JURNAL KEPERAWATAN PPNI JAWA BARAT

Volume 3 No 1 Juni 2025

EFFECTIVENESS OF A VIRTUAL EDUCATION PROGRAM IN ENHANCING LEARNING INTENTION AMONG NURSING STUDENTS IN INDONESIA: A PILOT STUDY

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ABSTRACT

Objective: This study aimed to examine the effect of a virtual education intervention using video on learning intention among undergraduate nursing students. **Methods**: A quasi-experimental study with a two-group pretest-posttest design was conducted involving 60 undergraduate nursing students. Participants were selected using a convenience sampling method and divided equally into intervention and control groups (30 students each). Learning intention was measured using the Attention, Relevance, Confidence, Satisfaction (ARCS) scale. Data were analyzed using a paired sample t-test to determine differences in learning intention before and after the intervention. **Results**: A total of 60 students participated, with a mean age of 20 years (SD ± 6.56), and 84% were female. The mean learning intention score in the intervention group increased significantly from 118.63 (SD ± 9.14) before the intervention to 132.77 (SD ± 7.91) after the intervention. The difference was statistically significant ($t = 0.000$, $p < 0.05$), indicating a positive impact of the virtual education program using video on students' motivation and intention to learn. **Conclusion**: The use of video-based virtual education demonstrates potential as an effective strategy to enhance learning intention among nursing students. Given its promising results, this approach could be integrated into nursing education to support student engagement and motivation. However, future research should adopt more rigorous experimental designs and larger, more diverse samples to validate and generalize these findings.

Keywords: Virtual education, Learning intention, Nursing students, Video-based learning, Quasi-experimental study

INTRODUCTION

The COVID-19 pandemic, declared a global health emergency in early 2020, brought profound disruptions across sectors including education by imposing lockdowns, travel restrictions, and strict social distancing measures. As a result, millions of learners worldwide were forced to transition from traditional face-to-face education to remote and technology-

mediated learning formats (Onyema et al., 2020). In response, education systems globally began adopting virtual learning platforms to ensure continuity of instruction. In Indonesia, the Ministry of Education and Culture (Kemendikbud, 2020) mandated online learning across all educational levels, including health and nursing education, which traditionally relies on direct practice and in-person instruction.

Although initially welcomed as an innovative alternative, online learning has gradually revealed shortcomings, particularly in student engagement and learning outcomes. Reports from Indonesian students indicate that online platforms are perceived as monotonous and less interactive, leading to declining motivation and increased learning fatigue (Pawicara & Conilie, 2020). In nursing education, this is especially concerning, as the field requires not only theoretical knowledge but also practical competencies such as adherence to patient safety protocols and professional behaviors. Therefore, instructional approaches must go beyond simple content delivery and actively stimulate student attention, engagement, and learning intention.

Learning intention refers to a student's internal drive and purposeful commitment to engage with instructional material, which serves as a proximal determinant of actual learning behaviors and outcomes. In the context of nursing education, learning intention plays a critical role in fostering professional competence, ethical practice, and adherence to clinical standards. Without intention, students are less likely to absorb or apply critical information, especially in areas such as patient safety where procedural adherence is vital (Hernawati et al., 2021). Hence, enhancing learning intention is not just pedagogical, but a matter of patient care quality and nursing professionalism.

To address this challenge, educators have begun turning to video-based virtual education as an engaging alternative. Compared to traditional e-learning formats such as static PowerPoint slides or text-based modules, videos offer multisensory stimulation combining auditory and visual inputs to enhance message retention and learner interest (Kamil, 2018; Yudianto, 2017). Furthermore, videos enable self-paced learning, allowing students to pause, review, and revisit complex content as needed, which aligns with the principles of adult learning. Prior studies have demonstrated that video-enhanced learning can improve interest, understanding, and practical skill development across various health topics (Purwanti et al., 2020; Rohendi et al., 2011; Ramadhan & Aminatun, 2019).

