情報リテラシー授業におけるフェイクニュースをテーマにした学習ゲームのデザイン

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Design of a Serious Game about Fake News for a Media Literacy Course

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Abstract

This work-in-progress paper introduces the design process of an online serious game about information sharing in social media as an innovative online interactive practice in media literacy education for young adult students. This game was designed as part of a digital media literacy course for freshmen and sophomores in a Japanese university. It provides a playful learning experience in a context that mimics real-world social media services. Players evaluate online information, decide to share or not the information, and as a result, gain or lose followers. To support their decision making, students can access other players' statistics and analyze references such as other academic papers or expert's blog posts. Through this experience, students are supposed to apply the knowledge and techniques acquired during the course and become smart consumers and responsible creators of online information. The results from the iterations will provide clues for the measurement of the learning effects and the engagement for this sort of online practice. Results from this research and lessons learned from the design process are expected to contribute to digital media literacy education as well as to serious game design.

1 Introduction

This paper presents the design process of an online educational game, as one of the components of a research on media literacy education. This game has been designed to be used in a media literacy course for higher education in Japan. The course focuses on the digital sphere, delivering media literacy knowledge and addressing topics related to online news, social media and digital citizenship.

In the initial phase, the design process comprises of concept creation, development, and utilization of games as engaging, playful and informative tools. Understanding that the ability to consume online information shapes one's digital citizenship, the game is expected to contribute to the learning outcomes and stimulate students to engage in online participation.

The ultimate goal of this research component is to measure the outcomes of a digital media course designed for university students in Japan.

2 Background

2.1 Media Literacy and Media Literacy Education

The spread of information and communication technologies (ICT) made information accessible to everyone with access to the Internet. This setting deeply impacted the way we work, learn, socialize, and made it easier for anyone to create media and online content. Nowadays, we are all exposed to an overwhelming amount of information online, making it difficult to understand messages or discern an appropriate answer to their questions.

Recent global events reinforced the need to reconsider how we understand and interact with information and media in general. The media or information literacy shapes the way one makes decisions and behaves toward social-political facts or events such as a pandemic.

In light of the high connectedness context in the current global society, media literacy has become a core competence in educational frameworks around the globe. Media literacy is "the ability to identify

different types of media and understand the messages they're sending [1]." It is directly related to topics such as 21st-century skills and digital citizenship.

Education frameworks presented worldwide show characteristics of strengthening the digital context of media literacy and stimulating students to creativity and expression. However, Japan still struggles to incorporate digital media related topics into the curriculum, despite the increasingly high internet penetration among elementary (around 85.6%) and junior high school (95.1%) students, including access from smartphones, tablets, and personal computers [2].

The goal of the course developed with this research is to bring the fundamental messages of media literacy education in a different approach to media literacy education practice at Japanese university classrooms. The course as well as the components were designed based on the fundamental pillars of learning competencies (knowledge, skills and attitude) as described below.

- ➢ Knowledge: Understand the dangers of simplifying and labeling information
- ➢ Skill: Understand the key points to assess the reliability of the information
- ➢ Attitude: Nurture responsible behavior as a digital citizen

The course comprises three modules: 1) About Digital Media Literacy, 2) Information and News Literacy, and 3) Behind the 'Like it' button. Each module was designed to provide a blended-learning experience with video, online interactive activities and group discussions.

The impact of the coronavirus in all levels of education made 97% of Japanese universities offer all courses online during the first half of the academic year [3]. Because of that, the course structure, as well as all its components, were designed also for online, offline, or hybrid learning environments.

2.2 Serious Games in the Context of Fake News

Digital games are a part of daily life in Japan. In 2018, the number of game players in Japan was estimated to be 67.6 million [4], a number that represents more than half of the entire country's population. The popularity of digital games is often associated with engaging and meaningful experiences.

In education, their potential for interactive learning environments and collaborative learning experiences have been seen in the shape of serious games [5]. The term serious games can be defined as "any piece of software that merges a non-entertaining purpose (serious) with a video game structure" [6]. Serious games are also often seen used in conjunction with other terms such as edutainment, digital game-based learning, and immersive learning simulator [7].

Schifter [8] highlights the connection between serious games and 21st-century classrooms with games as external motivators, for drills, practices, and other types of learning. Additionally, the games' virtual environments can represent a safe environment in which students can experience and experiment with their skills and knowledge [5]. As such, games represent a safe zone to try new approaches and ideas, without real-world repercussions if they turn out to not be good. Failure itself can be seen as a step conducive to learning, which can help to initiate collaboration and dialogue between peers and provide learners with new insights [9].

