

SAFESIM DESIGN:

Applying digital game-based learning to professional development

Dr. Juliana Tay, Ms. Sufiana Safiena, Assoc. Prof. Yang Miang Goh (PI)

World Engineers Summit 2021

Project is funded by SkillsFuture Singapore under the Workforce Development Applied Research Fund (WDARF)

Outline

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 - Why SafeSim Design?
- Methods
 - How did we start conceptualising SafeSim Design?
- Results
 - What did we learn in the process of developing SafeSim Design?
- Conclusion
 - What next?

Why SafeSim Design?

Digital game-based learning (DGBL) as an educational tool

- Improved academic performance and greater learning motivation
- Ability to deliver different types of information through short, interactive sessions
- Used mainly in formal education setting
- Limited research with adult learners
- Some game features could inhibit learning process

Hence, the journey to **research and develop SafeSim Design**, a digital game created to help engineers and other construction-related designers learn about Design for Safety (DfS).

03 How did we start?

Step 1: A systematic literature review/ Data collection

- Research articles published in past 10 years – ensure that the technology was not obsolete
- Participants limited to adults and students in Institution of Higher Learning - similar in their learning needs and experiences to adults interested in professional development

Step 2: A systematic literature review/ Data Analysis

- Basic coding scheme was developed
- Second open coding scheme was developed by grouping similar nodes from the first coding

04 How did we start?

Step 3: Three major themes were developed

Use of different gamification elements - to motivate and sustain players' engagement in learning

Use of teaching strategies - to aid in learning process

Challenges and limitations of DGBL as an instructional tool.

What did we learn about using gamification elements?

Not all gamification features are necessary or beneficial

- Extraneous factors could affect the learners' engagement with the learning content and level of motivation

Recognising players' achievements - a reward-based/ recognition-based system

- Help learners evaluate their learning progress
- Create a sense of competitiveness among the learners
- Improving learning engagement

SCENARIO 1: COMPLETED

SUMMARY ★★☆☆

Risks found	: 6 / 6
Risks fixed	: 6 / 6
Found Points Earned	: 850 / 1200
Corrective Stage	: 975 / 1200
Bonus MCQ points	: 0 / 0
Clues Bought	: 0
TOTAL POINTS	: 1825 / 2400

LEADERBOARD [FORUM](#)

1. CHAI XIN TIAN	2700 pts
2. Ting Ting Tay	2325 pts
3. Mohammad Nashrulhaq Abdullah	2225 pts
4. Sufiana Safiena	2100 pts

[REDO](#) [NEXT](#)

What did we learn about incorporating teaching strategies?

Alignment with adult learners' learning needs such as the need for relevancy.

- Use of real-world context in the digital games – allows learners to anchor new knowledge and experiences, practice what they learned in the "real" world

Recognising the varied life experiences, knowledge, and skills of adult learners.

- Differentiate resources to engage and challenge the learners
- Provide opportunities for players to express and share their thoughts and ideas

Prefab link bridge

CORRECTIVE

SCORE: 1000

Protruding vertical fins

How do you want to minimise the design risk?

A Remove the fin design if possible.

B Design the fins to be part of the precast wall.

C Provide temporary working platform, e.g. scaffolding, for the ...

Recommended Acceptable Least Applicable

YOUR SUGGESTIONS:

Please input alternative suggestions (if any).
Your suggestions will be reflected in the forums.

DONE

What did we learn about limitations of DGBL?

DGBL can increase learners' motivation – but motivation in what?

Motivated to learn or Interest in content => Set the tone for learning before playing to help them establish their identity as learners

Role of the instructor in DGBL

- As facilitators in the teaching and learning process
- As part of the development team in game development process

But, facilitators needs to learn about using DGBL and the different types of games they can use as instructional tools

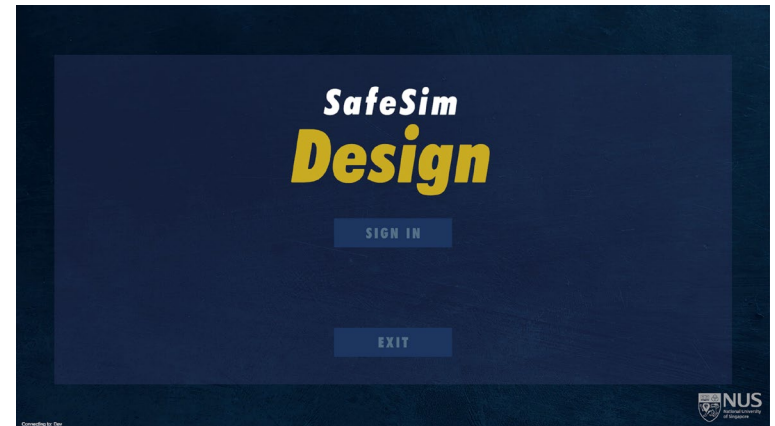
What next?

What do we know now?

DGBL can help meet the varied needs and expectations of adult learners

SafeSim Design was developed!

- Based on the DfS Library developed by IES and NUS
- A prototype digital game-based learning software
- For architects, designers, and engineers to **learn about design hazards and how to solve them**





Questions

Department of the Built Environment National University of Singapore

Dr. Juliana Tay, jtay@nus.edu.sg

Ms. Sufiana Safiena, bdgssak@nus.edu.sg

(PI) Assoc. Prof. Yang Miang Goh, bdggym@nus.edu.sg

Invitation to join in this study

NUS Safety and Resilience Research Unit (SaRRU) invites you to join us in testing **SafeSim Design**. We need your help to evaluate the gameplay and the authenticity of the game. Your participation will help us understand the effectiveness of the game and identify areas for improvement.

If you are interested, please contact us at bdgbox27@nus.edu.sg (Attn: Ms Sufiana Safiena)



THANK YOU