

PAPER

The Effect of Using the Interaction Simulation Video to Enhance Digital Empathy Skills

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This research aims to investigate the impact of using interactive simulation videos on enhancing digital empathy skills. The study involved 300 high school students from three schools in Bangkok, Thailand. The participants were chosen using the multistage sampling method. The research instruments included: (1) an interactive simulation video; (2) a digital empathy skills test; (3) a satisfaction assessment; and (4) an interview form. The data were analyzed using a dependent t-test, mean, standard deviation, percentage, and qualitative data analysis. The research found that (1) participants' digital empathy skills scores improved significantly at the 0.05 level, (2) participants' overall satisfaction was high ($\bar{x} = 4.48$), and (3) all participants agreed that the interactive simulation video was appropriate, helped them improve their digital empathy skills, and was suitable for use as teaching material. An interactive simulation video contains various elements that enhance students' digital empathy skills, including embedded questions, overlays, and hotspots.

KEYWORDS

interaction video, simulation video, digital empathy skills

1 INTRODUCTION

Currently, Internet usage hours are increasing worldwide, including in Thailand. Out of 24 nations in the Asia-Pacific region, Thailand ranked seventh in terms of Internet users in 2022, with China leading the list. In Thailand, in the central region, the majority of households in Thailand had Internet connectivity, followed by the northeastern region. Over half of all Thais utilize social media, and the country's social network penetration rate has been steadily increasing over the past few years. In Thailand, people spend an average of eight hours a day online, with over 2.5 hours of that time dedicated to social media in recent years. Having said that, Facebook, Instagram, Line, TikTok, YouTube, and X (formerly Twitter) are the most popular social media platforms in Thailand [13]. Hence, the number of cybercrimes is increasing.

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In the first half of 2022, 53.35 million US citizens were affected by cybercrime. In India, there were 212,485 reported cybercrimes in the first two months of 2022, and cybercrime increased by 153% in Canada, from 27,829 incidents in 2017 to 70,288 cases in 2021 [1]. In Thailand, a new regulation related to cybercrime called Thailand's Personal Data Protection Act BE 2562 (PDPA) was implemented in 2021. The effects of committing cybercrime not only impact the person who breaks the PDPA but also the person who is violated. Under the PDPA, individuals who violate this act may be subject to fines and/or imprisonment. On the other hand, Landstedt and Persson examined the factors linked to exposure to in-real-life (IRL) bullying, cyberbullying, and both IRL and cyberbullying to explore the relationship between these types of bullying and the mental health of Swedish boys and girls aged 13 to 16. They found that people who were the victims of these crimes had significant mental issues. Furthermore, all types of bullying increased the likelihood of psychosomatic problems in girls and were associated with depressive symptoms in both boys and girls. Based on these negative effects, it is vital for Internet users to have sufficient knowledge and skills to use the Internet wisely [6].

Digital empathy is one of the essential digital competencies that people should possess in their digital lives. Digital empathy involves being cautious and sensitive to one's own and others' feelings when navigating digital life. Digital empathy includes knowledge and understanding of how one's own online actions may affect others' thoughts and feelings. On the other hand, the online actions of others may affect one's own thoughts and feelings. Based on this knowledge and understanding, people should possess the skills to be cautious and recognize diversity in digital life. However, the higher rates of cyberbullying in the present reflect a lack of knowledge, understanding, and skills in digital empathy among people in the digital world. According to Novak, there is still much work to be done in the pedagogical educational system before the concept of digital empathy can be fully realized. There is a great deal of interest in learning and applying these concepts, from educators to students. Furthermore, the findings indicate that there is some consensus between the perspectives and attitudes of educators and learners regarding the importance of integrating netiquette and digital empathy into cross-curricular lessons. The teachers' perspectives have highlighted the importance of lifelong education linked to digital competencies and literacy, as well as the integration of these topics into the curricula of modern formal education [9]. The most effective teaching method involves having students experience or engage with real-life situations. However, waiting for real-life situations to occur can be difficult. Therefore, educators often use teaching methods that incorporate simulated situations, enabling students to actively engage in the learning process as if they were in real-life situations [5].