Serious games have been one of the ways utilized to work with the problems caused by fake news. Several games have been done utilizing different approaches to bring awareness to the topic, such as: "Bad News", where you play the role of a fake news producer and learn their techniques [10]; "Fake News Detective", in which you become a fact-checker in a hoax busting organization [11]; and "LAMBOOZLED!", a competitive deck-building card game to enhance news literacy skills [12]. Each with their own approach, those games were utilized as ways to work with misinformation and news literacy.

Another game called "Factitious" utilizes data collection mechanisms to allow assessment of factors such as patterns in understanding news literacy and play experience [13]. This case shows that collecting data from play sessions is essential for further analysis of the impact of serious game experiences on fake news and on news literacy. For such, defining which type of data is meaningful and must be collected during play sessions needs to be considered during initial design steps.

In the next subchapter, we will introduce the game Brain Company, designed in the Graduate School of Media Design, Keio University as a master's project.

2.3 Serious Games in the Context of Fake News

Brain Company [14] is a card game that aims to bring awareness about the dangers of fake news. It was designed around the concept that sharing fake news or not sharing reliable news can have real-life impacts.

Players score points by sharing reliable news and blocking fake news. If they share fake news or block trustworthy news sources, they lose points instead.

Each news piece is associated with reference cards, which aim to give other perspectives on the information and aid the player in making a decision. The reference cards are designed to simulate a variety of sources, from reliable news sources to social media. It is up for the players to decide which of those references are to be considered trustworthy and help them to identify if the news is fake or not. The objective of associating each news with other sources is to show the importance of researching and filtering information before sharing online, as well as considering the sources where each piece of news or associated information comes from.

Players have a time limit to make their decisions on sharing or blocking for 10 different news cards. The playing part is a single-player, but the idea of Brain Company is to run multiple single-player sessions in parallel at once. This way, after the individual sessions are over, players can compare their scores and results with each other.

One unique aspect of Brain Company to other games about fake news is that it exemplifies to players how social, economic and environmental problems can be linked to their choices on contributing or not to misinformation. The impact can be seen immediately after the play session, giving players the possibility of establishing a causal relationship with their decisions on sharing or blocking pieces of news. Some of those scenarios are based on real fake news cases and others are fictional. When comparing their results, players can engage in conversations on how each of their scenarios might differ, raising many points for discussion.

The assumption for creating those scenarios is that when the player chooses to block or share a piece of news, many other people took the same decision. This way, thousands of shares or blocks would have a huge impact on the opinion of people. The result is shown as a piece of bulletin news, telling a future scenario in which everyone shared or blocked certain news.

The following image shows an example of fake news included in the game, as well as the impact caused in society by the massive sharing or blocking of this news piece:
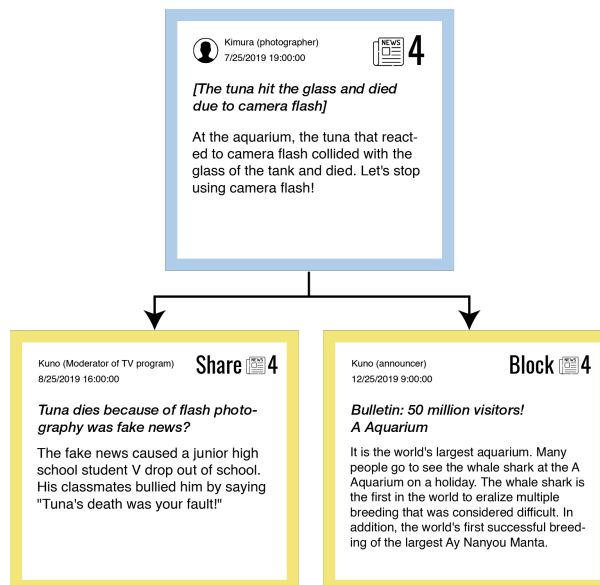

Figure 1 – Results from sharing or blocking news in Brain Company

In the case above, the information stating that the tuna died because of flash photography in the aquarium was fake news. So, if players share this information, the consequence is that a junior high school student who visited the aquarium and took photos with flash gets bullied by his classmates (and in this case, players lose points for sharing fake news). On the other hand, by blocking the fake news, players score points and the aquarium is not affected by misleading information, keeping its popularity as a visiting spot.

Brain Company's goal was to show those scenarios to players and allow them to reflect on the consequence of their actions online. Comparing before and after they play the game, test participants shifted their view towards the impact they have when they share news to be more cautious on the information they share, as well as on researching several sources to assess the reliability of news.

The current version, which will be described in the next chapter, utilizes both reference cards and after play scenarios for discussion as part of its design.

3 Design

The game designed in this research is part of a higher education course of media literacy and inspired by a party card game called Brain Company, created to raise awareness of fake news among adults.