Despite the growing body of research on e-learning, limited studies in Indonesia have focused on video-based virtual education targeting specific procedural competencies such as patient safety goals in nursing education. Additionally, few studies have directly measured its impact on learning intention, especially in a controlled or pilot-tested format. This presents a significant gap in evidence-based instructional design within the nursing domain.

Therefore, the present study aimed to develop and test the effect of a video-based virtual education module on patient safety goals among nursing students. This pilot intervention seeks to improve students' learning intention a core determinant of academic and clinical success—by utilizing interactive, culturally appropriate video content designed to simulate real-world application. The novelty of this study lies in its targeted use of patient safety content in video format, systematically tested in a virtual learning setting to assess its potential in enhancing intention to learn among future nursing professionals.

METHOD

Study Design

This study employed a quasi-experimental two-group pretest–posttest design to evaluate the effectiveness of a video-based virtual education intervention on nursing students' learning intention related to international patient safety goals. Participants were assigned to either an intervention group, which received the virtual education, or a control group, which did not receive the intervention during the study period. The primary outcome assessed was learning intention, measured using a validated instrument grounded in the ARCS model (Attention, Relevance, Confidence, Satisfaction), a widely recognized framework for evaluating motivation in learning contexts.

Sample and Sampling Technique

A total of 60 undergraduate nursing students were recruited for this pilot study, with 30 participants assigned to each group. The sample was obtained using a combination of convenience and purposive sampling techniques. Initially, students were drawn from an accessible cohort within a nursing education program. Subsequently, purposive sampling was applied to ensure that participants met the following inclusion criteria: (1) active enrollment in the nursing program, (2) ownership of virtual communication tools (e.g., smartphones or laptops), (3) voluntary selection of nursing as their academic major, and (4) willingness to provide informed consent. Students were excluded if they had prior training on patient safety goals, were unable to attend all intervention sessions, or withdrew consent during the study.

The sample size was determined in accordance with Julious' rule-of-thumb for pilot studies, which recommends 12 to 30 participants per group to assess preliminary effects and feasibility. Although no formal power calculation was conducted due to the exploratory nature of the study, the sample size was deemed adequate for pilot testing of educational interventions.

Intervention

The intervention was conducted over three days, from June 16 to June 18, 2021, via an online video conferencing platform to comply with public health restrictions during the COVID-19 pandemic. Participants in the intervention group were shown a video that demonstrated the application of the six International Patient Safety Goals (IPSGs) in clinical nursing practice. The video had a total runtime of 7 minutes and 48 seconds, was narrated in Bahasa Indonesia, and featured both visual and auditory demonstrations of clinical procedures related to patient safety. The video content was collaboratively developed by a team of nursing educators and instructional design experts and was peer-reviewed by three subject matter experts for content validity, clarity, and alignment with the nursing curriculum.

Instrument

Learning intention was measured using a structured questionnaire based on the ARCS motivational model, which evaluates four dimensions of motivation: Attention, Relevance, Confidence, and Satisfaction. The instrument had been previously validated and shown to have acceptable psychometric properties among nursing student populations engaged in virtual learning. In this study, it was used to assess students' readiness, motivation, and intention to engage with the educational content provided.

Data Collection Procedure

Data were collected at two time points: prior to the intervention (pretest) and after the completion of the intervention (posttest). Participants completed the ARCS-based learning intention questionnaire online through a secure link provided by the researchers. For the control group, the same data collection schedule was followed, but without exposure to the educational video during the study period. All participants were instructed to complete the assessments independently and were reminded to respond honestly and thoroughly.

Data Analysis

Descriptive statistics were used to summarize demographic characteristics and baseline learning intention scores. To assess the within-group effects of the intervention, paired sample t-tests were conducted to compare pretest and posttest scores in both the intervention and control groups. To compare the effectiveness of the intervention between the two

groups, independent sample t-tests were applied to the posttest scores. All statistical analyses were performed using SPSS software, and a p-value of < 0.05 was considered statistically significant.