Palaiogeorgiou, Papadopoulou, and Kazanidis defined "interactive video" as videos that offer interactive features, which can be presented in various formats within the video. The purpose is to offer a more engaging and immersive viewing experience for users. Users can respond to questions by clicking on interactive areas within the video, following the storyline of the developed video, or clicking external links to access additional information [10]. According to Nonthamalai, interactive videos are often used in open courses by inserting questions during the videos. This makes it possible for students to become interested in open learning and customize their education to suit their unique learning styles. Thus, students are able to comprehend the lesson and review the topic independently. Thus, interactive stimulation videos were a technique used in many research studies to enhance students' knowledge, attitudes, and skills [8]. Saenpich and Sirikulpipat developed an online interactive videos for the Economic Analysis course. It was attended by a group of 30 undergraduate students. The authors found that students exhibited significantly improved learning outcomes [12]. Chatpakkarattana and Suwatthipong studied the use of interactive video for distance

learning with the H5P program. They found that the interactive video created with the H5P program enables learners to review the material, assess their comprehension, and revisit previously covered material. As a result, the implementation of the H5P program not only encourages learning but also motivates student-centered instruction [2]. Nakanakupt and Jaichaun conducted a study on the impact of interactive video media on knowledge, confidence, practical birthing skills, and satisfaction among nursing students. The researchers conducted a quasi-experimental study with two groups: a control group and an experimental group. The control group received standard childbirth training along with unidirectional video media viewing, while the experimental group received regular childbirth training along with interactive video media. The research results showed that the experimental group had significantly higher average scores in knowledge and confidence in childbirth compared to their scores before the experiment. Additionally, the average scores for practical birthing skills in the experimental group were significantly higher than those in the control group [7]. However, the author has not yet encountered any research that uses interactive videos to cultivate digital empathy among students. Therefore, in this study, researchers aimed to investigate the impact of using the interactive simulation videos on enhancing digital empathy skills.

2 METHODOLOGY

The study is exploratory research because the researchers aim to investigate the impact of using interactive simulation videos depicting real-life situations on the digital empathy skills of the participants.

2.1 Participants

The participants were 300 high school students from three schools in Bangkok, Thailand. The participants were chosen using the multistage sampling method. The researcher randomly selected five classrooms in each school and then randomly selected 20 participants from each classroom.

2.2 Research instruments

The research instruments included (1) an interactive simulation video, (2) a digital empathy skills test, (3) a satisfaction assessment, and (4) an interview form.

1. The Interactive Simulation Video

The researcher created the interactive simulation video of “Thinking Before Clicking ... Digital Citizen Ethics,” which consists of three episodes. Each episode is detailed in Table 1.

Table 1. Example of the digital empathy skills test items

Episode	Title	About	Time Duration
1	I'm not afraid true ... I'm really afraid it is not	spreading accurate and accurate information	05.24 minutes
2	My areas Vs your areas	respect for rights without violating other people's privacy and emotional control when conflicting	06.16 minutes
3	Fun post ... Miserable	posting information creatively and using words in polite way to communicate	07.54 minutes

Six experts evaluated the quality of the video, and the evaluation results are as follows:

Episode 1: The experts stated that there is a quality at the highest level in all aspects ($x = 4.66$). When considered individually in terms of content, video media, and interaction aspects, it was found to have the highest level of quality in all aspects as well.

Episode 2: The experts stated that there is quality at the highest level in all aspects ($x = 4.67$). When considering each side of content, video media, and interaction, it was found that there is the highest quality on all sides.

Episode 3: The experts stated that there is quality at the highest level in all aspects ($x = 4.74$). When considering each side of content, video media, and interaction, there is the highest quality on all sides.

2. The Digital Empathy Skills Test

The digital empathy skills test measures students' knowledge, practical skills, and attitudes. There are 15 questions in total, with five questions focusing on knowledge, five questions on practical skills, and five questions on attitudes. Three content experts evaluated the digital empathy skills to assess the item-objective congruence (IOC) and ensure its validity. The experts' evaluation indicated that the digital empathy skills test has content validity, with the index of objectivity coefficient ranging from 0.66 to 1.00.

The researcher administered the test to a sample group of 30 high school students to determine the difficulty of the items (p), the discrimination power (r), and the reliability of the test. The results indicated that the difficulty of the items (p) ranged from 0.43 to 0.80. The discrimination power (r) ranged from 0.27 to 0.53. The reliability of the entire test (KR-21) was 0.78. The example of questions in the digital empathy skills test are presented in Table 2.

