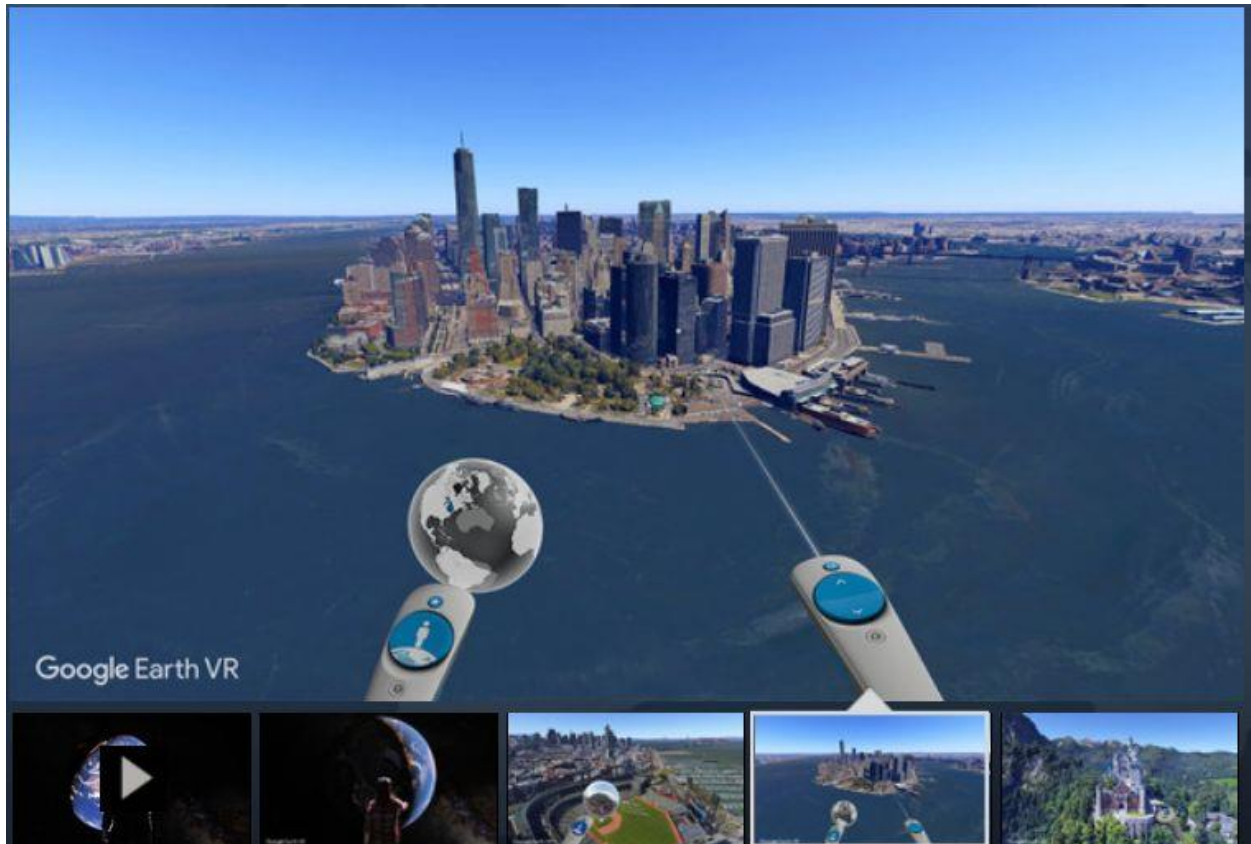
Google Earth VR lets you fly freely around the globe and enter Street View (360-degree, high-resolution photography) in most places. Suitable for reports and presentations, it can be used as a complement to the Wander app.

Hellblade: Senua´s Sacrifice VR

In this experiential game, developed in collaboration with psychologists, you take on the role of an authentic Celtic warrior with post-traumatic stress disorder who travels through a mythological world to find back her lost balance (and figuratively, mental health). With a suitable introduction and adequate reflection beforehand, the app is a suitable introduction to the world of mental illness, which is one of the themes of the social studies core curriculum. The app is not suitable for pupils or students with diagnosed mental disorders or a tendency to mental instability, as it simulates the experiences of a traumatised personality, albeit in a virtual environment.

