The Development on a Board Game to Promote an Information Literacy for Upper Secondary Students at the Srinakharinwirot University Prasarnmit

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Abstract
In today's information-rich landscape, cultivating effective information literacy skills is imperative for upper secondary students. This study focuses on developing a board game as an innovative tool to enhance information literacy among students at Srinakharinwirot University Prasarnmit Demonstration School (Secondary). Learning can be more enjoyable when gamified, and this research aims to achieve just that. By creating a unique board game, akin to traditional tabletop games, the study aims to equip students with the ability to discern reliable information from dubious sources. The interactive game immerses players in diverse scenarios, prompting them to evaluate the credibility of information encountered. This puzzle-like experience nurtures critical thinking and analytical skills, thereby fostering improved information comprehension. It's essential to address copyright considerations as well. Similar to how authors hold rights to their books, game creators possess ownership of their creations. Thus, respecting copyright is crucial in how the game is utilized. To gauge the game's efficacy, selected students will participate, followed by a comprehensive assessment cosisting a both a pre-test and a post-test. This approach will determine if the game effectively enhances information literacy skills. This research contributes a dynamic learning method that not only engages but educates. By blending entertainment with education, this innovative approach empowers students to navigate the sea of information competently. Ultimately, the fusion of fun and learning may greatly contribute to students' cognitive development.

Keywords: Information Literacy, Board Game, Upper Secondary Student

Introduction

Information access has evolved significantly in the digital age. According to the Thai Library Association (TLA) (n.d.), libraries play a crucial role in driving society toward a knowledge-based and learning-oriented direction. Moreover, the way we engage with books has transformed. In today's digital era, various forms of knowledge are accessible via the internet and portable technologies like tablet computers and smartphones. This allows learners to access information not only within but also outside the classroom. In this digital context, students have the opportunity to acquire knowledge anytime and anywhere, which empowers them to become discerning evaluators of information sources and enhances their overall digital literacy.

Information literacy encompasses the vital skills of discernment and the evaluation of information source credibility. These skills are indispensable in everyday life and collectively form what we refer to as Information Literacy. As articulated by Kampanat Coosirirat and Kobsook Kongmanus (2015), the ultimate aim of information literacy is to equip learners with proficiency in information-related skills, enabling them to apply these skills effectively across their educational, professional, and daily life endeavors. This objective primarily centers on the learner, emphasizing their ability to define their information needs, access required information efficiently, evaluate both the information itself and its sources, incorporate selected information into their existing knowledge base, and utilize this information effectively for various purposes. Therefore, information literacy emerges as a critical skill with applications spanning education, the workplace, and everyday life.

Figure 1, adapted from the UNESCO Information for All Programme (Link: https://www.unesco.org/en/ifap/information-literacy), visually represents the components of information literacy.

Information literacy empowers individuals from diverse backgrounds to effectively seek, evaluate, use, and create information for personal, social, occupational, and educational purposes. Emphasizing the significance of copyright is essential when individuals engage in information creation and consumption.

In Figure 1, we present information literacy as a guiding light in the information age, illuminating pathways to development, prosperity, and freedom within society. In today's digital landscape, where information is abundant and easily accessible, understanding and respecting copyright laws are integral aspects of information literacy.

Individuals with information literacy skills can access information related to various aspects of life, and they also uphold copyright laws and respect intellectual property rights.

In the digital realm, information literacy includes proficiency in using information and communication technologies while adhering to copyright and intellectual property rights. It also involves computer literacy, which relates to information and communication technology, and media literacy, encompassing the comprehension of various media formats used for information transmission. Responsible navigation of the internet and interpretation of multimedia content require both technical competence and a solid understanding of copyright principles.

A board game is a type of recreational activity that employs various pieces, cards, or models played on a specialized surface or board designed specifically for that game. Beyond providing entertainment and enjoyment, board games offer valuable opportunities for players to enhance their analytical thinking, planning, and decision-making skills (Kingkarn Buranasinvattanakul, 2019).

Sarinee Achavanuntakul (2021) notes that board games have surged in popularity, evident from the proliferation of board game stores and cafes across the country. The increasing availability of Thai-translated games, numbering in the hundreds and continually growing, coupled with the expanding Thai game design community, underscores this burgeoning trend.Utilizing games as an educational tool can yield positive outcomes in education due to their inherent characteristics. Games are inherently inclusive, transcending boundaries of race and religion, and they inherently challenge players, compelling them to grasp the strategies required to succeed (Sadanand Kaewsri, 2020). Creating learning experiences through board games thus serves as a medium for knowledge dissemination and as a means to foster interpersonal relationships among students. This approach is both enjoyable and entertaining, subtly nurturing a passion for reading.