Table 2. Example of the digital empathy skills test items

Items	Questions	Answers	
		Yes	No
1	Taking photos or videos of yourself while taking a shower and then posting them on your own Facebook profile is something that can be done because it's a private space.		
2	If we share information without knowing that it is false, it is considered an innocent action.		
6	If I come across false information on online media, I will click to report that information.		
7	If I am not sure whether the information, I received is true or not, I will verify its accuracy before posting.		
11	When others are going through a tough time, I want to uplift them by writing or posting messages to make them feel better.		
12	When I read the life stories of others who are facing problems online, I feel empathy for them.		

3. The Satisfaction Assessment

The researcher formulated questions to assess student satisfaction, which were divided into two aspects: satisfaction with content and satisfaction with interactions. Each aspect consisted of five questions, resulting in a total of 10 questions in the satisfaction assessment. The researcher presented the satisfaction assessment to three experts in the fields of media and educational technology to evaluate the content validity, accuracy, and comprehensiveness of the assessment items using the IOC.

The results revealed that each question had an IOC value of 1.00 for all questions. The example of questions in the satisfaction assessment are presented in Table 3.

Table 3. Example of the satisfaction assessment items

Items	Questions	Answers				
		Very Little	Little	Moderate	High	Very High
1	The sequence of the story content is interesting.					
3	The duration of each video presentation is appropriate.					
5	The knowledge from the media can be applied in daily life.					

4. An Interview Form

The researcher designed interview questions to gather student opinions. The set consisted of five questions. The researcher administered the interview questionnaire to three experts in media and educational technology to evaluate the validity, accuracy, and comprehensiveness of the questions. Using the IOC, the evaluation results indicated that each question had an IOC value of 1.00, indicating a perfect match for all the items.

Examples of interview questions:

- Do you think that interactive simulation videos have helped you develop digital empathy skills (such as responsible online information sharing, respecting your own and others’ rights, and engaging in constructive communication that demonstrates empathy)? If yes, why do you believe that?
- Do you have any additional suggestions for improving the interactive simulation videos you have studied? If so, what are they?

2.3 Research design

The research design is a one-group pretest-posttest design, and the research process involves the following steps:

1. The participants undergo a digital empathy skills test before beginning the study.
2. The participants are studying the interactive simulation video to enhance their digital empathy skills.
3. The participants undergo a digital empathy skills test after the study.
4. The participants complete a satisfaction assessment.
5. The researchers randomly selected 30 participants to conduct interviews about their opinions on learning and engaging in interactive activities in videos using a qualitative interview method.

2.4 Research analysis

1. Analyzing and comparing the digital empathy scores before and after the experiment using a dependent t-test statistical method.
2. Analyzing the data obtained from the satisfaction assessment of those engaged in interactive video learning. The analysis involves calculating the mean and standard deviation.

3. Analyzing the data obtained from interviews with participants about their thoughts on learning and engaging in interactive activities in videos. The analysis involves calculating percentages for quantitative data and conducting content analysis for qualitative information.

3 RESULT

The research found that participants' scores in digital empathy skills improved. Overall satisfaction was high, and all participants agreed that the interactive simulation video was appropriate and helped them enhance their digital empathy skills.

The participants' digital empathy skill scores improved at the significant level of 0.05. The overall results can be summarized as follows:

Table 4. The result of comparing digital empathy skill scores between post-learning and pre-learning

Learning	Full Score	Mean	S.D.	t	Sig
Post-Learning	15	13.61	1.43	49.79	.00
Pre-Learning	15	8.35	1.10		

Notes: n = 300; *Significant at .05.

From Table 4, the average digital empathy skill score post-learning is 13.61, while the pre-learning score is 8.35. The comparative analysis of post-learning and pre-learning scores indicates a significance value of 0.00, which is lower than the significance level (α) of 0.05. This indicates that the scores after the learning process, achieved through the use of interactive simulation videos to improve digital empathy skills, are significantly higher than the scores before the learning process, at a statistically significant level of 0.05. The digital empathy skills test assesses students' understanding, practical skills, and attitudes. When considering each aspect individually, the summary is as follows:

Table 5. The result of comparing digital empathy skill scores between post-learning and pre-learning: knowledge domain

Learning	Full Score	Mean	S.D.	t	Sig
Post-Learning	5	4.37	0.73	28.22	.00
Pre-Learning	5	2.75	0.71		

Notes: n = 300; *Significant at .05.

From Table 5, it can be concluded that the scores for digital empathy skills in the knowledge domain after learning with interactive simulation videos are significantly higher than before learning, with a statistical significance level of .05.

