



Create with VR for Educators

Teacher tips for bringing VR into the classroom

This document is a useful resource for bringing VR with Unity into your classroom. Below you will find tips and resources to help you in procuring and managing the use of hardware in the classroom and in creating an inclusive and supportive teaching environment.

Why teach VR?

Virtual reality (VR), as a key technology in the current technological revolution, is dramatically impacting individuals, organizations, and environments. The industry is growing rapidly, and real-time 3D skills are in high demand. Beyond entertainment and video games, virtual reality is being applied in industries such as healthcare, automotive, manufacturing, architecture, construction and others. It is used for design visualization, virtual training, remote operation of equipment, and immersive marketing experiences.

The immersive nature of VR also makes it a suitable medium for empathy and behavior training. Demonstrating the effect of damaging behaviors in VR can be powerful and may lead to more positive behaviors for users, e.g., demonstrating the long-term effects of smoking on an avatar, or demonstrating the human impact over time on the planet.

3D engines like Unity have made it possible to create and deliver highly polished VR content. Such solutions make creating virtual reality experiences a much more accessible pursuit and with display methods becoming more affordable there is an opportunity to master VR content creation to engage a growing audience.

Working with limited resources

VR headsets are expensive, and with the challenge of limited resources, it is not always possible for schools to acquire enough headsets for each student.

Our course is designed in such a way that large portions of the work can be done without the use of a headset.

If you have only a few headsets, try to:

- Stack the activities in such a way that students can access the headsets on a rotational basis.

- Create a booking system where students can book the use of the headset provided they reach certain milestones.

Investigate Low-Cost Options

It is no secret that VR headsets are expensive, especially when you need to acquire them at scale. While most tutorials, including the ones in this course, are aimed at popular devices like the Oculus and HTC Vive headsets, there are cheaper options available that can be just as effective. Headsets that utilize smartphones, like Google Cardboard, despite being limited in functionality, can still be effective in demonstrating the immersive capabilities of Virtual Reality.

Apply for grants

If you and your institution can craft a solid proposal explaining why students would benefit from VR technology, you may be able to fund the necessary equipment through technology grants. This [Unity Educators Live webinar](#) highlights data that shows the enormous growth in the XR industry and the demand for students with these skills which could be used to support any grant or funding application.

Approach Companies About Using the Technology on a Trial Basis

Companies may be open to supplying hardware on a trial basis, especially if it could mean that your institution may invest in a lot of headsets later. Explaining that your institution still needs to evaluate the potential of using VR in the classroom may help in convincing them to provide headsets on a trial basis.

Use crowdfunding

You may be surprised at how communities can come together and how willing people may be to assist if it means investing in their kids. Crowdfunding platforms allow people to contribute in small to large amounts, and those individual donations can quickly add up.

Here are some of the current most popular crowdfunding sites:

- [Kickstarter](#)
- [Indiegogo](#)
- [Causes](#)
- [Patreon](#)
- [GoFundMe](#)

What if you don't have access to a VR headset?

The XR Toolkit from Unity provides a device simulator that allows you to emulate device input actions that would normally run on physical VR/AR devices. Movement in the emulator can be controlled via keyboard, mouse, or gamepads. Initially designed to speed up the development

workflow, this emulator can also be used to simulate the behavior of a VR application without actually owning the hardware.

Additional Resources

- [How To Add The XR Device Simulator To Speed Up Development | Unity XR Toolkit](#)
- [Teaching XR Development | Unity Educators Live](#)
- [Teaching VR: All things considered | Dan Miller](#)

Recommended Reading

- [Unity 3D: What is AR, VR, MR, XR, 360?](#)
 - [Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do, by Jeremy Bailenson](#)
 - [Transformative Experiences: VR for Good | Samsung CEO Summit](#)
 - [XR for Social Impact: A Landscape Review | Games for Change](#)
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Setting up your hardware

The first step in teaching with VR is setting up your hardware. We have a learning unit dedicated to helping you with this, that you can access [here](#). It is strongly recommended that you go through the setup process yourself before your students. In cases where time is limited, it may be practical to set up all devices for testing and publishing prior to the commencement of your program.

Taking care of your hardware

VR headsets are expensive and sometimes sensitive technology that is not easy to replace. Taking care of your headsets will ensure that they last longer and remain in good working condition for much longer.

Since these headsets are wearable technologies, various parts are consistently exposed to body oils, sweat and dust. These can form a layer of grime on your hardware and, in the long term, can cause damage.

Hard surfaces

Hard surfaces on the controllers and headset can be wiped down with alcohol-free antibacterial wipes. Areas that need extra attention include the top and bottom of the eyepiece, which you grab

when putting on and taking off the headset and, on the Oculus headsets, the halo adjustment ring on the back. Make sure there is no build-up of grime on the controllers in the areas that you are likely to touch the most.

Soft surfaces

Soft areas like the headband and foam are prime areas for bacteria to gather and are often created with materials that are not easy to keep clean. These components should be replaced with a faux leather surface that is wipeable and easier to maintain. These can be purchased from 3rd party suppliers like Amazon.

Once replaced, they can be cleaned with alcohol-free antibacterial wipes. Take extra care to wipe down the nose and forehead area as there is consistent skin contact on those areas.

