## Project Title

Augmenting Digital Lean Training with Virtual Reality (VR)

## Project Lead and Members

- Loo Wei Hann
- Mohamed Razeen Bin Samsudeen
- Lim Hui Pin
- Tan Wen Xin
- Leow Jia Min Charmaine

## Organisation(s) Involved

Tan Tock Seng Hospital

## Healthcare Family Group(s) Involved in this Project

Healthcare Administration

## Applicable Specialty or Discipline

Kaizen

## Project Period

Start date: Not Available

Completed date: Not available

## Aims

1. To provide practical experience in a safe & controlled environment where staff can gain confidence to work on real-life projects
2. To overcome operational constraints of needing to find suitable settings (e.g. clinic, pharmacy) and coordinate time for training
3. To maintain the accessibility that microlearning provided: Learning anytime, anywhere

CENTRE FOR HEALTHCARE INNOVATION

# CHI Learning & Development (CHILD) System

## Background

See poster appended/ below

## Methods

See poster appended/ below

## Results

See poster appended/ below

## Lessons Learnt

See poster appended/ below

## Conclusion

See poster appended/ below

## Additional Information

Accorded the Outstanding Poster Award at MOH National Quality Improvement Conference 2023 (Workforce Safety & Joy-In-Work Category)

This project was also featured as a case study on Meta and GovInsider.

## Project Category

Training & Education

Education Platform, Virtual Learning Platform, Learning Theories & Framework, Simulated Training

Technology, Digital Health, Virtual Reality, Immersive VR

## Keywords

Lean Methodology, Digital Learning

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# Augmenting Digital Lean Training with Virtual Reality (VR)

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## Problem Statement

6S, a Lean process improvement methodology has been taught and adopted hospital-wide since 2007 to drive efficiency in the hospital. Classroom training was converted to Digital Learning in 2020. One year post digital learning implementation, feedback was mostly positive. However, learners shared two major impediments to their learning, which this project aims to address.

**1) Just reading about examples was not sufficient to teach them how they could apply 6S**

**2) High likelihood of forgetting the concepts learnt due to lack of hands-on experience**

## Project Aim

1. Provide practical experience in a safe & controlled environment where staff can gain confidence to work on real-life projects.
2. Overcome operational constraints of needing to find suitable settings (e.g., clinic, pharmacy) and coordinate time for training.
3. Maintain the accessibility that microlearning provided : Learning anytime, anywhere.

## Potential Solutions

Continue to deliver instructional content via Digital Learning but augment with practical experience to reinforce learning. The following approaches (a, b, c) were considered and evaluated against our project aims (1, 2, 3):

| | 1. Practical experience | 2. Overcome operational constraints | 3. Learn anytime, anywhere |
|---|---|---|---|
| **a) Face to face** | ✓ | | |
| **b) Virtual classroom (e.g. Zoom)** | ✓ | ✓ | |
| **c) Virtual Reality** | ✓ | ✓ | ✓ |

Virtual Reality was identified as the best approach to augment 6S learning experience.

**Instructional Content via Digital Learning**

1. Lean in Healthcare
2. DOWNTIME
3. 6S

Staff to complete their digital learning through mobile devices.

**Augmented Application via Virtual Reality**

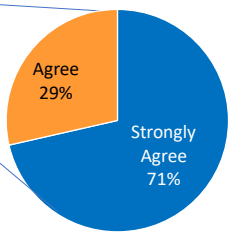
4. 6S Application in different settings

Staff experience Waste Walk and 6S application in VR

## Outcomes and Impacts

**100%** **VR improved understanding of the 6S concept**

**100%** **Enjoyed the experience**




Staff feedback that the VR experience was intuitive, realistic, and engaging. It provided our staff a safe environment to try 6S in healthcare contextualised scenarios.

*"Love the part where there is a **comparison of before and after.**"*

*"I was able to explore and **interact with objects** in the clinic. The visuals were so crisp and the sound was so **realistic** that it **felt like I was really there**."*

*"The VR session is very **intuitive** and I learnt a lot along the way."*

*"Leveraging VR, I can **apply** the knowledge almost **immediately** in the simulated environment. Even when I do make mistakes, they don't have real-life harmful repercussions to patients, other staff, or myself – hence ensuring **psychological safety to learn without fear**."*

## Lessons Learnt

**Scenario Curation Takes Time**

As the 1st formal VR training in TTSH, we required more time to look into the following:

- Scenarios should be carefully selected and adapted and cater to a diverse group of staff.
- Drawing up credible storyboards relevant for staff's learning is an iterative process requiring close collaboration.
- Use targeted publicity and integrate the VR practical experience into staff's learning paths for maximum uptake.

**Less is More**

We started with a direct translation of real-life scenarios into the VR environment to make the scenario more immersive. However, we learnt that in VR, keeping the environment and number of interactable elements minimal helped learners focus their attention to the learning objectives.