Table 6. The result of comparing digital empathy skill scores between post-learning and pre-learning: practical domain

Learning	Full Score	Mean	S.D.	t	Sig
Post-Learning	5	4.75	0.51	33.66	.00
Pre-Learning	5	2.94	0.75		

Notes: n = 300; *Significant at .05.

From Table 6, it can be concluded that the scores for digital empathy skills in the practical domain after learning with interactive simulation videos are significantly higher than before learning, with a statistical significance level of .05.

Table 7. The result of comparing digital empathy skill scores between post-learning and pre-learning: attitude domain

Learning	Full Score	Mean	S.D.	t	Sig
Post-Learning	5	4.49	0.78	30.96	.00
Pre-Learning	5	2.64	0.68		

Notes: n = 300; *Significant at .05.

According to Table 7, the scores for digital empathy skills in the attitude domain significantly increased after learning with interactive simulation videos, compared to before learning, at a statistical significance level of .05.

Overall participant satisfaction was at a high level (Mean = 4.48). The overall results can be summarized as follows:

Table 8. The result of the evaluation of participants' satisfaction after learning with the interactive simulation video to enhance digital empathy skills

Item	Mean	S.D.	Interpret
Satisfaction with content	4.48	0.69	A lot
1. The story sequence is interesting.	4.50	0.70	A lot
2. The images and scenarios in the video convey principles and concepts of ethical use of technology in a way that is easy to understand.	4.49	0.65	A lot
3. The duration of each video presentation is appropriate.	4.47	0.70	A lot
4. Video media has a clear picture and sound.	4.42	0.72	A lot
5. Content knowledge from the media can be applied in daily life.	4.57	0.70	The most
Satisfaction with interactions	4.47	0.67	A lot
1. Video interactions are easy to interact with on computer screens and mobile devices.	4.37	0.70	A lot
2. Video interaction helps students understand the content more clearly.	4.50	0.64	A lot
3. Video interaction helps students understand the material more quickly.	4.51	0.65	The most
4. The duration of the interaction in the video is appropriate and relevant to the content of the video.	4.47	0.70	A lot
5. The graphical style of the video interaction is appropriate and makes students read clearly.	4.50	0.65	A lot
Total	4.48	0.68	A lot

From Table 8, the participants' overall satisfaction after learning through the interactive simulation video to enhance their digital empathy skills is at a high level (Mean = 4.48). The content is rated at a high level (Mean = 4.48), and the interaction is also rated at a high level (Mean = 4.47).

All participants agreed that the interactive simulation video was appropriate, helped them improve their digital empathy skills, and was suitable for use as teaching materials.

The researchers randomly selected a sample group of 30 individuals to conduct interviews about learning and engaging in interactive activities in videos. The results can be summarized as follows.

3.1 Developing digital empathy skills

All 30 participants (100%) expressed that interactive videos play a crucial role in developing digital empathy skills; 26 participants (86.66%) stated that they have a significant impact, while four participants (13.33%) stated that they have a very significant impact. The participants provided reasons why the simulated situations in the videos closely resemble real-life scenarios and current social situations, making it easy for them to connect and apply the knowledge gained. Consequently, this enhances their understanding of using digital technology and online social media with greater mindfulness.

3.2 The presentation of content and interactive activities in videos that participants perceive to help develop digital empathy skills includes

- The use of pop-up summaries and voiceover narration during the dialogue of characters allows for the summarization of the knowledge acquired from each character's actions. Key learning points, such as best practices, legal requirements, and potential consequences, are communicated through these techniques.
- The inclusion of interjected questions within the content aims to stimulate critical thinking while watching the video, encouraging viewers to review and reflect on the video's content.
- Similar situations may arise, or individuals may engage in actions contrary to what was presented in the video.
- Content featuring simulated situations commonly encountered in the present day plays a significant role in fostering critical thinking and practical application abilities when faced with similar circumstances, either personally or in relation to others.
- The inclusion of concluding summaries or reflections at the end of each episode offers both entertainment and educational value. This includes learning from the characters' mistakes, the consequences of their actions, and how they resolve problems.

3.3 An overview of using interactive videos in education to develop digital empathy skills

All 30 participants (100%) agree that interactive video is suitable for educational purposes in developing digital empathy skills. They provided reasons such as the age-appropriate content of the videos, the easy-to-understand and relatable simulated situations in the videos, and the ability to apply the knowledge gained from the videos in their daily lives.