Kaimuk Laosunthara (2022) found that students at Srinakharinwirot University Prasarnmit Demonstration School (Secondary), particularly those less engaged in social activities, expressed a willingness to visit the library, often due to invitations from friends. Therefore, developing board games aimed at enhancing information literacy and promoting reading can serve as an incentive for students to frequent the library and engage more with books.

It is crucial to develop board games tailored to upper secondary students to promote information literacy. Such initiatives enable students to acquire essential information literacy skills, equipping them to access appropriate and credible information sources and understand how to reference information correctly, including the creation of bibliographies following American Psychiatric Association (APA) standards. These endeavors not only prepare students for university-level education but also contribute to the development of lifelong learning skills. Considering the importance of this matter, I have created a board game with the aim of improving information literacy among upper secondary students at Srinakharinwirot University Prasarnmit Demonstration School (Secondary).

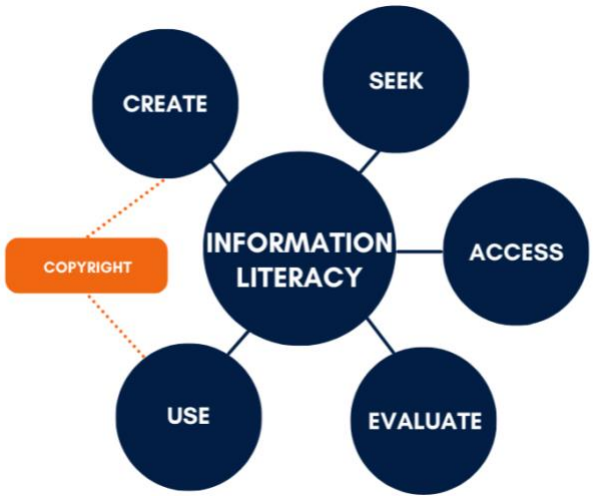

Figure 1: Information Literacy Adapted from UNESCO information for All Progreamme https://www.unesco.org/en/ifap/information-literacy

Material and Methods

The study collected data from Upper Secondary students of Srinakharinwirot University Prasarnmit Demonstration School (Secondary) in Thailand during the academic year 2023. A sample group was selected to participate in board games to assess information literacy before and after playing. The study focused on one classroom, employing a specific method due to a potentially non-normally distributed population and a small sample size of approximately 30 participants. As a result, traditional statistical test parameters were not applied. Instead, the study utilized the Wilcoxon Signed-Rank Test (Sheskin David J.,2011).

Development of the Board Game

I have created an educational gamified learning resource named "COPY RIGHT?" that focuses on Information Literacy and Copyright Law.

Gaming Equipment

The gaming equipment for "COPY RIGHT?" consists of three sets of cards, as shown in Figure 2 Types of Cards. This figure provides an overview of the various cards and components used in the "COPY RIGHT?" board game, which is designed to promote information literacy and copyright knowledge. (a) Information Literacy Question cards (Front-side): These cards contain questions related to information literacy on their front side. Players will listen to these questions during the game, (b) Information Literacy Question cards (Back-side), (c) Copyright Question cards (Front-side): Similar to the Information Literacy Question cards, these cards contain questions related to copyright law on their front side, (d) Copyright Question cards (Back-side),(e-1)(e-2) a card used for tallying scores in the final round, associated with question number. These cards are used for keeping track of scores, especially in the final round of the game. They are associated with specific question numbers to ensure accurate scoring. (f) e-1 and e-2 (Back-side), (i) Signs for use in answering: Yes and No. These signs are used by players to indicate their answers to the questions posed during the game. Players must quickly tap the "Yes" or "No" sign to answer each question. These components collectively make up the game's playing cards and scoring system, enhancing the players' experience while also educating them about information literacy and copyright law.

Figure 2: Type of cards (a) Information Literacy Question cards (Front-side) (b) Information Literacy Question cards (Back-side), (c) Copyright Question cards (Front-side) (d) Copyright Question cards (Back-side), (e-1)(e-2) a card used for tallying scores in the final round, associated with question number (f) e-1 and e-2 (Back-side) (i) Signs for use in voting: Yes and No.

