Viral Sphere: Fostering Healthy Social Media Practice Through Playful Simulation

Jacob F. Davis, Hannah G. Gaudesen, Nina Genster, Simone L. Rasmussen, Johan K. Sørensen and Emanuela Marchetti
University of Southern Denmark, Odense, Denmark

davis_jacob@hotmail.com
h.gaudesen@hotmail.com
ninagenster919@gmail.com
simonel.rasmussen@gmail.com
johan_k@live.dk
emanuela@sdu.dk

Abstract: In this paper, we present the development of a learning game, *Viral Sphere*, aimed at stimulating discussions on the European General Data Protection Regulation (GDPR) among secondary school students and educators. Our game consists of a fictional social media platform, displaying a network diagram to illustrate the spreading of data. Our design aims at promoting informed decision making, through interactive scenario-based learning. Players navigate real-life inspired situations, simulating posting on social media platforms and related consequences, as data spread beyond their immediate network. Data from testing with students, shows that our gameplay can facilitate meaningful conversations about GDPR in a relatable manner.

Keywords: GDPR, Game-based Learning, Social Networks, Social Media.

1. Introduction

As we acknowledge the need to teach young people principles about data protection, we propose a design-concept to foster informed decision-making regarding posting online. We designed a learning game to encourage and catalyze discussions between high school students and teachers on the European General Data Protection Regulation (GDPR), based on various theories of learning and game design. Our project builds upon a larger Erasmus project about GDPR (Marchetti et al., 2024).
Our design leverages a fictional social media platform, integrated with a network diagram, visualizing the spreading of data across multiple nodes, representing an individual posting across her network, and potential consequences.

Our project incorporates interactive scenario-based learning, where players are presented with decisions regarding posting on social media, portraying real-life inspired scenarios as seen on Figure 1. As the students decide about posting within the game, they will witness the potential consequences of their actions. This is demonstrated through the network component, allowing students to observe chats, reactions, and the spreading of data to individuals, beyond their immediate social circles, hence the game name *Viral Sphere*.

Figure 1: The three scenarios from the game.

Our learning game aims at serving as an interactive tool for initiating meaningful conversations about GDPR compliance, leveraging the influence of social media to contextualize abstract concepts in a relatable and accessible manner. Through immersive gameplay and scenario-based challenges, students should engage in interactive experiences and stories that prompt critical thinking and ethical decision-making regarding data privacy issues. Ultimately, the learning game should foster a culture of informed digital decision-making.

2. Theory and Design

Our concept builds on Kolb's Experiential Learning (Kolb, 2015) and network theory (Hogan, 2017). According to Kolb, learning is a continuous process where knowledge is gained by experiencing real life situations, reflecting on them, and then re-forming their knowledge to then repeat the process (see figure 2).

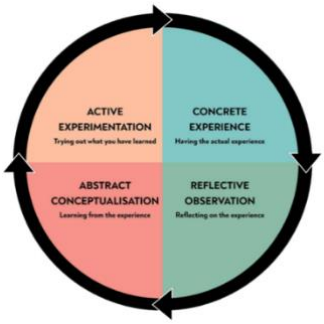

Figure 2: Kolb's Experimental Learning model (Kolb, 2015)

Our game fits into Kolb's model by providing an opportunity to experience firsthand the potential consequences of posting to social media platforms. Students and teachers should use the game during lectures aimed at teaching about GDPR and being safe online. Here the students will play through the game followed by a class discussion, allowing them to reflect on their experience.

Using games in education to make learning processes more fun and effective is encouraged in theories like Playful Learning (Papert & Harel, 1991). This theory argues for the use of games, or other creative learning tools in education, to bring a fun element that can help the students learn, increasing motivation and reflections. Our design concept aims at making learning processes about GDPR fun and, therefore, increasing engagement and willingness to participate in a potentially boring topic. Being a work in progress, we are still investigating existing literature on the topic. Henriksen-Bulmer et al (2023) and Scholl (2018) address motivation and learning of GDPR schools, leveraging analogue board games. DiGioia et al (2019) investigated a non-linear storytelling game (similarly to our game), aiming at clarifying the rules avoiding legal jargon. Tobarra et al (2019) instead adopted a meta-level perspective, providing a cloud game-based educational platform, aimed at hosting games to support learning of cyber-security.

The network diagram of our game is based on a simple level 1 network, defined as the personal network (Hogan, 2017). The term "simple network" refers to a network consisting of nodes and edges illustrating the connection between these nodes. In our social network diagram, individuals are represented as nodes, while the edges depict associations and activities among certain individuals (Fig. 3).