4 DISCUSSION

The researcher's discussion focuses on enhancing digital empathy skills through interaction simulation videos in various aspects, as outlined below:

1. In the field of knowledge, a study on the impact of interactive simulation videos revealed that digital empathy skills, specifically in terms of knowledge, significantly improved after learning with interactive simulation videos. The post-learning scores for digital empathy skills were found to be significantly higher than the pre-learning scores, with a statistical significance level of 0.05. The variance is attributed to the learning process, which includes simulated situations in all three stages and the use of interactive elements such as Overlay elements to summarize key content. Additionally, embedded questions are used to review learners' knowledge and understanding through their responses to questions. According to Tsitouridou, A. Diniz, and Mikropoulos, overlay elements refer to any type of element that can be superimposed on the video, such as maps, audio files, hyperlinks to other websites, PDF documents, social media services, or other videos, and textual representations (e.g., titles that describe objects). These components are synchronized for a set duration and are usually aligned with the visual structure of the video frames being displayed. They can fulfill multiple instructional objectives and are simple to include [14]. Additionally, feedback from learners' responses, which reference real-life situations, enables learners to analyze and make decisions to solve problems. This approach aligns with the principles of designing simulated situations to support learners in achieving their goals and expanding their knowledge [4]. Consistent with the research of Nakanakupt and Jaichaun, the study on the effects of interactive childbirth simulation videos found that including content summaries with simultaneous audio narration during the events of each character in different segments of the simulation scenarios allows learners to review what they have learned from the characters in each scenario. Furthermore, inserting questions within the content also stimulates critical thinking while watching the video, allowing learners to review the video content. These elements collectively contribute to the advancement of knowledge regarding ethical digital technology usage [7].
2. In practical terms, the study of the results of using interactive simulation videos revealed that digital empathy skills, especially in practical aspects, significantly improved after learning with interactive simulation videos. The post-learning scores for digital empathy skills were found to be significantly higher than the pre-learning scores, with a statistical significance level of 0.05. This improvement may be attributed to the use of embedded questions, which prompt learners to make decisions in specific situations. Embedded questions are probably the most widely utilized aspect of instructional interactive videos. In addition to encouraging deeper viewer participation, questions are also used as evaluation tools. Integrated questions improve students' engagement with the course materials. Students may pause the video on their screen to allow time for the learner to respond. Nevertheless, there are other situations in which the questions are optional and accompanied by a timer that indicates how long they will be visible on the video [14]. Furthermore, offering feedback based on learners' decisions promotes the development of their skills and boosts their self-confidence in analytical thinking and problem-solving abilities. This increase in self-confidence has an impact on the ability to demonstrate accurate skills [4]. This is consistent with the research conducted by Punte, Tanak, and Pилanthanonnd, who studied the production of interactive videos to promote practical sewing skills in the vocational course for 4th-grade elementary school students. The research findings showed that interactive video promoted students' ability to independently practice sewing and develop step-by-step working skills [11]. Students demonstrated

a high level of skills as assessed across all objectives, which is consistent with the results of interviews with students after engaging with interactive simulation videos. One factor that students found helpful in developing digital empathy skills was the content of the simulation scenarios that they frequently encountered in current situations. Students could apply this knowledge to real-life events and interactions with themselves and others. This is part of developing practical skills for learners to use technology ethically.

3. In terms of the attitude domain, the study on the use of interactive simulation videos to enhance digital empathy skills found that attitude scores improved after participants engaged with the interactive simulation videos. The improvement in attitude after learning with interactive simulation videos was statistically significant at the .05 level. The interactive simulation videos include hotspots, where learners are required to summarize their understanding of the principles and concepts to apply in real-life situations. Hotspots are clickable areas (such as buttons or regions) in a video that can offer additional information, direct viewers to other parts of the video or external links, or serve as the answers to questions integrated into the content. Hotspots make it possible to have interactivity directly related to the video's content. Hotspots are valuable because they emphasize specific visual elements in the video. Therefore, hotspots aid in mental organization and selection during observation [14]. Furthermore, students were required to articulate their emotions in response to the simulated events or situations and explain how they would utilize the knowledge in future encounters. For example, if students encounter a similar situation again, how would they react, and how would they apply the knowledge gained in this instance? These factors contribute to the reflection on and reinforcement of learners' attitudes toward what they have learned. This framework is based on scenario-based modeling, which involves debriefing and explaining what happened after the simulation to stimulate or guide learners' thought processes toward learning outcomes [4]. Luca conducted a comparative study on safety briefings on airplanes, comparing traditional cards, traditional videos, and interactive videos. The study found that interactive video media showed higher perceptual efficiency compared to cards and traditional videos. This was determined by surveying passengers about their self-perceived perceptual abilities, the ease of perceiving the briefing media, and the effectiveness of their perception [3]. These findings align with post-learning interviews with students who had engaged with interactive simulation video content. The students discovered that having debriefing opportunities at the end of the content enabled them to reflect on their thoughts and analyze how they would respond in different situations or consider the potential consequences of their actions. This approach fosters awareness of digital empathy among learners.

