

Project Title

Transformation of Continual Education and Competency Assessment for Nurses-The case of use of serious game for blood transfusion competency assessment

Project Lead and Members

Project lead: Andrea Choh Chau Lin, Nurse Clinician

Project members:

- Teo Kai Yunn, Nurse Clinician
- Ang Shin Yuh, Deputy Director Nursing
- Quek Li Ting, Senior Executive
- Ivy Goh Hui Qi, Associate Executive

Organisation(s) Involved

Singapore General Hospital

Project Period

Start date: March 2019

Completed date: August 2019

Aims

To assess nurses' blood transfusion competency skill objectively

Background

All nurses in Singapore General Hospital (SGH) are reassessed for competency on their core skills as a regulatory requirement and for quality assurance. There are about 2200 Registered Nurses in SGH who has to be reassessed for their competency on blood transfusion procedure every two years. Traditionally, conducting this competency assessment would require both the assessor and assessee to be in the same setting and direct observation by the assessor. The team consist of Nurses and administrators from the Department of Nursing Administration who worked with game developers to

a serious game to replace the need for face-to-face assessment for the blood transfusion competency skill.

Methods

See attachment

Results

See attachment

Lessons Learnt

We learned to think out of the box to look at different ways and methods to conduct competency assessment. Building games for competency assessment is an orthodox method which has not been tried before. We had to pick up the knowledge and language of the gaming platform to understand how it can be applied. With the understanding and knowledge, we could design the assessment to meet the requirements and ensure that it does not compromise the quality of the competency. We emphasised on the design of the game and did not realise that it may not be able to be supported with all models of computers. If we could start over again, we could consider a mobile platform which can be built on a tablet or phone so that it could be used easily without any sophisticated hardware.

Conclusion

See attachment

Project Category

Automation, IT & Robotics

Keywords

Automation, IT & Robotics, Healthcare Training, Online Learning, Staff Competency, Nursing, Improvement Tool, 5 Why Diagram, Manpower Savings, Serious Games,

Singapore General Hospital, Skill Based Competency Assessment, Blood Transfusion
Competency Skill, Online Simulation Game

Name and Email of Project Contact Person(s)

Name: Andrea Choh Chau Lin

Email: Andrea.choh.c.l@sgh.com.sg

Blood Transfusion Competency

Andrea Choh Chau Lin, Teo Kai Yunn, Ang Shin Yuh, Ivy Goh Hui Qi & Quek Li Ting
Nursing Division

Introduction:

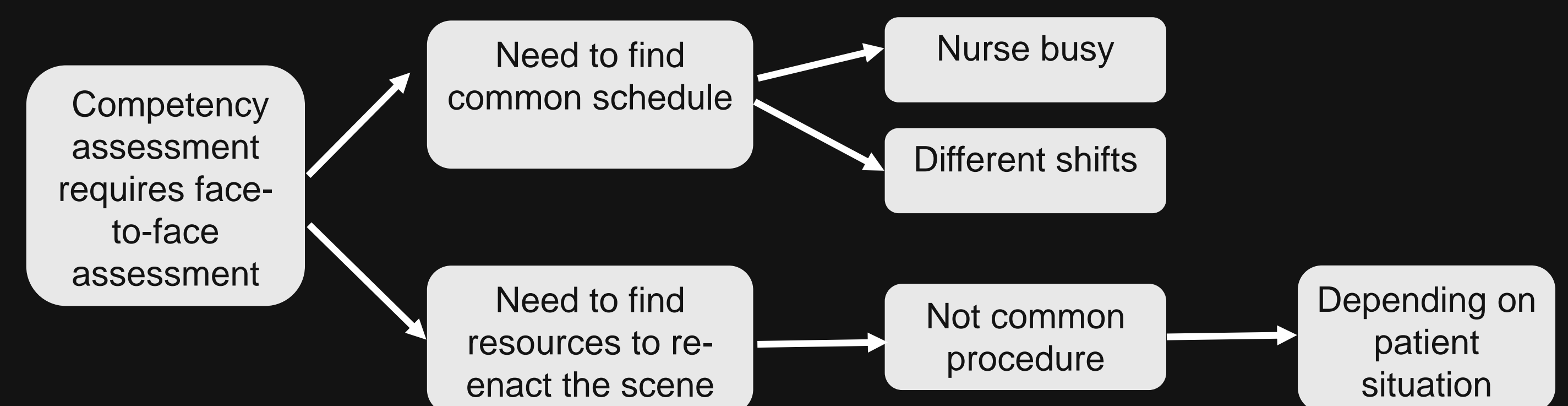
Conducting skill based competency assessment would required face to face assessment and observing the skill practiced in the clinical area which takes up time for both assessor and assessee. It also poses a challenge in our current setting especially if the skill performed is rarely observed. In addition, the assessment can be varied as it depends on the judgement of the assessor and it may not encompass all different scenarios that is faced in the clinical area.