The media literacy course includes time in the lecture for students to learn how to handle the information that exists around them through interactive activities such as discussions and mini-games. For a

better understanding of the context, we describe the course core concept and how it impacts the game design process.

3.1 Media Literacy Course Core Concept

The core structure of the course (knowledge, skills, attitude) is also adopted in the game design as described below.

Knowledge: Understand the dangers of simplifying and labeling information.

There is a lot of information that cannot be classified as completely correct or completely wrong. In fact, there are gray areas in determining accuracy in fact-checking.

The value of information varies with context, and even experts may disagree about its reliability.

Skill: Understand the key points to assess the reliability of the information

Meta information like author and publish date is often useful for evaluation. Figure out what can be used as meta-information and what to pay attention to.

In some cases, it is useful to estimate the intent of the publisher. Various reasons exist for publishing fake news, including revenue, propaganda, desire for approval, and misunderstanding.

Attitude: Nurture responsible behavior as a digital citizen

Proactive sharing of valuable information can lead to a wealth of information space, community development, and solutions to social problems.

On the other hand, even non-malicious sharing can foster misunderstanding and discrimination.

The term "information" is not limited to articles in the commercial media, but also includes UGC, as represented by social networks as well as corporate and government announcements and data.

Game Concept

Based on knowledge, skill and attitude, the game aims to engage players through action. The first action players take is to evaluate information in a context that mimics real-world services. The user interface takes a SNS-like look by displaying card-type information and a timeline styled layout. The game also presents real articles and posts, so players can use original sources as reference to base their decision making.

The second action players take is to analyze experts' opinions as part of how to read and understand information. In a real-life context, readers are influenced by opinion leaders and key persons related to a determined subject. It is also said that what others in their social circle do can influence one's opinion. To add this scenario in the game environment, players can view other players actions on sharing or block, forming statistics in which they can base their decision on. Additionally, players are also shown which choices experts had on each news presented in the game.

3.2 Game Experience

The original card game is a single-player game. However, it is meant to be played with more players simultaneously, as the final results can be compared through a ranking system. In the setting of a workshop, comparing results between players can create an environment conducive for discussions and deeper analysis to take place.

As such, the game experience can be seen in two parts:

- The first part is the individual play session, in which each player reads different news and references, deciding to share or to block the information. Each player's decision process is based on their interpretation of news and sources, related to their assessment of the reliability of each piece of information.

- The second part is the discussion session, in which players can compare their results and discuss the impacts of the news they shared and blocked, as well as discuss the importance of responsible behavior as a digital citizen. In this part, players can see the overall session results, how players answered, and what type of scenario their choices created. The statistics of other players' choices, as well as the answers of specialists in the topic of the news are shown, adding extra elements for discussion.

Two main points of the design of Brain Company are kept in this new design inspired by the original card game: reference sources and future scenarios. The experience as a whole works closely with the knowledge part of the course, which is understanding the information in different contexts and assessing its reliability.

Skill is closely related to the reference cards, as they present information from other sources, allowing for players to assess the same information from multiple perspectives. The references contain

information such as publication date, source, author, and others, connecting to meta-information that can be relevant to assess reliability of information.

Lastly, the scenarios created by sharing and blocking news allows for players to understand the possible consequences of their actions, relating closely to attitude. Reflection on those scenarios can help to foster responsible behavior in digital environments, showing the impact that wrong information sharing can cause when done on a large scale.

3.3 Initial Digitization

To approach the digitization of the concept originated from the card game Brain Company, the first step was to digitize the original game. Initially, we converted the original game experience as is, without adjustments. The original version was not designed with specific course modules in mind, thus missing features and opportunities for changing the design were detected.

The goal in this first step was building the same experience designed in the original game but in a digital medium. Some advantages from having the game in a digital version includes having pictures for each news to mimic a real article, providing a timer, adding soundtrack, saving session results and linking different sessions with several participants in the same group through a code system.

The following picture shows how each news is presented to the players, with blocking/sharing features, reference cards on the right side and meta-information relating to the news and references.
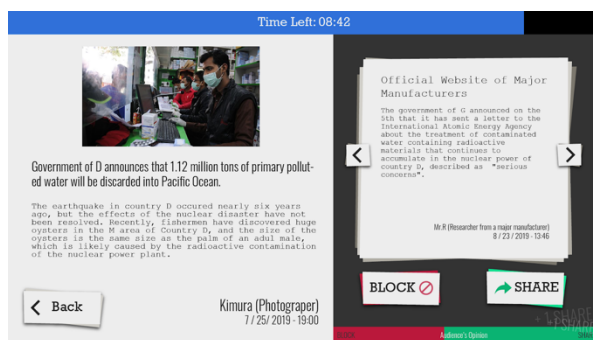

Figure 2 – Initial digitization of Brain Company

3.4 Refinement Based on the Initial Digitization

The version created during the digitization step served as a benchmark for the mechanics from Brain Company. From this point, we decided to create a new game from scratch, based on design aspects of Brain Company. One change is on how the objective of the game is presented to players. In Brain Company,

players aimed to score higher to compete with other players and perform well in the game. In this new design, players take the role of influencers, and their final score is based on the number of followers they can obtain. To increase their number of followers, they must share reliable news and block fake news. If they do the opposite, the number of followers will decrease.

