

Teachers' Guide to Windows Mixed Reality

Learning with Lenovo Explorer

 Windows 10 Pro



Windows Mixed Reality? What's that?

So there's Virtual Reality, Augmented Reality... and now Windows Mixed Reality? Don't panic. It's not nearly as sci-fi as it sounds.

Windows Mixed Reality blends the physical and digital worlds to produce new environments where physical and digital objects can co-exist and interact as if all of them were real. It's a fantastic way to bridge conceptual learning with real-world experience.

This is all made possible through the Lenovo Explorer headset. Simply place it over the eyes like a pair of goggles and your students could step into ancient Rome, see what's inside a volcano or even take apart an engine with their own hands.



Click on the buttons below to discover more about Windows Mixed Reality and how to create lessons that are out of this world.

Lenovo™



How does Windows Mixed Reality change teaching and learning?



Not only is mixed reality engaging and immersive, it is also a great way to teach theoretical concepts, provide personalised learning and cater to different learning styles. In a study of 500 teachers Lenovo found that 94% believed that Windows Mixed Reality would benefit the classroom and 42% predicted that it will be commonplace in the next five years.

History, Geography, Sociology

- Take students to places they can't really visit, like Machu Picchu in 1465 or the Colosseum in the Roman Empire, complete with immersive graphics, sound, animation and informative characters.
- Let students travel to Antarctica to witness its marvels, flora and fauna first-hand. Or take them to Mars where they can experience actual footage from NASA.

Science

- Observe, interact with and model changes in a virtual environment. Students could map the surface of Mars, explore the layers of the Earth's crust or model the effects of climate change on our future.
- Conduct scientific experiments without risk or impact, such as virtual dissections and surgeries, or designing complex machinery and electrical circuits.

Art, Design, Architecture, Engineering, Construction

- Let your students create worlds, buildings, machines or artefacts to find out whether they work, eliminating design flaws as they learn.
- Model and test abstract concepts, like equations or experimental architecture.

Mathematics

- Render abstract concepts in ways that would be impossible to see in real life. For example, place maths models in a virtual world and allow students to interact with them.
- Use high-speed calculation to explore advanced concepts.

See what's available



How will Windows Mixed Reality benefit students?

Windows Mixed Reality provides exciting opportunities to inspire and engage students, while improving student outcomes. Academic studies have shown that students are not just more motivated¹ when they learn through mixed reality, they also improve their attention span, understanding and test scores.²

Boost motivation and achievement

- Studies found that students who learn physics in mixed reality are more motivated, more collaborative and higher achieving compared with students who learn in a traditional 2D framework.

Align with constructivist learning theory

- Windows Mixed Reality is a great place to facilitate authentic enquiry, active observation, peer coaching, reciprocal teaching and legitimate peripheral participation with multiple modes of representation.

Provide adaptive and personalised learning

- Because students can freely explore and interact with a 3D environment, they take ownership of their learning.
- Students can be scaffolded through step-by-step instruction, even when they choose their own topics or outcomes.

Provide experiential assessment

- The cameras on the Lenovo Explorer headset allow teachers to figuratively see through their students' eyes – a wonderful 'in context' opportunity for support and feedback.

Make learning more flexible and more equitable

- Because the Lenovo Explorer can simulate environments anywhere and allow teachers to provide hands-on instruction from afar, it is a fantastic way to include students who are remote, unwell, differently abled, or otherwise unable to attend regular schooling.