Mission Statement:

Reduce the need for face to face competency assessment by 80% in 1 year

Analysis:

The team analysed the issue with a 5-Why diagram:



Interventions

The team envisioned using 'Serious Games' for nurses to be assessed objectively in a real physical set-up. This would allow testing of decision making and responses for rare complications/ scenarios which is not possible in the traditional way of assessment.

'Administration of Blood and Blood Products' competency assessment was chosen as it is a yearly competency assessment and there is limited opportunities for nurses to be assessed in the clinical areas. In addition adverse events during blood transfusion is rare and usually would require the nurse to reiterate the steps without performing the skill. Having a virtual environment set-up can help the nurses to visualize and practice carrying out this procedure in a safe environment without involving a real patient.

An online simulation game was created with the following features:

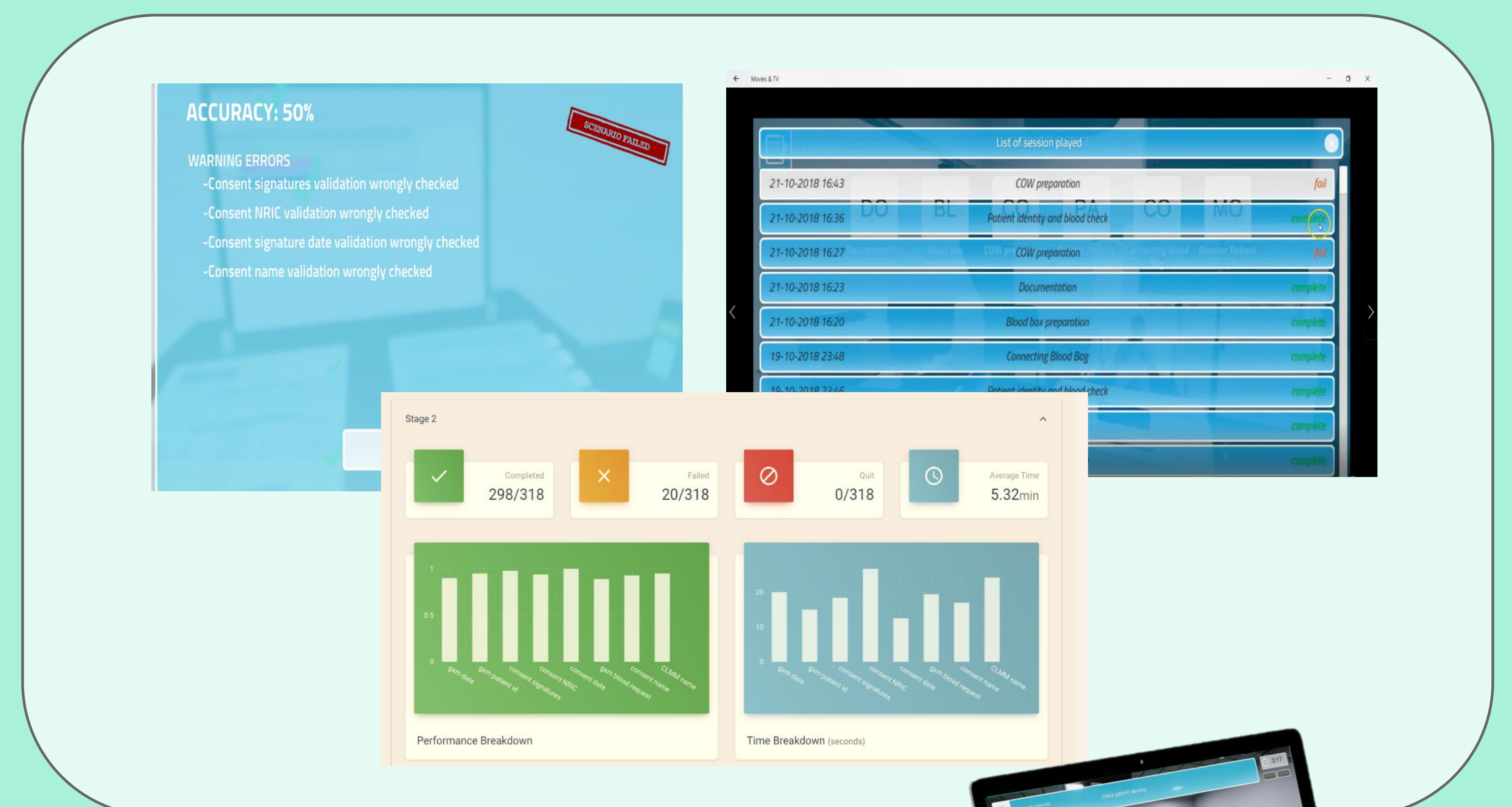


- Spilt into stages for 'bite size' assessment
- Player to pass the stage to continue with the next
- Built in 'distractors' to test player's reactions and decision-making

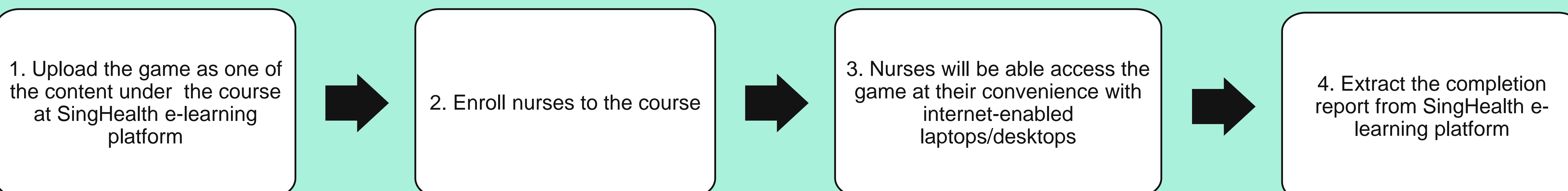
Using the gaming concept, the player will need to reenact the correct steps when administering blood to pass the competency. Any mistake in the game is captured and analysed so that learning and corrective actions can be taken by the player.

This also allows the assessor to view their progress and provide targeted training or practice reinforcement.

Backend, Nursing Division has an overall view of the nurses' responses which creates an opportunity for management to understand the behaviour in the designed work process and review the current work process.



PROCESS AFTER LAUNCHING THE GAME:



Result:

An approximate of 2200 nurses has successfully completed the assessment via the game from February to May 2019. hence the mission of 80% reduction in face to face competency assessment was achieved

In addition we have also achieved manpower savings as there is no need for an assessor to conduct the competency assessment which can be used to perform patient centered care.

An approximate **manpower saving hours of 1100 hours per year.**,
(2200 nurses to conduct assessment x 0.5 hour)

A T-Test was performed for 30 observations. P-value is 5.64229E-19 which is statistically significant.

Conclusion:

With the implementation of the game, as an alternative to traditional method of assessment, we have achieved manpower saving hours and competency assessment can be carried out in safe environment. Nurses were also tested on their critical decision-making process as the game require them to solve real-life scenarios and spatially complex tasks. Nurses can do their competency at their own time and pace using their own laptops/desktops and receive prompt feedback for their answers.

The team will explore other competency assessment to build using this gaming platform,