Surgical Robot Simulator VR (free!)
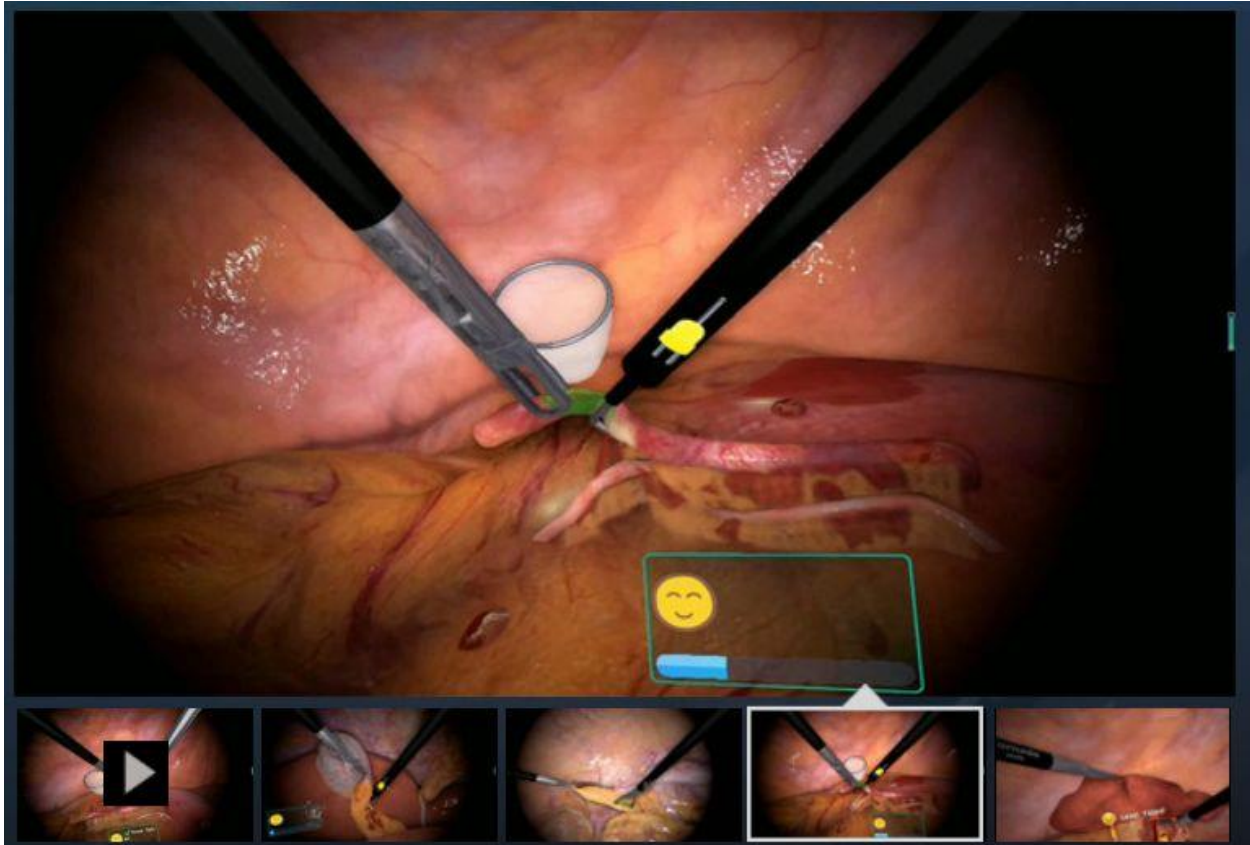
In this app, you can try out