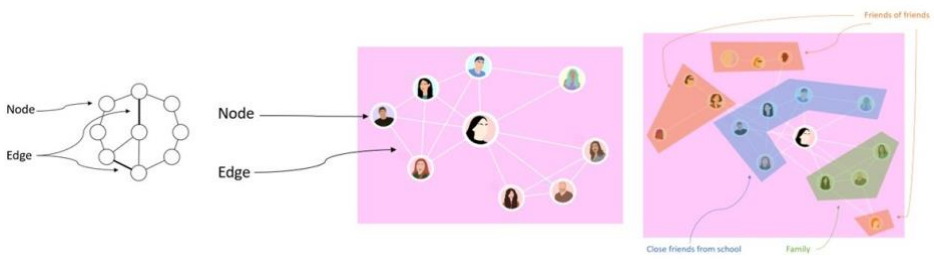

Figure 3: Simple Network (Hogan, 2017), basic and expanded network from Viral Sphere

Level 1 of the simple network is also referred to as "The personal network", which illustrates the personal connections associated with an individual. In our game, this network is small at the start including only the protagonist's immediate family and close friends from high school. As the game advances, the network gradually

expands and more clusters emerge, as data is spread to friends of the protagonist's friends. Through this diagram, we aim at demonstrating how individuals possess clusters of connections within their social network. Furthermore, we seek to illustrate that each person within your own clusters also have their own network, through which your data can spread (Fig. 3).

A main part of our design process was writing the stories represented in the game, in particular we focused on branching narrative (Heussner, 2015), in which players' decisions affect what will happen next, so to provide players with different experiences depending on their own decisions in the game. This is beneficial to create player agency, so the players feel that their actions are meaningful to the story and the game (Heussner, 2015, pp. 111-113). In Viral Sphere we have chosen a simple branching narrative structure, by only allowing two branching paths at a time, which will link up again after every scenario. These branches happen when the player can choose between posting or not posting on social media. This makes the choice of posting become more meaningful to the player which highlights the focus of the game. Thus, it helps direct the focus of the player to the element we want them to think about.

The game is designed to create experiences that will make players reflect on the choices taken by the characters in the game, as well as the choices the players and their friends take in their everyday lives. Using the medium of games for this purpose is appropriate since games are capable of being vehicles of ethical and moral experiences and introspection, as argued by Miguel Sicart in his book Beyond Choices (Sicart, 2013). According to Sicart, a failure in a game which leads to consequences for the non-player characters, can feel like a moral failure on the player themselves. This is accomplished by creating an object (the game) that invites the player to explore and 'play', whilst engaging with their own values (Sicart, 2013, p. 6). This works even when the game is not particularly responsive to the player's actions. A game, like ours, where the players observe the story more than affecting it, can still provide a meaningful experience, enabling players to reflect on the actions of the characters in the game without losing overview on narrative (Sicart, 2013, p. 88).

3. Test and Discussion

We conducted an ethnographic test with 3 classes, for a total of 42 students, from Oerestad Gymnasium, a technical high school in Copenhagen with the support of their informatics teacher. The students were from various ethnical background with a ratio of circa 1/3 females and 2/3 male, are enrolled in their final years of (18-20 years old), with focus on sciences and technology.

We started with an introduction to the project, afterwards the students were given time to play through the game while being observed by the group and teacher. After finishing the game, the students were prompted to fill out a survey regarding their experience of the game. The survey consisted of qualitative, open-ended questions focusing on how the students related to the characters and stories in the game, their answers were afterwards categorized based on the students' recurring statements.

In figure 5 one can see a diagram of the initial response from the users after they had completed the game. The diagram shows that they enjoyed the game, with many being interested in the subject matter and finding it realistic and relatable. However, some students felt that the material was too inconsequential and tame, wanting more dramatic narratives and more influence on the game's outcome.

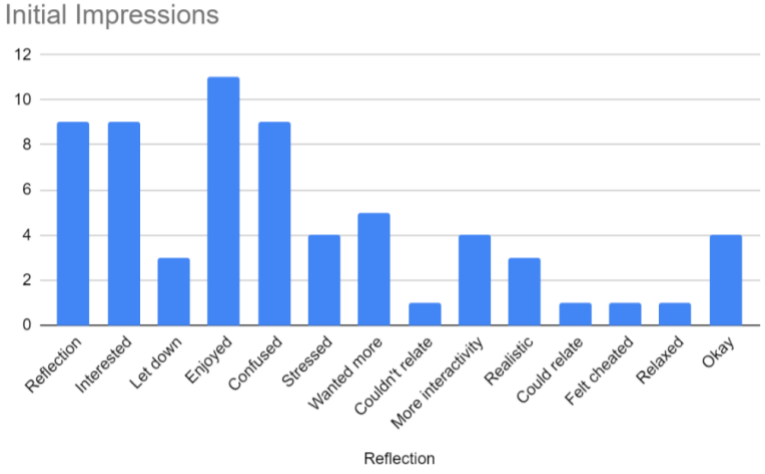

Figure 5: Graph over the users' initial impressions

Students seemed to enjoy discovering what would happen in the narratives, as shown in figure 6, such as being able to choose whether or not to share posts and see the consequences, which are core mechanics in Viral Sphere.

Figure 7 shows a diagram about suggested changes. The most common suggestion was to have more available actions, with many specific suggestions concerning a more interactive chat system. Other frequent suggestions included creating a more personal connection to the player, with wanting to be able to recreate themselves, or making the game easier to follow with more simplified instructions and a clear explanation of the game's purpose at the beginning.

