



Design concept of interaction simulation video for enhance digital intelligent quotient in digital empathy skills

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Abstract

The purposes of this research were to develop and evaluate the framework for the concept of interaction simulation video for enhancing the digital empathy skills of students. The purposive selection method was used to recruit six experts to participate in this research. The instrument used was the quality evaluation form of the interaction simulation video for enhancing the digital intelligent quotient in digital empathy skills. The data were analyzed through the mean and standard deviation. There were two important results that were discovered from this research. The first result was based on the data, documents, and related research on the concept of interaction simulation video for enhancing the Digital Intelligent Quotient in Digital Empathy Skills that were studied, analyzed, and synthesized. In order to increase knowledge, skills, and attitudes on improving Digital Intelligent Quotient in Digital Empathy Skills, there were five domains that should be included. These domains consisted of interactive video, simulation-based learning, digital empathy, digital empathy skills, and the integration of the concept of interaction simulation video for enhancing the Digital Intelligent Quotient in Digital Empathy Skills. The second result was related to the evaluation results from the experts on the concept of interaction simulation video for enhancing the Digital Intelligent Quotient in Digital Empathy Skills. Based on the experts, the Mean of the appropriateness of the concept of interaction simulation video for improving Digital Intelligent Quotient in Digital Empathy Skills was 4.87 ($SD = 0.35$) in every component, which was a high-quality level.

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Introduction

Thailand was ranked the world's second highest in having students who are bullied in school (The world's first rank was Japan) (Rohitsathien, 2021). In 2013, 30–40 percent of

teenager bullying was related to cyber bullying either bullying others, being bullied, or being aware of cyber bullying situation. In 2014, this number increased up to 50 percent. Thalang (2016) stated that the amount of cyber bullying among teenagers continually increased every year. According to Hinduja and Patchin (2010), cyber bullying behaviors had influence on suicidal thoughts and attempted suicide increase. Therefore, decreasing the amount of cyber bullying behaviors of Thai students is needed.

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Cyber bullying behaviors are actions that may include post, view, comment, and share information via technology. The purposes of these behavior are intentional and/or unintentional to harm others' feeling and/or humiliate others (United States Department of Health and Human Services, 2017). To decrease cyber bullying behaviors, individuals should have awareness and empathy toward others (Paolini, 2018). Empathy as a learnable skill helps individuals to understand others' thoughts and feelings (Everhart et al., 2016). When individuals understand others' thoughts and feelings, individuals will become more aware of their behaviors toward others via social media.

Empathy skill in digital life is called digital empathy skills. Digital empathy skills are the combination skills between cognitive and emotional skill to understand others' thoughts and feelings and feel the same way that others in the digital platform feel (Friesem, 2016). Digital Intelligent Quotient in digital empathy skills supports people to cope with the digital life. DQ in digital empathy skills include skills as following; ability to be empathetic toward others in the digital life, ability to have a healthy relationship with others in the digital life, recognition of online effects on society, politic, economic, and culture, recognition of the effects of using the internet, recognition of the effects on clicking like and share data and information via online, and rights and responsibilities of being an online user. The above-mentioned skills support individuals to: (1) predict the feeling and perspective of others who he/she communicates with via online; (2) appropriately communicate and have relationship with others; (3) be empathetic to people who are culturally different; and (4) not ignore injustice in the digital life (Inthanon, 2020).

To prevent cyber bullying, it is necessary to increase knowledge on DQ in digital empathy skills (Mithas & McFarlan, 2017; Park, 2019).

Based on previous studies, learning through experience is one of the most effective teaching strategies for increasing DQ in digital empathy skills. However, there are limitations of learning through real life experience. Therefore, the researchers adopted the concept of interaction stimulation video in order to support students to learn about digital empathy skills and practice how to apply such skills via interaction stimulation video instead of learning through real life experience. The interaction stimulation video is the strategy that supports students to engage in the learning process by themselves. The aim of applying the interaction stimulation video is to encourage students to understand, analyze, and reflect on situations that they may face in real life. Khammanee (2014) mentioned that teaching by using stimulation technique is a process that encourages students to learn based on the designated learning objectives.

The purpose of using a stimulation technique is to assist students to engage in a designated vignette. The vignette will be based on the real-life situations that students may confront with the digital life. The consequences that students receive will be based on students' decision while completing the interaction stimulation video.