Initially, the development platform changed from Game Maker Studio 2 (utilized on the digitization step) to a JavaScript implementation. This change was based on intended features and scalability. The following list details features added on the design of the new game, many of them aiming at engaging players by making the game more realistic or containing interactions that mimic social media usage:

- Existing news: all news shown to players are examples of real news or fake news. In Brain Company, some of the information was based on real cases, but necessarily the same as the original source. From now, all news shown is based on real (or 'real gale's) sources.
- Statistics: players can see in real-time the answers from other players. This can influence how information is perceived based on the pressure of other players. In the discussion step, comparing players' answers and utilizing captured data to generate relevant statistics on answering patterns and information perception can be a resource for discussion and learning.
- Specialists perspective: players can see specialists' opinions on the credibility of each of the news they blocked or shared. This can be used as a material for the discussion session in the second part of the game, showing different perspectives on how to assess information reliability.
- Algorithm-based scoring system: the scoring system for the new game is based on relevance algorithms utilized in social media services. If a specific news is shared by the overwhelming majority of players, then the quantity of followers players can get or lose is also higher, increasing the impact for that choice. This aims to mimic how trends tend to be highlighted on content websites, with everyone talking about the same subject. Many times, when a new trend happens, many content producers / influencers also create content on the same topic, as trendy can mean increased revenue or exposure. Because of how information tends to be replicated thousands of times during trends, the impact can also be greater.

Some of the features are still a work-in-progress in terms of implementation, but already defined as part of the new design. The changes in design presented in the next chapter aim to increase the engagement of the players and make the game more connected to real-life internet usage.

3.5 Incentive Design and User Engagement

The new design aims to be more realistic and add more layers when assessing the reliability of information. To achieve a more relatable and believable setting, a new visual style was developed to mimic a social media interface. This change also relates to the change that players now play the role of an influencer with the objective of having more followers. The following picture is an example of the new user interface added to the game (the following image is an early work-in-progress version, and may not be reflected in its totality in the final version of the game):
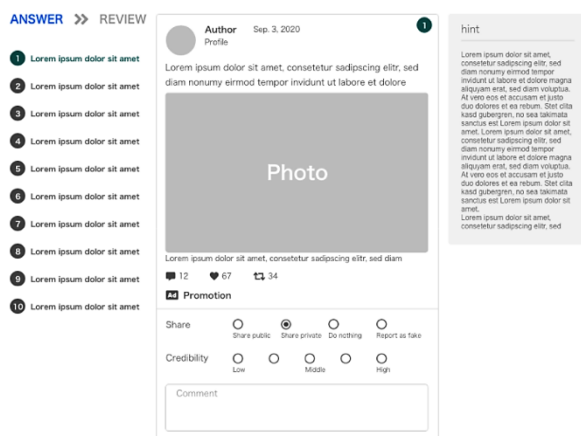

Figure 3 – New game implementation and interface

The setting of being an influencer in online media is chosen to create a more relatable setting for players. Students participating in the game sessions during the media literacy course are university freshmen and, in general, close to the reality of social media usage. Being an influencer also means that they would be held more accountable towards what they share on social media. Additionally, it creates a game objective to be the biggest influencer, adding competitiveness to the game experience.

Another element added in this new design is for players to rate how credible they believe each news to be and an open space for commenting on the reasons they decide to share or block the news. This information is not meant to impact the final score of the game as much, but to generate data that can enrich

the discussion session after the play sessions. From the perspective of the player, it aims to evoke further consideration before making a final decision during the game. In some cases, information cannot be defined as totally fake or true. There might be some truth in a piece of fake news, when looked at from different perspectives or different contexts. This creates a dilemma in which people can get confused when assessing information reliability. Evaluating how certain a player is in their choice of sharing or blocking a certain news can generate meaningful data that can be studied further.

4 Future Works

The current version is a work-in-progress. The first iteration of this game is expected to be released late October 2020, with its first run scheduled to start in the new academic year starting in April 2021. Until the run scheduled for the course to be conducted in 2021, the team will conduct several PDCA cycles to finalize the game and refine its design to match the academic needs of the media literacy course.

The authors are willing to share updated results from this research and from development during the conference's official presentation.

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