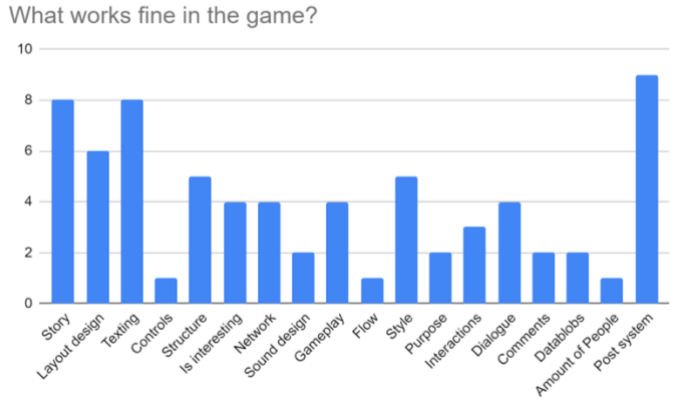

Figure 6: Graph over what the users enjoyed about the game

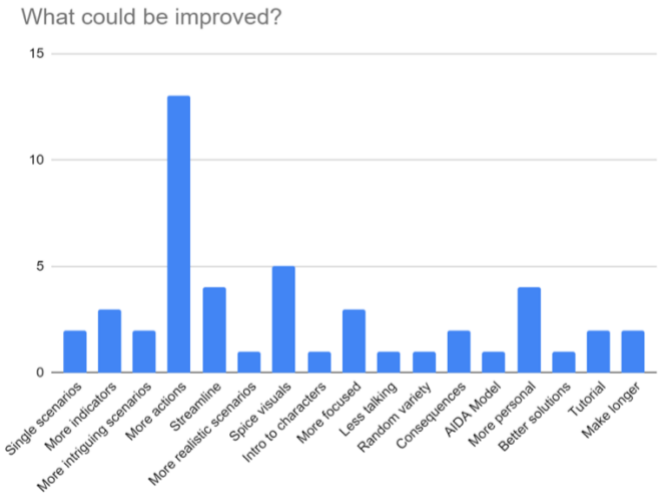

Figure 7: Graph over the users suggested changes

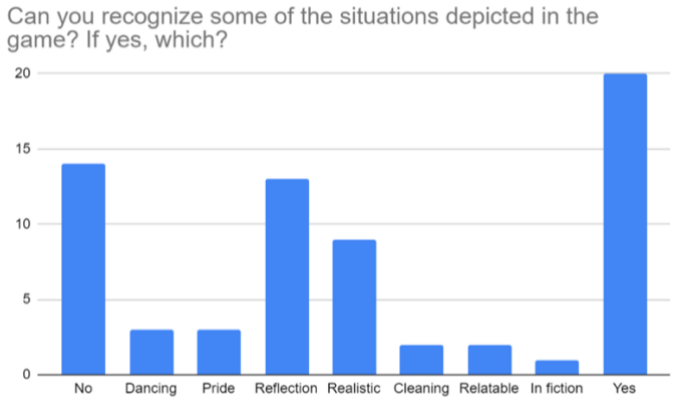

Figure 8: Graph over what, if any, situations in the game the users found recognizable

Some answers contradict each other, as figure 8 shows small difference between people answering yes or no, regarding if the students find the scenarios recognizable. This suggests that it may be difficult to capture the

attention of every user through a narrative based video game, however, our results indicated that a majority enjoyed the experience as it was.

Based on the response from our tests, in a possible future iteration, we should attempt at giving more choices to the players, most likely through the game's chat system. We could explore the concept of *Illusion of Choice* (Brown, 2016), to enhance a sense of agency, hopefully helping the players adverse to reading to feel more engaged. Another aspect that would be prevalent to add is the ability to create oneself at the start of the game, as opposed to being a designated person. However, this aspect would require further testing to verify whether it would help create a stronger connection to the game or make the experience to feel more disconnected. Finally, to appease users who, feel that the game needs to tackle more mature situations, a built-in Scenario Creator would allow each teacher to implement whichever narrative they feel would be fit to discuss, allowing users to explore various kind of scenarios that they feel would fit their intended demographic.

4. Conclusion

By utilizing the power of interactive learning games as tools for dialogue, our project aims at empowering students to become active participants in terms of shaping digital privacy norms and practices. Through collaborative engagement with teachers, students are expected to develop critical thinking skills, ethical reasoning, and a nuanced understanding of their rights and responsibilities in this digital age. Ultimately, the learning game serves as a starting point to fostering a culture of a more informed digital decision-making.

Based on our testing, it can be stated that the learning game is facilitating discussions about GDPR and behavior on social media between the high school students and educators. Feedback from testing sessions indicates a positive reception, with participants appreciating the engaging narratives and interactive elements. However, constructive feedback highlighted the demand for increased interactivity and customization options. Despite varying preferences among users, the majority expressed satisfaction and engagement with the game, affirming its potential as an educational resource.

In conclusion, while further refinement is warranted, our learning game serves as a promising tool for instilling awareness of digital privacy principles and fostering responsible online behavior among high school student, for which these kinds of games can be utilized to make it easier for educators engaged in a dialogue about these kinds of subjects.

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