The interaction stimulation video is a digital instructional media that is designed to replicate real life activities in the form of interactive video. The main purpose of the interaction stimulation video is to provide students a close experience to either learn or practice new knowledge and skills. There are several advantages of using the interaction stimulation video such as encouraging students to engage in learning, tracking students' progress easily, and evaluating students' learning constantly. Additionally, the interaction stimulation video provides immediate feedback to students. Therefore, students can evaluate their performance and progress after completing each session. Nonthaman (2018) mentioned that the interaction stimulation video is an education resource that encourages students' learning in all domains (cognitive, affective, and psychomotor skills). The interaction stimulation video will advocate students to be motivated and to increase their understanding in contents.

Based on the above concepts, the purpose of this research study was to create the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills of students. The framework that was developed would indicate the future solutions and preventions on digital life problems.

Purposes

1. To develop the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills of students.
2. To evaluate and verify the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills of students

Methodology

Participants

Participants were six professionals on technology education and Digital Intelligent Quotient. The selection criteria for participants were: (1) the participants have experience related to the design of learning or digital empathy skills of at least three years; and (2) the participants graduated with a doctoral degree or had the position of Assistant Professor.

Research Instrument

Instrument was the evaluation form on quality of the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills.

Statistics

Statistics that were used were Means and Standard Deviations.

Research Design

Research was divided into two phrases as following:

Phrase 1: Developing the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills

1. Analyzing and Synthesizing information related on theories, principles, and components of interaction simulation video and Digital Intelligent Quotient in Digital Empathy Skills to develop the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills.

2. Using the conceptual information obtained from the analysis and synthesis in step I to draw a conceptual framework for interactive simulation video media design that enhances digital intelligence skills consisting of 5 components: (1) interactive video, (2) simulation-based learning, (3) digital empathy, (4) digital empathy skills, and (5) integration of interactive video, simulation-based learning, and digital empathy.

Phrase 2: Evaluating and verifying the framework on concept of interaction simulation video for enhancing

Digital Intelligent Quotient in Digital Empathy Skills of students

1. Designing the tool for evaluating the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills. The evaluation form is a 5-level Likert Scale, which was developed by applying the elements of the conceptual framework to be used as a topic for assessment.

2. Presenting the framework on concept of interaction simulation video for enhancing Digital Intelligent Quotient in Digital Empathy Skills and delivering the framework to the profession to evaluate and verify the quality of the framework.

3. Analyzing the evaluation results from the professionals by using means and standard deviations. Based on the evaluation and interpretation criteria of Pannee (2015) and setting the standard for the evaluation scores for each component, which must be 3.51 or higher (higher quality).

Results

According to the two phases of the research methodology, the results and analysis are as follows:

Phase 1: The result of the development on concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills.

The principle, concept, and theory were studied and summarized as the design concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills.

Figure 1 shows that the conceptual framework for interaction simulation video for enhancing digital empathy skills consisting of five components as follows:

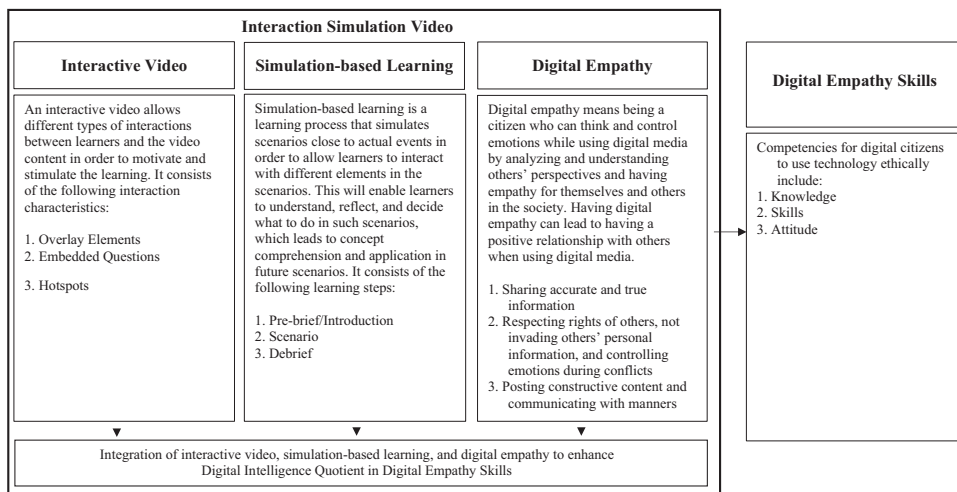


Figure 1 The Framework on design concept of interaction simulation video for enhancing digital intelligence quotient in digital empathy skills

1. Interactive video

The video was designed to be interactive between the learners and the content in the video. The interaction style consists of: (1) overlay elements; (2) embedded questions; and (3) hotspots.

