

**Tia C**  
BSc (Hons) Ethical Hacking

## Introduction

As the number of people accessing the internet has increased – especially with the subsequent lockdowns due to the pandemic cyber-enabled crime has also increased. In particular, technology-facilitated sexual violence (hereinafter, TFSV) has risen to such an unprecedented scale that the police and specialist charities are struggling to provide timely and effective support to victims. (Police Scotland, 2020; Tanczer, et.al, 2021).

The mitigations in place are also not suitable for purpose. They do not educate about or prevent people from TFSV and most are only effective once a crime has taken place. Mitigations in place by social media can also be circumnavigated and have major flaws in their execution (Henry et.al, 2021).

The use of gamification has been used to educate about serious issues effectively before. As such, gamification may be a possible mitigation to educate people about TFSV. (Arinta, et.al, 2020).

## Aim

The aim of this project was to answer the research question of “How can gamification be applied to educate people about technology-facilitated sexual violence?”.

This research question has three specifics that had to be answered:

**RQ1:** *What are the mitigations available to prevent technology-facilitated sexual violence?*

**RQ2:** *How effective are the mitigations at educating, preventing and protecting people against technology-facilitated sexual violence?*

**RQ3:** *How effective is gamification to educate users about technology-facilitated sexual violence?*

The main objectives of the game were to educate, prevent and protect users against TFSV.

## Method

### Analysis

The effectiveness of gamification was also analysed, emphasising the need for intrinsic motivation to be successful (Aparicio et.al, 2012). The game also had to be easy to use for adults of all ages and abilities. A visual novel was chosen for the game format.

### Design

Five chapters were created for the game, each revolving around a category of TFSV. The chapters were based on studies from the literature review as well as victim statements from charities, social media and news outlets.

The characters in each chapter asked the player for help. Each decision would affect the conversation and further actions of the character in the chapter.

### Development

The Ren’Py visual novel which uses python was used to develop the game. The chapters were developed, with assets such as phones and backgrounds added in to aid in the worldbuilding.

Information pages were added in between chapters to display information about the crimes such as laws and how players can protect themselves. The game was then hosted on a web server, where participants would be able to play the game.

### Evaluation

To evaluate the effectiveness of the game, a survey with pre- and post-game questions was created.

The pre-game questions asked demographic questions and about current knowledge of TFSV. Participants were asked how likely they were to ask friends and family for help.

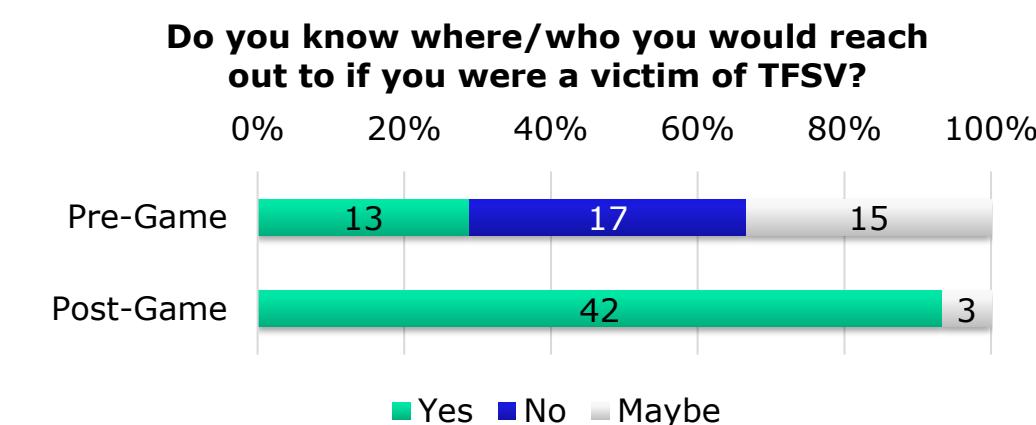
The post-game questions asked about the usability and suitability of the game. Participants were asked again how likely they were to ask for help from family and friends.

## Results

Forty-five participants taken part in the study, which was advertised online through social media and offline at security conferences. A wide range of people from all ages, genders and sexualities engaged in the study. However, there were no non-white participants. The main demographic represented were white, heterosexual males between the ages of 18-24.

Before playing the game, under half of participants (n=21) said they knew what TFSV was. After playing, all participants apart from two said they had or maybe learned about TFSV.

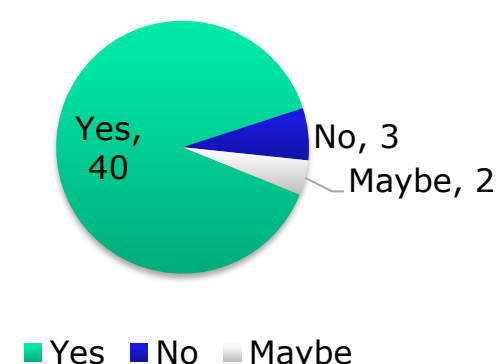
Participants were also asked if they knew where or who to reach out to if they became a victim of TFSV. Only thirteen participants said they did know in the pre-game survey, whilst after playing forty-two participants said they knew where to go for help.



Participants were unlikely to ask family or friends for help due to embarrassment and fear of victim blaming.

When asked if the game was suitable for educating people about TFSV, the majority of participants (n = 40) said that it was. It was noted that the story was believable and easy to understand.

**Did you feel the narrative (story) of the game was suitable for educating people about technology-facilitated sexual violence?**



## Discussion

The literature review identified that the current mitigations that are in place are not enough to tackle TFSV. However, the game was an effective mitigation by educating players about TFSV crimes, laws and prevention.

The project found men and LGBTQ+ people were less likely to approach friends and family if they were a victim - meaning they would rely more on specialist support. Most participants said they would seek the police or charities for help if they became victims.

The game was considered to be a suitable mitigation against TFSV. It was considered usable and easy to play, taught players about TFSV crimes, what the law was and where to seek help. Players said that they would use the game to generate an open conversation about TFSV with friends and family.

## Conclusion

In conclusion, the project was very successful, with all three research questions being answered. It was found that current mitigations in place were not suitable or accessible, and do not educate or prevent people from becoming victims. The game was considered a suitable mitigation, educating and preventing players from becoming victims of TFSV.

Future work includes the game being tailored to various age ranges, rather than being a ‘one-size fits all’ game.

## References

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