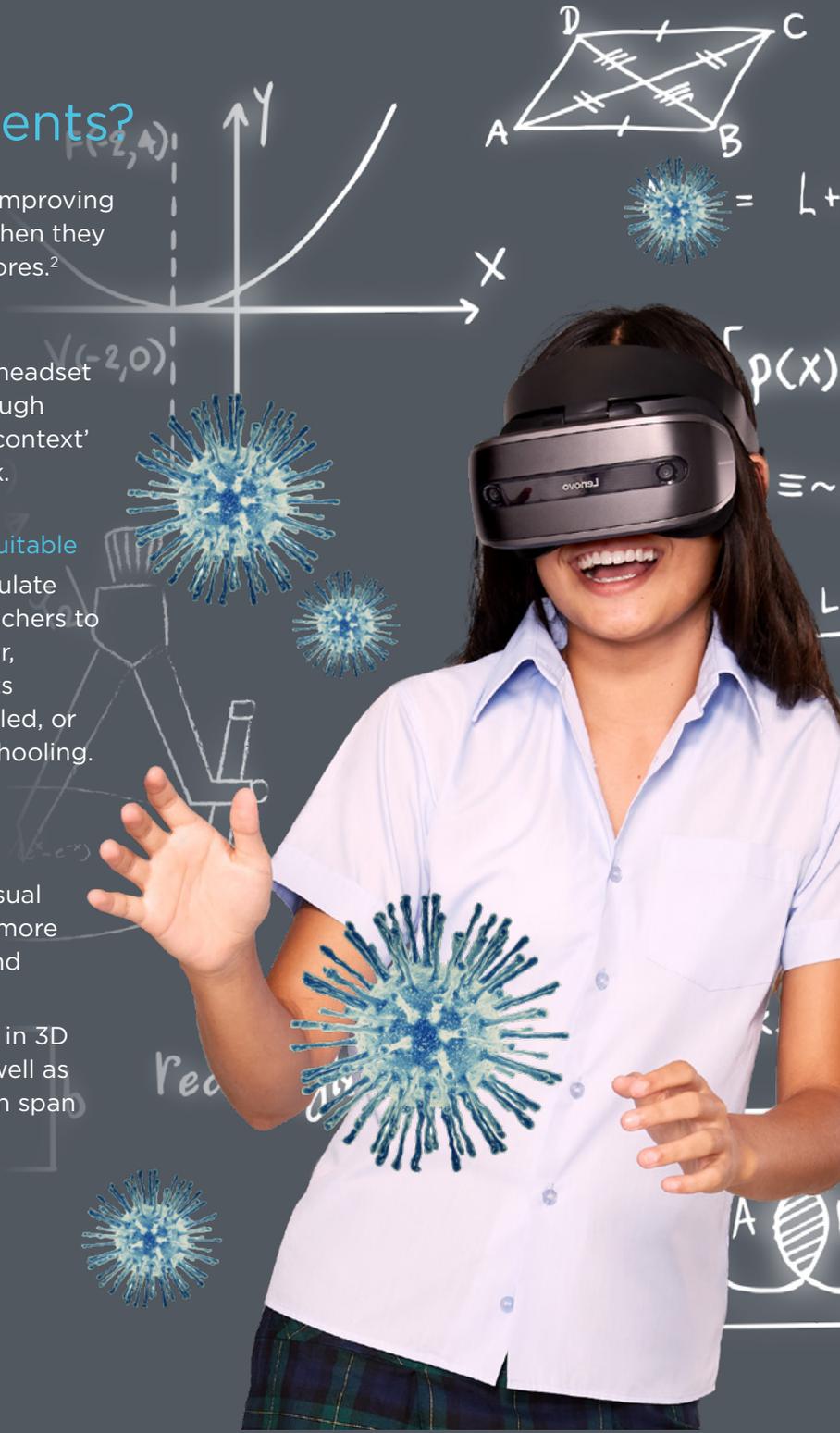
Encourage deeper, more effective understanding of scientific concepts

- Because 65% of the population are visual learners, mixed reality is significantly more effective than traditional textbooks and 2D resources.
- Studies show that students who learn in 3D increase their test scores by 86%, as well as improve their understanding, attention span and engagement in learning.³

1. Di Serio, Angela et al. (2012) Impact of an augmented reality system on students' motivation for a visual art course <https://www.sciencedirect.com/science/article/pii/S0360131512000590>

2. Tzung-JinLin et al. (2013) An investigation of learners' collaborative knowledge construction performances and behavior patterns in an augmented reality simulation system. <https://www.sciencedirect.com/science/article/pii/S0360131513001322>

3. Bamford, Anne, Dr., 3D in Education Study (2012) <https://www.lifelique.com/download/The-3d-in-education.pdf>



What do I need to start teaching with Windows Mixed Reality?