2. Simulation-based learning

Students will learn through stories that reflect reality and interact with the things in the video. This is done by using information that is similar to reality and making decisions and solving problems with the following learning steps: (1) Pre-brief/Introduction; (2) Scenario; and (3) Debrief.

3. Digital empathy

This is part of the content of the interactive simulation video. This reflects a digital citizen with the ability to use intelligence and control emotions while using digital media by analyzing and understanding the point of view of others. Having compassion for both self and society can lead to good relationships with others in the use of digital media containing content about (1) Sharing accurate and true information; (2) Respecting the rights of others, not invading others' personal information, and controlling emotions during conflicts; and (3) Posting constructive content and communicating with manners

4. Integration of interactive video, simulation-based learning, and digital empathy to enhance Digital Intelligence Quotient in Digital Empathy Skills.

In developing interaction simulation video to enhance digital intelligence quotient in digital empathy skills, the researchers integrated the concept of interactive video, simulation-based learning, and digital empathy and produced an interactive video called 'Think before Clicking: The Morals of Digital Citizens'. The video aims to cultivate digital empathy through an interaction simulation video, which is divided into 3 parts;

Part 1: True or False (Concept: Sharing accurate and true information)

Part 2: My Space vs Your Space (Concept: Respecting the rights of others, not invading others' personal information, and controlling emotions during conflicts)

Part 3: Fun Posts That Hurt (Concept: Posting constructive content and communicating with manners)

Each part and each interaction in the video emphasize 3 competencies of digital empathy: (1) Knowledge; (2) Skills; (3) Attitude.

There are 3 types of interactions: (1) Overlay Elements; (2) Embedded Questions; and (3) Hotspots. In addition, the video follows these steps of simulation-based learning;

Step 1: Pre-brief/Introduction – Learners are given basic information regarding the characters, scenarios, and information related to the main concept of the story. One of the types of interactions called “Overlay Elements” is applied as summaries are added into the presentation to enrich the knowledge and lay foundations for skills and attitude.

Step 2: Scenario — Learners are given scenarios and roles to make decisions based on the principle and concept learned in Step 1. One of the types of interactions called “Embedded Questions” is applied as questions to enhance engagement and help the learners review the content provided. The questions help the learners make decisions in the given scenarios and foster their skills and attitude.

Step 3: Debrief — “Hotspots”, one of the interaction types, is used to link the learners to external materials. It helps summarize the concept so the learners can implement or apply what they have learned from the scenarios. Learners can also reflect on their feelings regarding scenarios in Step 1 and 2, which enhances their knowledge and attitude and fosters their planning skills (making an action plan) for possible scenarios in the future.

5. Digital Empathy Skills

It is the result of students doing learning activities through interactive simulation videos, which consist of:

1. knowledge such as sharing legitimate information and respecting their rights and the rights of others,
2. skills such as sharing legitimate information, and communicating constructively with empathy, and
3. attitude such as having awareness for sharing legitimate information.

Phase 2: Evaluation results on the concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills.

The design concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills was given to 6 experts for evaluation. The results are as follows;

Table 1 shows the evaluation results on the concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills. The experts agreed on the quality of the concept. The mean of the total results was 4.87 ($SD = 0.35$) and every component is at the highest level of appropriateness. The integration of interactive video, simulation-based learning, and digital empathy has the highest mean, which is 5.00 ($SD = 0.00$).