Lenses

Lenses are at the heart of the VR operation and need extra care. Always use a microfiber cloth for lenses, and avoid using liquid, alcohol-based or chemical cleansers. You can use a microfiber cloth dabbed in soapy water or a non-alcohol-based glasses cleaning wipe.

Do not expose your headset lenses to direct sunlight, especially when drying, as this could cause damage.

Storage

Pack your headsets away after each use in an area where it is not likely to receive bumps and knocks and, if possible, covered so as not to collect dust.

Hygiene

Hygiene is extremely important on VR headsets since you are in contact with the specific parts of your body that are notorious for transferring germs, namely the hands and face. There are two basic rules that should be followed to minimize any hygienic risk in using headsets:

- First rule of using VR headsets in groups - no person exhibiting any disease symptoms should be working with a VR headset.
- Second rule of using VR headsets in groups - wash your hands and face before and after each use of a VR headset.

Beyond these rules, it is critical to clean the VR headset frequently in any scenario where it is used by more than one person. To clean your headset, follow the guidelines in the previous section.

Accessibility and Inclusivity

Virtual Reality is fast becoming an established technology in various industries, and with rising use cases and lower prices, the adoption rate is increasing at great speed. With so many people becoming interested and using the technology, it is important to ensure that we don't exclude those who may have challenges in using it.

Problems could range from mild cybersickness to applications assuming a specific head height that does not take into account someone in a wheelchair or interaction that requires full-body mobility.

Oculus provides guidelines for accessible design in Virtual Reality applications here: [Introducing the Accessibility VRCs | Oculus](#)

Additional Resources:

- [Accessibility of Virtual Reality Environments: Accessibility | University of Melbourne](#)
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Tips for Facilitating Unity in the Classroom

The following selected tips and interviews are available as part of the [Unity for Educator Course](#) - a course specifically aimed at educators interested in bringing Unity in their classroom for the first time.

Diversity and Inclusion

Championing diversity and inclusion builds a sense of belonging for students of all genders, ethnicities, sexual orientations, and socioeconomic backgrounds. Celebrating and embracing diversity and having high expectations for all students leads to greater learning outcomes and future success. This is particularly important in technology industries where women and many racial and ethnic groups are underrepresented.

Watch the video at [this link](#) to understand strategies that Unity educators use to champion diversity and inclusion in their learning spaces.

Co-Learning

Unity's learning approach is rooted in the "constructivist theory of learning". Within the constructivist theory, people tend to learn best by creating meaning and understanding from their experiences, and from the community around them, which helps them achieve their goals.

To support this approach, educators are most effective when they take on the role of "guide" and "co-learner" alongside their students. Together, you work through the development process, work through challenges, and learn along the way. Many Unity educators find that the co-learning approach reduces feelings of pressure to be the "expert" when they are at the beginning levels of learning the technology and workflow.

Watch the videos at [this link](#) to hear why Unity educators think this approach is important when teaching Unity.

Differentiation

Students come to Unity with different experiences, learning styles and abilities, and will grasp Unity concepts at different paces. Content and resources on Unity Learn have been created to provide learners of all ability levels with an opportunity to learn at their own pace, with clear step-by-step tutorials and challenges. This makes differentiation in the classroom more manageable.

Watch the following video to see how educators approach differentiation when teaching Unity. Having a structured course with incremental steps of difficulty might cater to your learners on one level, but we should remember that differentiation is more than just different work. Differentiation activities should give students different routes to achieve the same goal.

Watch the video at [this link](#).

The [Project Strategy Guide](#) can help with differentiation. It provides support for students on getting started or getting unstuck and helps them to extend themselves.

Taking students through the project planning process

Project planning, simply put, refers to all of the steps you take to ensure your project is a success.

A good project plan should contain:

- Your project objective(s)
- The project scope (to avoid "project creep"; i.e your project becoming unmanageably complex as new ideas are added)
- A list of the most important project deliverables
- For groups, a breakdown of what needs to be done (tasks/activities), to what extent (parameters), by whom (personnel) and when (time/deadline)
- For groups, a communications plan - who will report to whom, and when?

For any creative project, planning is crucial, and especially when dealing with complex systems where there are many moving parts, like games or simulations. Planning keeps projects focused, timely, and most importantly, provides accountability and the means to objectively review progress. It is also important to remember that a plan is not set in stone. Things can change quickly once a project is underway, so it's essential to continuously check progress against the plan, and adjust if required.

Since project planning is such a widely transferable skill, this phase of a project is a rich teaching and learning opportunity which shouldn't be rushed. Planning can take many diverse forms; interactive, visual, diagrammatic, lists, or a combination of all of these, so feel free to experiment.

Here are some useful resources for project planning:

- [Project Design Document](#) - from the Create with Code course
- [VR Project Design Document](#) - from the Create with VR course
- [Project Charter Document](#) - from the [Introduction to Project Management](#) tutorial
- [Goal Setting/Learning Plan Guide](#) - this tutorial supports learners to set goals and milestones

Paper proto-typing in the planning phase

Prototyping is a process that is used widely across a range of creative industries to help save time and costs in the development process. Paper prototyping is a powerful way for your students to quickly visualize a project, test various ideas and get feedback before even opening Unity.

Watch the video at [this link](#) to see how Unity educator Mark Suter uses paper prototyping in his course.