You really only need two things. First, a Lenovo Explorer headset. Second, a device with a graphics card and performance level that is powerful enough to run mixed reality learning experiences. See the table right for more detail on suitable devices.



How do I set up a Lenovo Explorer?

Plug it in

On the latest version of Windows 10, simply plug the Lenovo Explorer headset into a single USB 3.0 and HDMI slot. Then follow the on-screen commands to get started in minutes.

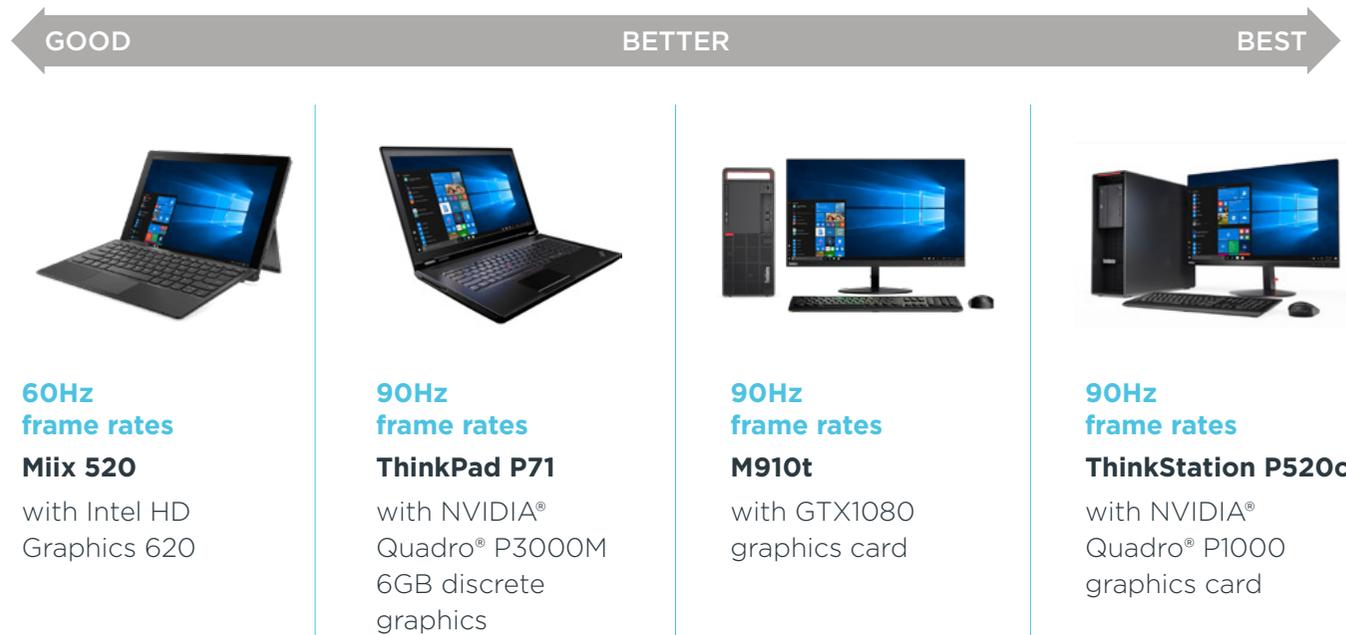
Create a safe play zone in your class that is clear of obstacles

To map the controllers, simply load them with AA batteries, switch them on, and follow a short series of commands to define a 'safe' play zone in your classroom.