Table 1 Evaluation results on the concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills

Component	Mean	Standard Deviation	Level of Appropriateness
1. Interactive Video	4.83	0.41	Highest
2. Simulation-based Learning	4.83	0.41	Highest
3. Digital Empathy	4.83	0.41	Highest
4. Digital Empathy Skills	4.83	0.41	Highest
5. Integration of interactive video, simulation-based learning, and digital empathy	5.00	0.00	Highest
Total	4.87	0.35	Highest

Discussion

From research and analysis of related materials and research papers, the concept of interaction simulation video for enhancing Digital Intelligence Quotient in Digital Empathy Skills consists of: (1) Interactive Video; (2) Simulation-based Learning; (3) Digital Empathy; (4) Digital Empathy Skills; and (5) Integration of interactive video, simulation-based learning, and digital empathy. The concept was evaluated by the experts and has shown to be at the highest level of appropriateness. The mean of the total results was 4.87. The interaction simulation video appeared to enhance three competencies for digital empathy: (1) Knowledge – Knowledge comes through three steps of simulation-based learning and overlay elements in the interactive video, which help summarize the main ideas. Embedded questions also help the learners review their understanding through answering questions and receiving feedback. Questions were based on scenarios that enabled the learners to think critically, make decisions, and solve the problems. This learning support aligns with the design concept of simulation scenarios that help learners reach their goals and gain more knowledge (Groom et al., 2014) and a study by Nakanakupt and Jaichaun (2022). The study focused on the results of child delivery interactive videos. After a sample group received the training and watched interactive videos, the mean of their child delivery knowledge went up substantially .01, compared to the mean before the intervention. The sample group also had a substantially higher average score compared to the control group, at .01.; (2) Skills – In the interaction simulation video, Step 1 exposes the learners to the simulated scenario while Step 2 enables them to become the character and make decisions through embedded questions. Feedback is also given after the decisions are made. This helps enhance the learners' skills and self-confidence in critical thinking and problem solving. The level of self-confidence can affect the ability to showcase their true skills (Groom et al., 2014). It also aligns with the study conducted by Punte et al. (2020).

They studied the production of interactive videos for enhancing sewing skills in Primary 4 students. The results showed that using interactive videos enhanced the self-directedness in students. They were able to follow the steps, acquire a good level of sewing skill, and pass every learning objective. It is also in coherence with the study conducted by Norkaeo et al. (2018). They studied the results of a simulation-based learning program for student nurses to gain CPR knowledge and skills. The study found that the knowledge regarding CPR of the sample group, who used the program, increased substantially by $p < .001$. The CPR skills also substantially rose by $p < .001$. Lastly; (3) Attitude – In Step 3 of the interaction simulation video, hotspots are used enabling the learners to summarize their understanding of the principle and concept so they can apply them in future scenarios. They are also given opportunities to reflect on their feelings towards simulated scenarios and to share their ideas of how to react to the possible scenarios. Examples of questions are; What would you do if you encountered this type of scenario again? How would you apply what you have learned? (Sinthuchai & Ubolwan, 2017). Their answer can help the learners reflect and help strengthen their attitude towards what they have learned. The integration of this concept is based on the design concept of simulated scenarios (Groom et al., 2014), which involves debriefing. Given explanations after the scenarios ended, learners are also encouraged and guided through a thinking process leading them to the learning outcomes. This links with a study of Khumsuk and Nillapun (2021) focusing on the learning outcomes of simulation-based learning. It helps increase learners' self-confidence and level of confidence in critical thinking and problem solving. It also affects the ability to showcase their true skills in the learning matters. Moreover, Chittaro (2017) conducted a comparative study of aviation safety briefing media: card, video, and video with interactive controls. Passengers answered survey questions regarding their own reception of information, the user-friendliness of the media, and the media efficiency. The study showed that the video with interactive controls was more efficient than the card and the normal video.

According to these studies, designing a concept of interaction simulation video involves an integration of different concepts as a framework. It includes scenario designing principle, learning process, and different types of interactions. These are to support the learners in cultivating knowledge, skills, and attitude regarding digital empathy. Consequently, the results of the design concept evaluation were in the highest level of appropriateness.

Recommendations

1. The concept of interaction simulation video can be applied to other teaching and learning management concepts, such as gamification, and virtual classrooms. Interaction simulation videos can enhance knowledge, skills, and attitude and motivate students to learn.

2. The concept of interaction simulation video can be applied to different levels of learners, such as primary, secondary, and tertiary education. For elementary school students, videos may be less complex and have only one decision-making point (linear interactive video). For secondary school students, videos may be more complex and provide more choices to make decisions (branching interactive video). For learners at the higher education level, videos should allow learners to make their own choices other than those given within the context or set learning outcomes (branching interactive video).

3. This conceptual framework should be applied to create media based on the conceptual framework designed to determine the effectiveness of the sample media usage.

Conflict of Interest

The authors declare that there is no conflict of interest.

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