



Development of a Virtual Reality Serious Game for Fire safety training



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OUTLINE



- **Introduction**
- **Material & Method**
- **Results**
- **Discussion**



THE FIRE ACCIDENT

- 1 of the significant causes of **injuries** and **deaths** in Thailand.





- The cause of these losses is due to the lack of knowledge, understanding, and training in dealing with fires.
- This leads to anxiety and an inability to deal with the actual situations safely when confronted with them.



As a prevention, **the importance of preparedness for fire** should be first concerned. This can provide an opportunity to be able to survive and improve decision-making skills.

INTRODUCTION

- The appropriate fire safety training can reduce injuries and help increase the survival rate, especially in the case of emergency in high buildings.

HOWEVER



- **Fire safety training** in real situations is expensive and time-consuming, even though it is considered the most effective way.



INTRODUCTION



- **Simulation games** are being used as an alternative media for
 - Educating various skills
 - Practicing critical thinking processes, or
 - Being used as training tools.
- It provide players with scenarios that reflect the real world;
 - Players can take a roleplay & make a decision on given options
 - They can test the outcomes of their actions
 - leading to a more engaging learning experience compared to other forms of media.



Virtual Reality (VR)



OBJECTIVE



1. To develop **a fire safety training simulation game** by using **VR technology** to practice fire safety for both entertainment & training purposes
2. To evaluate the quality of the game in terms of fire safety training.

MATERIAL & METHOD



Collecting the necessary information and useful knowledge related to surviving fire



Designed the game features & developed



The basic fire training mode
The fire survival training mode
The indoor fire survival mode

Testing & making the evaluation tools



Quality evaluation by the professional firefighters



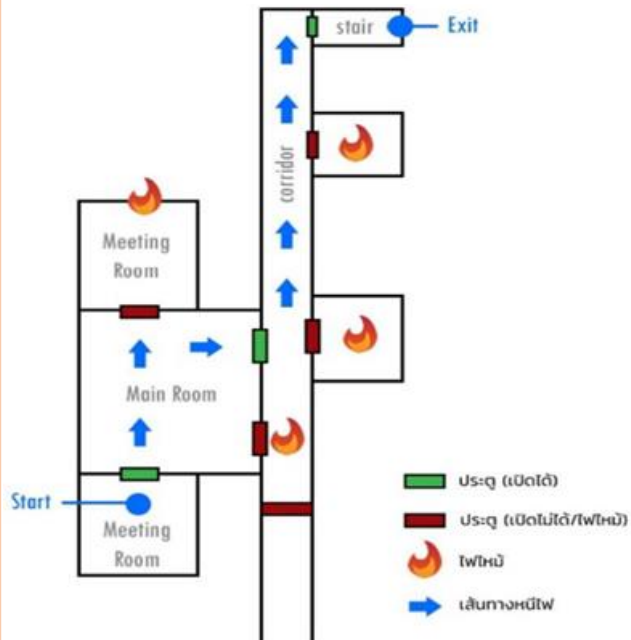
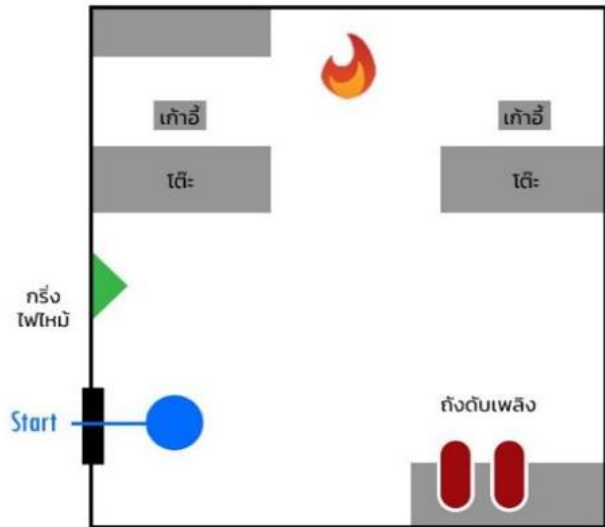
User testing by the users aged 18-30 years