5 RECOMMENDATIONS

1. Before incorporating interactive video, it is crucial to prepare learners by ensuring that they have the necessary tools and technology to support its usage. This preparation helps to prevent and minimize errors that may arise from inadequate equipment or technological challenges during the learning process.
2. When preparing the learning environment for students and learners, it is crucial to ensure that there is ample sufficient space for students, enabling them to study without disturbing one another. Alternatively, providing each learner

with headphones can help minimize potential distractions during the learning process.

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7 REFERENCES

- [1] AAG, “The latest 2023 cyber-crime statistics,” 2023. <https://aag-it.com/the-latest-cyber-crime-statistics/>
- [2] T. Chatpakkarattana and C. Suwatthipong, “Interactive video for distance learning by using the H5P program,” *ECT Journal*, vol. 13, nos. 14–15, pp. 27–38, 2018.
- [3] L. Chittaro, “A comparative study of aviation safety briefing media: Card, video, and video with interactive controls,” *Transportation Research. Part C, Emerging Technologies*, vol. 85, pp. 415–428, 2017. <https://doi.org/10.1016/j.trc.2017.10.007>
- [4] J. A. Groom, D. Henderson, and B. J. Sittner, “NLN/Jeffries simulation framework state of the science project: Simulation design characteristics,” *Clinical Simulation in Nursing*, vol. 10, no. 7, pp. 337–344, 2014. <https://doi.org/10.1016/j.ecns.2013.02.004>
- [5] T. Khammanee, “Teaching methods: Diverse alternatives,” (7th Edition), Bangkok: Chulalongkorn University Press, 2014.
- [6] E. Landstedt and S. Persson, “Bullying, cyberbullying, and mental health in young people,” *Scandinavian Journal of Public Health*, vol. 42, no. 4, pp. 393–399, 2014. <https://doi.org/10.1177/1403494814525004>
- [7] M. Nakanakupt and P. Jaichaun, “Impact of interactive delivery-demonstration video on undergraduate nursing students’ knowledge, confidence, delivery skills, and satisfaction with the video,” *Journal of Thailand Nursing and Midwifery Council*, vol. 37, no. 2, pp. 81–94, 2022.
- [8] N. Nonthamalai, “Video interactions in 21st century open learning,” *Journal of Education*, Chulalongkorn University, vol. 46, no. 4, pp. 211–227, 2018.
- [9] M. Novak, “Netiquette and digital empathy in the context of applying cross-curricular topics in the contemporary education,” in *Paper Presented at the Economic and Social Development: Book of Proceedings*, Varazdin, 2022, pp. 146–153.
- [10] G. Palaigeorgiou, A. Papadopoulou, and I. Kazanidis, “Interactive video for learning: A review of interaction types, commercial platforms, and design guidelines,” in *International Conference on Technology and Innovation in Learning, Teaching and Education*, Springer, Cham, 2018, pp. 503–518. https://doi.org/10.1007/978-3-030-20954-4_38
- [11] K. Punte, S. Tanak, and N. Pilanthananond, “Interactive video production for enhancing handicraft skills in occupation course of Prathomsuksa IV students,” *Kasetsart Educational Review*, vol. 35, no. 1, pp. 113–122, 2020.
- [12] S. Saenpich and P. Sirikulpipat, “Development of online interactive graphic videos for undergraduate economics students at Sukhothai Thammathirat open university,” *Nonthaburi: Sukhothai Thammathirat Open University*, 2019.
- [13] Statista Research Department, “Internet usage in Thailand – statistics & facts,” 2023. <https://www.statista.com/topics/6140/internet-usage-in-thailand/#editorsPicks>
- [14] M. A. Tsitouridou, J. Diniz, and T. A. Mikropoulos, “Interactive video for learning: A review of interaction types, commercial platforms, and design guidelines,” *Technology and Innovation in Learning, Teaching and Education*, Springer International Publishing AG, 2019. <https://doi.org/10.1007/978-3-030-20954-4>

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