Experimental Trial of the Developed Game

For the experimental trial of the developed game, participants were recruited 1 class. This class has a total of 43 students. Of these, 37 students actively participated in the research, comprising 10 male students and 27 female students. The experimental trial was conducted on October 11, 2023. The experimental trial followed a structured timetable as presented in Table 1:Timetable of the Experimental Trial. During the initial 10 minutes, a designated facilitator takes on the role of the conductor. Their responsibility is to provide a comprehensive explanation of the game rules to all the participants. This phase is essential to ensure that all participants have a clear understanding of how the game "COPY RIGHT?" is played, including its objectives, rules, and scoring system. It sets the foundation for a fair and informed gameplay experience. Figure 3 represented Explanation about the game rules.

The next 15 minutes involve active participation from all the participants. They are tasked with responding to a pretest questionnaire. This questionnaire likely contains questions related to information literacy and copyright knowledge. The purpose of this pretest is to establish a baseline understanding of the participants' knowledge in these areas before engaging in the game. It serves as a reference point for assessing the impact of the game on their knowledge. Figure 5(a)-(d) represented Trial of game.

The most substantial portion of the trial, lasting between 25 to 30 minutes, is dedicated to the actual gameplay. All participants actively take part in playing the game "COPY RIGHT?" This phase involves listening to questions, making quick decisions, tapping the appropriate response signs, and competing to earn question cards. It is the core of the experimental trial, where participants put their knowledge and skills to the test. Figure 4 represented After the game concludes, the participants spend the final 15 minutes responding to a posttest questionnaire. Similar to the pretest, this questionnaire likely contains questions related to

information literacy and copyright knowledge. Figure 6 represented Response to the Posttest questionnaire.

The posttest aims to measure the impact of playing the game on the participants' knowledge. By comparing their pretest and posttest scores, researchers can assess the effectiveness of the game as an educational tool.

Duration	Conductor	Contests
1) 10 min	Facilitator	Explanation about the game rules
2) 15 min	All participants	Response to the Pretest questionnaire
3) 25-30 min	All participants	Trial of the game
4) 15 min	All participants	Response to the Posttest questionnaire

Table 1: Timetable of the trial

Figure 3: Explanation about the game rules

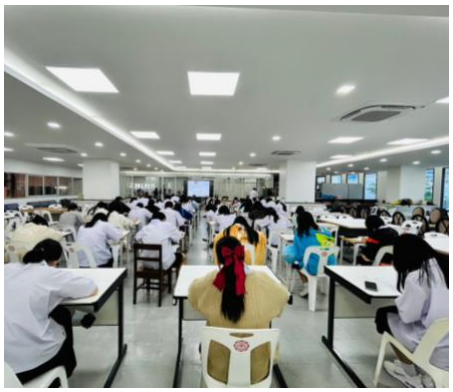

Figure 4: Response to the Pretest questionnaire

Figure 5(a): Trial of the game

Figure 5(b): Trial of the game

Figure 5(c): Trial of the game

Figure 5(d): Trial of the game

Figure 6: Response to the Posttest questionnaire

Results

Data Overview

In this analysis, data from two assessments (pre and post-learning) of 37 participants were used. The assessments covered 15 items and were divided into two categories: Category 1 (Information Literacy Skills) and Category 2 (Knowledge of Copyright Law).

Statistical Analysis

When a participant provides an incorrect answer, they receive a score of 0, while a correct answer earns them a score of 1.

Mean Scores and Standard Deviations

- The average score in Category 1 is 0.822 with a standard deviation of 0.130.
- The average score in Category 2 is 0.804 with a standard deviation of 0.141.

The Wilcoxon Signed-Rank Test for Both Categories

Category 1 (Information Literacy):

- Wilcoxon Signed-Rank Statistic: ($T = 28.5$)
- Two-Tailed p-Value: ($p < 0.001$) (indicating statistical significance)

The Wilcoxon signed-rank test for Category 1 indicates a statistically significant improvement in scores after the learning sessions.

Category 2 (Copyright Law Knowledge):

- Wilcoxon Signed-Rank Statistic: ($T = 15.5$)
- Two-Tailed p-Value: ($p < 0.002$) (indicating statistical significance)

The Wilcoxon signed-rank test for Category 2 also indicates a statistically significant improvement in scores after the learning sessions.

In both cases, the p-values are less than the conventional significance level of 0.05, suggesting that there is strong evidence to conclude that the learning program had a significant impact on improving scores in both Information Literacy and Copyright Law Knowledge.

Conclusions

The outcomes of the Wilcoxon signed-rank tests for both categories demonstrate a statistically significant improvement in scores after the learning sessions. In both cases, the p-values were less than the conventional significance level of 0.05, providing robust evidence to conclude that the learning program had a significant and positive impact on enhancing participants' Information Literacy Skills and Knowledge of Copyright Law. These results underscore the effectiveness of the educational intervention in improving participants' understanding and proficiency in these critical areas.

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