



NUS taps hologram tech for medical, nursing training

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It is a sight that will soon become common in medical teaching halls at the National University of Singapore (NUS): A medical student wearing a headset with flashing lights as he practises inserting a tube for an intravenous drip into a latex dummy.

At times, he pauses and raises his arm as if to make a point. He is in fact interacting with holograms projected from his headset, which are giving him step-by-step instructions on conducting the procedure.

Mr Rajragavan Sarvananthan, 24, who has taken part in such a session, said the headset – Microsoft’s HoloLens 2 – allows medical students to integrate lectures with practice sessions, when previously they had to wait for lectures to refresh their understanding.

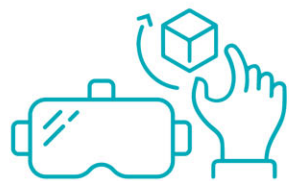
The final-year medical student, who was part of the pilot initiative for two months, said: “Being able to replay key steps and get additional practice in each procedure allows me to feel more confident in providing a safe experience for my patients.”

More students from NUS’ Yong Loo Lin School of Medicine will benefit from such additional practice when the initiative is expanded later this year.

From April, 300 second- and third-year nursing and medical students will undergo training with the help of 3D holographic technology, made in collaboration with

How mixed, virtual and augmented realities differ

A mixed-reality curriculum will be used in training medical and nursing students at the National University of Singapore’s Yong Loo Lin School of Medicine from April. Here are the differences between mixed reality, virtual reality and augmented reality.



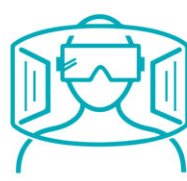
Mixed reality

A real-world environment with interactive virtual objects embedded within a user’s field of vision.

Users can interact directly with virtual objects in a real environment via touch.

Headsets like the HoloLens 2 are used, with goggles that allow users to see their physical surroundings while also projecting interactive virtual objects into their field of vision.

Current uses include holographic assisted surgery, where a patient’s CT scan is superimposed over his organ, giving doctors “X-ray vision” of what is inside the organ.



Virtual reality

A fully virtual environment where one can interact with others.

Users can interact with virtual objects by using a handheld controller.

Headsets used include the Oculus Rift, which has goggles that completely cover the eyes and a screen that streams dynamic live footage of the virtual world and responds to the movement of the user’s head and eyes.

Current uses include access to games like VRChat, or anything that can be played on devices like the Oculus Rift.



Augmented reality

A real-world environment overlaid with virtual objects.

Users can interact with virtual objects in the real environment through a phone screen.

Devices like phones and tablets are used; cameras capture real-world footage before virtual objects are embedded into them.

Current uses include games like PokemonGo and some Instagram and Snapchat filters. It is also used in online shopping to show customers how big an item is in comparison with objects in a physical space.

With the help of Microsoft’s HoloLens 2 headsets, nursing student Kerwin Chia (left) and medical student Nicholas Sim – both from NUS’ Yong Loo Lin School of Medicine – practise inserting a cannula into a dummy arm. From April, 300 second- and third-year nursing and medical students from the school will undergo training with the help of 3D holographic technology, made in collaboration with Microsoft, before they are sent on clinical attachments. ST PHOTO: MARK CHEONG

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Microsoft, before they are sent on clinical attachments.

This is the first time holographic technology – described as mixed reality as opposed to virtual reality or augmented reality – is officially being integrated into the curriculum for training medical and nursing students in Singapore.

Associate Professor Alfred Kow, assistant dean of the Yong Loo Lin School of Medicine, said the new technology is an advancement from the current virtual reality training that medical students undergo.

“Unlike virtual reality lessons, where students have to use unwieldy controllers and heavy head-

sets that can be worn for only about 30 minutes without nausea, the HoloLens 2 can be worn for five to six hours and allows students to practise with the actual tools they will use in work,” he said.

“This allows students to develop the right ‘hand feel’, which is crucial to the profession,” he added, referring to how doctors and nurses need to have experience with real medical tools in order to be considered proficient.

For a start, the mixed-reality education programme has lessons on inserting a urinary catheter and a tube for an intravenous drip.

In two years, another 10 general

procedures will be added.

The school aims to increase the number of headsets available to students by the end of this year as the programme is expected to eventually provide instruction for other skills, like clinical soft skills and surgical skills.

Prof Kow envisions that in the next three to five years, medical students may be able to learn advanced surgical skills at home with the HoloLens 2. The high-tech gear may also be used to assess their proficiency in clinical skills when they are on attachment.

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