basic surgical operations in a safe environment.
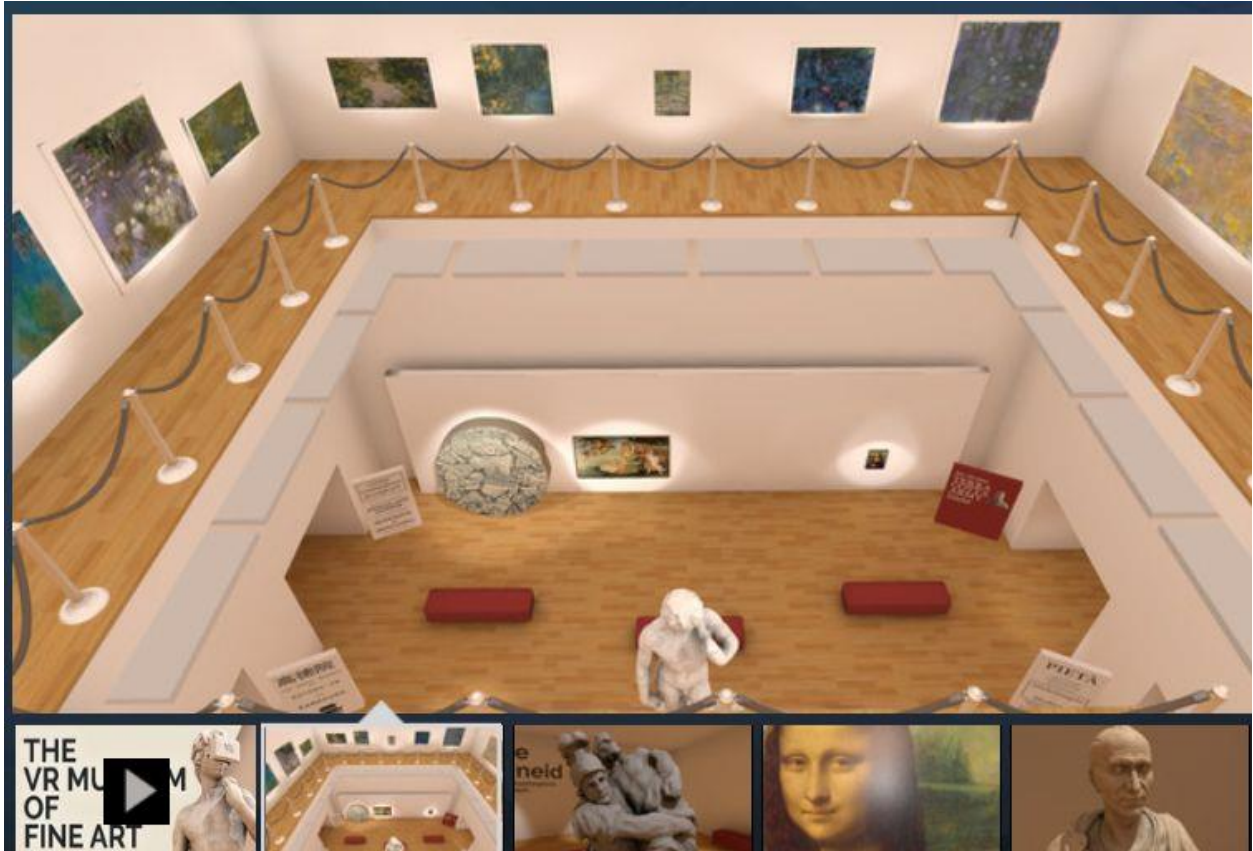
Clash of Chefs VR