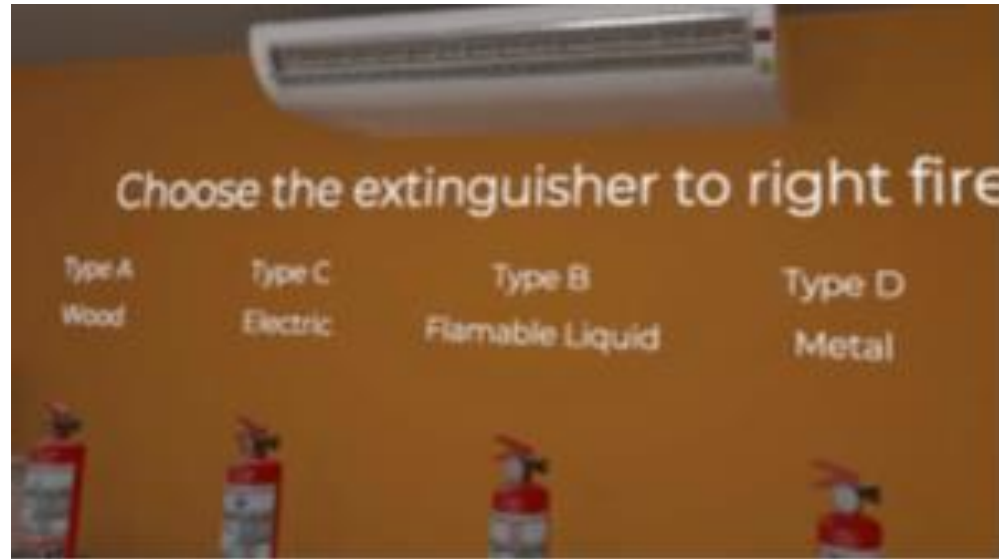
Collecting data & conclusion

RESULT

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RESULT



RESULT

- **The overall quality** of “the virtual reality serious game for fire safety training” was rated by **3 professional firefighters**.

Table 1. The overall quality evaluation of the game by professional firefighters.

Evaluation Topic	Mean	S.D.	Quality level
The system of the game	4.50	0.50	Very Good
The graphic of the game	4.67	0.47	Very Good
The use of sound effect	4.33	0.47	Good
The user interface (UI)	4.67	0.47	Very Good
The game content	4.56	0.49	Very Good
The knowledge assessment questionnaire	4.56	0.49	Very Good
Average score	4.55	0.48	Very Good

The quality levels were separated by score: Very good (4.50-5.00), good (3.50-4.49), and fair (3.00-3.49). A lower score than 3.49 was counted as unacceptable.

RESULT

- The knowledge achievement test before and after playing the game was rated by 20 of 18-30 year-old players.



Table 2. The comparison of the knowledge achievement test of before and after playing the game.

The score	N	Average score	S.D.	p-value
From pre-test	20	40.55	14.83	< 0.01**
From post-test	20	61.55	4.95	

** represents a significant difference between the score from pre-test and post-test.

DISCUSSION



- We introduce a new way for fire safety training through the VR serious game, which can give the player experience in a realistic way without any danger.
- It was evaluated by both professional firefighters and inexperienced players as **an effective tool to prepare for fire safety training.**

- In future research, it is recommended to investigate the effectiveness of combining the game with on-site training in enhancing individuals' knowledge and skills pertaining to fire safety.

VIDEO



Fire Safety VR Training Game

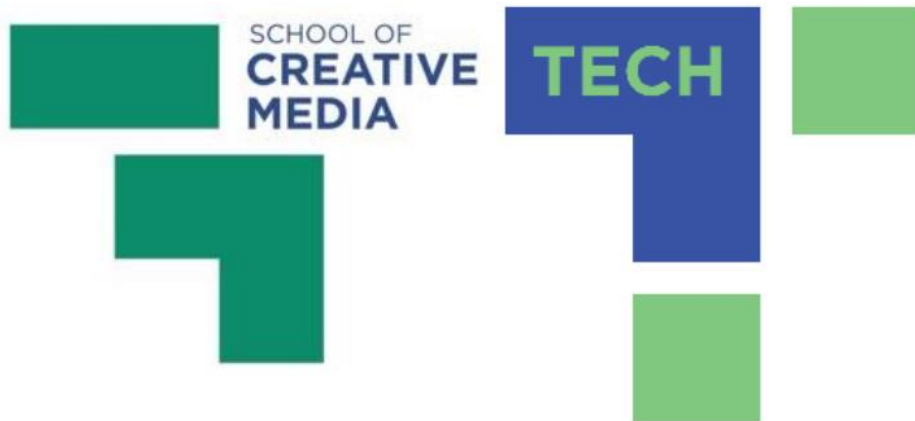


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