



PRESS RELEASE

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Virtual Reality Gaming for Medical Students in the time of Pandemic

Educators at NUS Medicine have created a digital gaming system for medical students to acquire understanding of patient safety and the importance of inter-professional communications in the operating theatres, reducing the risks of exposure to aerosol-generating procedures during the COVID-19 pandemic.

Singapore, 5 August 2020 — Using an innovative virtual reality (VR) gaming system, medical students at the National University of Singapore Yong Loo Lin School of Medicine (NUS Medicine) can now develop their understanding of patient safety in complex, hard-to-simulate surgical settings, through an immersive, virtually simulated environment.

The School's introduction of the **PA**tient **S**afety a**S** Inter-Professional Training (PASS-IT) enables students to experience the process of patient safety as they immerse themselves in the operating theatre scenario and learn the entire flow of the peri-operative setting, from dental clearance to anaesthesia evaluation, and the handling of sharps during surgery and the safe conduct of operations.

ENHANCING INTER-PROFESSIONAL COMMUNICATION

Operating within a complex healthcare system where healthcare workers in different roles are unable to understand each other's roles has led to growing communication gaps that may compromise patient safety. However, medical education has traditionally emphasized the importance of core competencies over soft skills such as inter-professional communication. Such skills are usually honed in clinical settings when medical students are brought to a patient's bedside to observe physicians at work.

Against the background of the Covid-19 pandemic, medical educators face the challenge of balancing practical learning experiences while ensuring the safety of students by minimising their exposure to contagion. This however leads to a shrinking number of opportunities for their students to pick up on inter-professional communication.

The VR environment enhances the teaching and learning of situational patient management, letting them observe the role that each healthcare worker performs and allowing them to gain a greater appreciation of each role from a macro perspective.

"PASS-IT's gamified style lets multiple learners be immersed in situations where they are given the opportunity to participate in what would usually be a highly restricted environment. With the COVID-19 situation, students have also been removed from these settings of practical learning due to the risk of exposing them to aerosol-generating procedures. This VR

system is a good tool to help the students consolidate their learning despite increased clinical restrictions,” said Associate Professor Alfred Kow, a surgeon and Assistant Dean (Education) of NUS Medicine and one of the educators spearheading the initiative.

“This tool can also allow students to make mistakes, learn in a safe environment and ensure that they are competent before they enter actual clinical environment to care for patients,” added Assoc Prof Kow.

TECHNOLOGY THAT WORKS

In PASS-IT, students don VR headsets and wield hand-held controllers to interact with each other in real-time. Their physical movements and actions are tracked and displayed in real-time for visualisation and evaluation.

With the start of Phase II of Singapore’s reopening, the PASS-IT programme was piloted with a cohort of 36 third-year medical students who had just completed their clinical rotations in surgery and a group of 56 fourth-year medical students during their Phase IV Anaesthesia posting. The results were encouraging, with students showing improved understanding of peri-operative patient safety after the training. The VR training has also elevated their appreciation for effective communication between healthcare workers. In addition, the majority of students positively-rated the use of VR technology to enhance their knowledge of patient safety.

Specifically, the students demonstrated significantly improved understanding in the following areas after the VR session:

- Importance of protecting a patient's potential points of injury when under general anaesthesia
- Importance of the “Time-out” process during surgery, a universal protocol of an immediate pause by the entire surgical team to confirm the correct patient, procedure, and site
- Responding in the event of a needle-stick injury during surgery
- Importance of the “Sign-out” process towards the end of surgery, where the surgical team conducts a verbal check-list of the instruments, specimens and medical management of the patient post-surgery
- Importance of communication during surgery to reduce errors and injuries in the operating theatre

“Medical students have not been allowed into the operating theatre during their Anaesthesia posting as a result of the COVID-19 situation. The introduction of PASS-IT VR system has been timely as it gave the students a unique opportunity to continue the operating theatre learning experience virtually in a safe and structured manner. This innovative VR tool can certainly complement the operating theatre learning experience when the current restrictions are lifted,” added Assistant Professor Terry Pan from the Department of Anaesthesia at NUS Medicine.

“The initial feedback from pilot studies amongst medical students have been very encouraging and we believe that this sort of experiential learning is integral in helping to enhance and reinforce the didactic curriculum. PASS-IT will not be limited to medical students but will also include scenarios for dental students,” Assoc Prof Kow said.

About the National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, as well as 12 NUS Overseas Colleges across the world. Close to 40,000 students from 100 countries enrich our vibrant and diverse campus community.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 30 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy, environmental and urban sustainability; treatment and prevention of diseases common among Asians; active ageing; advanced materials; as well as risk management and resilience of financial systems. Our latest research focus is on the use of data science, operations research and cybersecurity to support Singapore's Smart Nation initiative.

For more information on NUS, please visit www.nus.edu.sg.

About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through its doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is Asia's leading medical school and ranks among the best in the world (Times Higher Education World University Rankings 2019 by subject and the Quacquarelli Symonds (QS) World University Rankings by Subject 2019).

For more information about NUS Medicine, please visit <https://medicine.nus.edu.sg/>