Expand your options with Microsoft devices

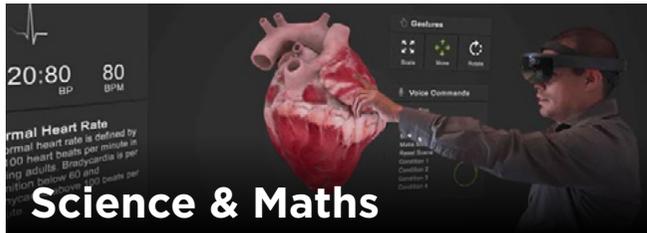
While in mixed reality, you can use an Xbox One controller to play games and a keyboard and mouse to run Microsoft Office apps. You can also ask Cortana (Microsoft's digital assistant) to provide answers, take orders, set reminders and automate tasks.

The following Lenovo devices are designed for use with Lenovo Explorer.



What should I teach with Windows Mixed Reality?

The Lenovo Explorer has a growing catalogue of applications that are specifically designed to help teaching and learning. To get started, think about the areas of your curriculum that you've always had to explain on your own. In mixed reality, there might finally be a way to show and not tell.



[Lifelife](#)

This digital STEM curriculum that engages students over 1,000 interactive models is verified by the world's top universities.

[Insight Heart](#)

A virtual companion guides you through high-resolution 3D visuals of a beating heart that you can move, rotate and scale using gesture or voice.

[HoloAnatomy](#)

Students can experience an inside view of the body, to get a complete understanding of how it functions at the skeletal, muscular and organ level.

[Galaxy Explorer](#)

Transform your mixed reality room into our galaxy.

[Gravity Lab](#)

This physics and electronics puzzle game lets students learn how to build a machine in a lunar testing facility.

[Minecraft](#)

Strap on a headset and craft, explore and survive in three whole dimensions (four if you count time) using the power of mixed reality.

[Hello Mars](#)

Students experience a Mars landing, prepare as a space pilot and voyage through the Martian terrain with the Curiosity Mars Rover.

[theblu](#)

Students experience the wonder of different ocean habitats.



[HoloTour](#)

Bring history to life with 360-degree video, spatial sound, holographic scenery and expert guidance from virtual tour guide, Melissa. Students can explore unreachable places like Ancient Rome or Machu Picchu.

[Gala360](#)

Gala360 transports students around the world with highest-quality, 360-degree photos and narrations. Experiences include:

- Yosemite National Park
- Rome in 3D
- Temple of the Goddess Hathor, Egypt
- Actual 360-degree photos from Mars
- Expedition to Antarctica

[Walk the World](#)

View any place in the world in 3D with your Explorer headset. Shows OpenStreetMap and four other Bing and Google Maps on the floor. You can navigate by walking over it (or teleport if you are using Mixed Reality).



[Actiongram](#)

Students experiment with storytelling by creating their own mixed reality videos to share online.

[3D viewer beta](#)

View 3D models from supported .fbx files from Microsoft Edge, OneDrive, and other apps. Students can move, resize and rotate their 3D models, position them in your room, play and pause animations.

[HoloSketch](#)

A spatial layout and UX sketching tool for HoloLens to help students learn how to visualise and build holographic experiences.

[Fragments](#)

Students play the role of a detective, examining crime scenes and gathering clues from life-sized holographic characters. They use a digital crime lab and cutting-edge forensic tools to crack the case.

[Windows Mixed Reality Academy: Project Island](#)

This game is the open-source project taught at Windows Mixed Reality Academy sessions during Microsoft Build 2017. Students play the adventure game to understand MR.

[MoveStudio](#)

Enable dance students to explore a space where unfettered movement takes them in unexpected directions and they can record and play back their experiences.

[Fantastic Contraption](#)

Students create life-sized contraptions and send them off to solve puzzles on the other side of a floating island.