6S IN ACTION: A VR EXPERIENCE

Nothing beats putting training to practice, and getting the hands on experience needed before implementation. Find out how the team at CHI's Kaizen innovate learning that takes training beyond the classroom walls.

By Tjut Rostina, CHI

CHI's Kaizen team has taken experiential learning to the next level with the recent launch of their virtual reality training for 6S.

With the first series of training sessions taking place in early January 2023, the immersive learning experience will augment Tan Tock Seng Hospital (TTSH)'s signature 6S training programme, by enabling staff to practice a mix of clinical and non-clinical scenarios to illustrate 6S application across the hospital.

The first scenario to start off the training series was on SOC blood-taking (Phlebotomy), where staff would have the VR experience on optimizing the blood-taking process, and reduce the time taken to do this with patients. Going forward, the team has plans to launch a scenario focused on pharmacy medication packing in the next release.

Find out what drove the team to explore training beyond the traditional classroom walls, and the expected impact of the learning experience in VR.

The Backstory

The signature 6S training programme has been implemented successfully at Tan Tock Seng Hospital since 2008, equipping the workforce with basic lean knowledge to increase the efficiency of their work processes and environment.

Traditionally taught in a classroom setting, the programme was redesigned into microlearning modules via National Healthcare Group eLearn in 2020, enabling staff to continue their training during the pandemic by accessing these modules on their mobile devices.

This innovation earned was awarded the Workforce Transformation Best Practice Medal at the National Healthcare Innovation and Productivity (NHIP 2021) awards for making training accessible through the digitally enabled microlearning.

However, microlearning alone is insufficient to achieve the learning outcomes that experiential classroom based training offered.

In a review of the 6S microlearning module a year after implementation, while most of the feedback received were positive, learners shared that an experiential learning to apply their new found knowledge would have been more effective in helping to retain and understand 6S better.

As such, the Kaizen team explored ways to take the training of 6S to another level that would enable more effective learning through virtual reality (VR).

Existing Challenges

To enable staff to practice 6S in their training more effectively, CHI's Kaizen team proposed to augment microlearning with Virtual Reality (VR) experiential training.

The VR component will fulfil two categories of needs:

- ***Learning Experience and Outcomes***

According to research studies, online learning would only be effective when there was effective integration of pedagogy, technology and content.

While a lot of thought has been put into the pedagogy and content design in the development for the 6S microlearning modules, there was still a missing component of experiential learning and application.

Consequently, the online learning for 6S had not achieved the desired learning outcomes as learners lack the chance to apply the knowledge, and subsequently, the confidence to apply 6S in their work.

VR has been used for decades in industries where people learn best by doing, and by getting feedback when they make mistakes in a risk-free environment.

There is a vast amount of research supporting the effectiveness of VR to enhance learning experiences and decrease the amount of training time required. VR will complement the microlearning module by providing learners the opportunity to practice 6S and have the confidence to apply the knowledge in their work.

- ***Operational Constraints***

One of the challenges faced by the team was the administrative load of identifying and booking relevant venues to carry out the “Waste Walk”, a walk-through of existing processes to see which areas can be eliminated or made more efficient with 6S.

While staff members had the opportunity to propose changes using 6S principles after the Waste Walk, they did not have the autonomy to execute the improvements.

By implementing a VR environment, staff can apply and practise the 6S principles to augment the microlearning programme to further enhance learning effectiveness.

The Solution

The proposed VR component of the 6S programme would provide staff with an opportunity to apply 6S (knowledge that they acquired through the microlearning module) in a safe virtual environment. The VR component would provide staff with an opportunity to practice and apply the basic Lean concepts leading to a deeper knowledge transfer.

This would ultimately enable staff to be more confident and adept at identifying and removing waste so as to facilitate care / process redesign in their work environment.

The care and process redesign would facilitate identification of opportunities for automation and/or job redesign, which will prepare the workforce for the future. This was in line with the CHI Innovation Cycle.

The plans for implementation and execution of the VR project are as follows:

- Engage an experienced VR Developer to develop the VR application that is suitable for Oculus Quest VR headset (most affordable and easy to set up)

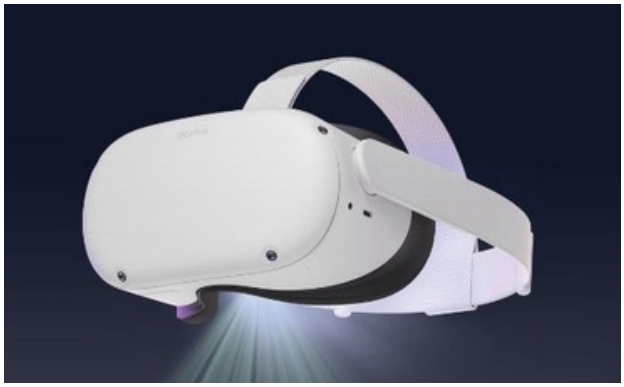
- Agile testing of VR application prototype with internal staff to ensure that it is suited to their learning needs

- Deployment of VR application to TTSH internal staff and subsequently to community partners

The VR module have built-in assessment at various stages to test learners’ learning and knowledge.

Learners would need to complete it before moving to the next stage. There was also an evaluation to measure the overall effectiveness of knowledge transfer.

The expectation would be that the overall learning would translate to behavioural changes where the staff would be able to lead and complete 6S projects on the ground.



The oculus headset used in the VR experience.

Going Forward

“With the VR headset and this training, it helps me to understand 6S better. As a nurse in the ward, the scenario feels very relatable, and I am able to apply 6S in safe environment,” shared Joshua Lim, a staff nurse of TTSH who did a session on Phlebotomy.

The 6S microlearning module has already been offered beyond TTSH, through the Agency for Integrated Care Learning Institute LMS (AIC LI).

While the current VR training sessions were offered to TTSH staff, moving forward, the team plans to extend this to learners within the community and to scale it beyond operations in TTSH.

“By extending this VR module to community partners, it would further encourage better understanding of Lean for the wider community, and have an improvement mindset that would enhance efforts as care partners in Central Health.

This would also facilitate better innovation which would positively impact care delivery beyond hospital walls.

The sessions on Phlebotomy are currently open for TTSH staff. For more information, please visit http://for.sg/vr6s .

Staff nurse Joshua Lim trying out the VR experience.

CENTRE FOR HEALTHCARE INNOVATION