In this app, you can try out basic cooking recipes. The app is only available in English and will expand your vocabulary related to this field.
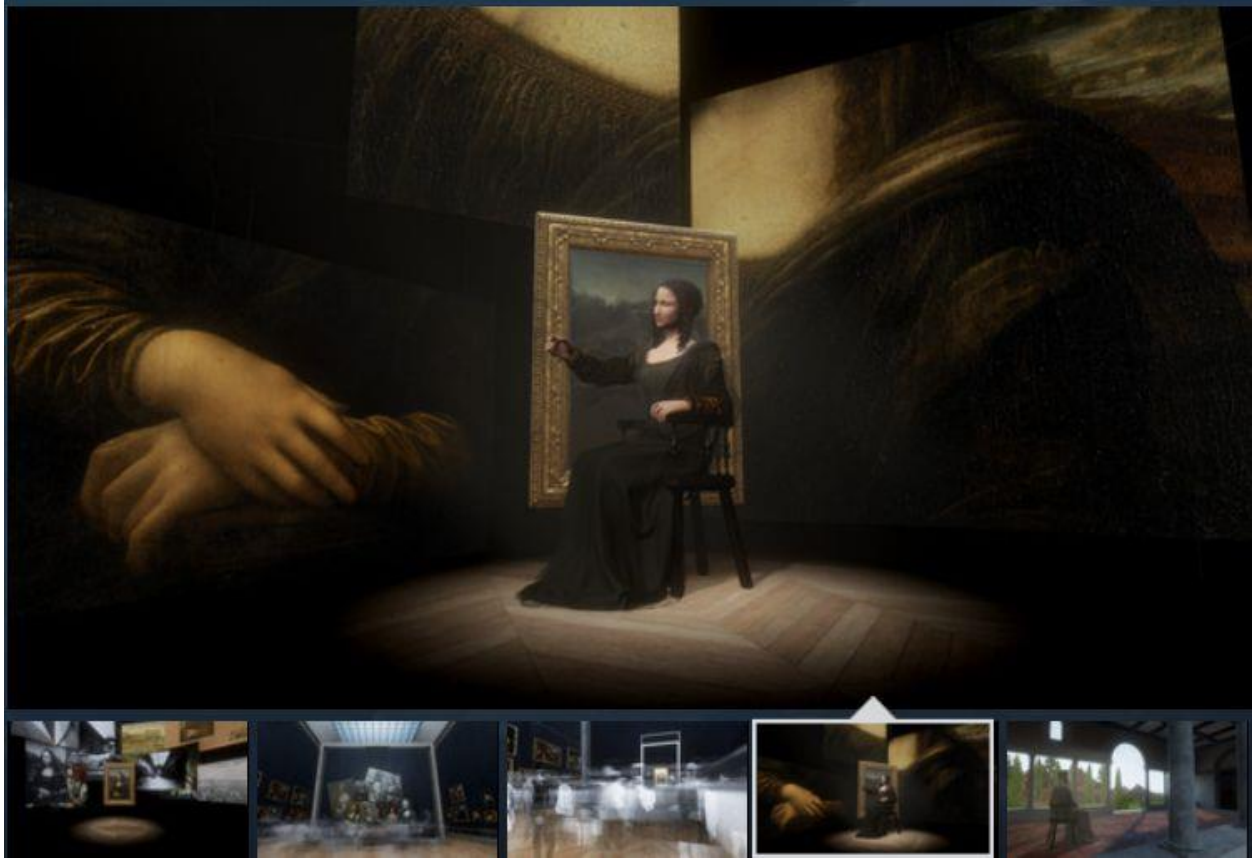
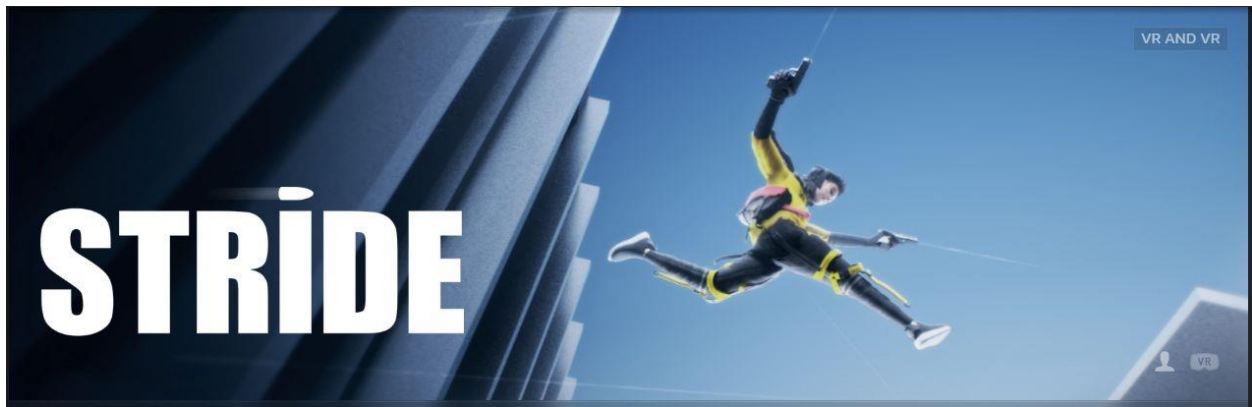Art education:

The VR Museum of Fine Art (free!)

The app allows a virtual visit to the most famous paintings and sculptures, with expert commentary in English.

Mona Lisa: Beyond The Glass

The app allows for a virtual visit to the Louvre Museum, with the main focus and commentary devoted to an in-depth analysis of the Mona Lisa in a variety of contexts.

STRIDE application

In this app, you can try street parkour, a popular activity among young people, i.e. running and jumping on rooftops, over walls and other obstacles. It is suitable as an introduction to this sport in physical education and as a motivation to improve in it. Like any similar application, it improves fine motor skills, head and hand coordination and orientation in space.