Ethical Considerations

This study was approved by the Institutional Ethics Committee, with all procedures conducted in accordance with established ethical guidelines for research involving human subjects. Prior to participation, students received detailed information about the study's purpose, procedures, potential risks and benefits, and the voluntary nature of their involvement. Written informed consent was obtained from all participants. The confidentiality of respondents' data was strictly maintained, and participants were assured of their right to withdraw from the study at any time without penalty.

RESULT

Table 1. Overview of Nursing Student Interests in ARCS Category Before and After Intervention in the Control Group

Indicator ARCS	Pre-Test		Post-Test		Enhancement
	N=30	%	N = 30	%	
Attention					
mean	3.40		3.54		0.14
Pretty good	17	43.3%	14	46.7%	
Well	13	56.7%	16	53.3%	
Relevance					
mean	3.44		3.51		0.07
Pretty good	15	50.0%	12	40.0%	
Well	15	50.0%	18	60.0%	
Confidence					
mean	3.31		3.60		0.29
Not good	1	3.3%			
Pretty good	20	66.7%	12	40.0%	
Well	9	30.0%	18	60.0%	
Satisfaction					
mean	3.62		3.70		0.08
Pretty good	8	26.7%	10	33.3%	

Well	22	73.3%	20	66.7%	

Based on the table above, it shows that the picture of the control group's interest in learning is seen from the ARCS indicator, where the highest increase is in the confidence indicator with an increase of 0.29. And the smallest increase is in the relevance indicator with an increase in value of 0.07 (Table 1)

Table 2. An overview of nursing students' learning interest before and after the intervention in the intervention group

Indicator ARCS	**Pre-Test**		**Post-Test**		**Enhancement**
	N=30	**%**	**N = 30**	**%**	
Attention					0.02
mean	3.97		3.99		
Pretty good	1	3.3%			
Well	29	96.7%	28	93.3%	
Very good			2	6.7%	
Relevance					0.42
mean	3.69		4.11		
Pretty good	7	23.4%			
Well	22	73.3%	26	86.7%	
Very good	1	3.3%	4	13.3%	
Confidence					0.04
mean	4.00		3.96		
Well	30	100%	28	93.3%	
Very good			2	6.7%	
Satisfaction					0.46
mean	3.53		3.99		
Pretty good	15	50.0%	2	6.7%	
Well	15	50.0%	23	76.6%	
Very good			5	16.7%	

Based on the table above, it shows that the description of the learning interest of the intervention group is seen from the ARCS indicator, where the highest increase is in the satisfaction indicator with an increase value of 0.46. And the attention indicator has decreased the mean value of 0.02 (Table 2).

Table 3. Test Results Paired Sample T-Test Control Group and Intervention Group

Variable	mean	N	SD	Sig (2-tailed)
PreTest Control	113.83	30	8.146	,024
PostTest Control	118.63	30	9,148	
Intervention PreTest	117.97	30	12,439	,000
PostTest Intervention	132, 77	30	7,912	

Paired Sample T-Test output table above, it is known that the value of Sig. (2-tailed) in the intervention group of 0.000 <0.05, then Ho is rejected and Ha is accepted. As for the control group, the value of Sig.(2-tailed) was 0.024 < 0.05, so Ho was rejected and Ha was accepted, meaning that there was a difference between virtual education and video on student interest in learning. If we look at the two intervention groups, 0.000 and the control group 0.024, it shows that the intervention group is more effectively used for learning virtual education with video (Table 3).

Table 4. Test Results Independent Sample T-Test

t	df	Sig. (2-tailed)	Mean Difference
-6,400	58	,000	-14,133

Based on table 4. above, the results of the independent sample t-test are known that Sig. (2-tailed) of 0.000 <0.05, it can be concluded that there is a significant effect between the control group and the intervention group, which means Ha is accepted and Ho is rejected (Table 4).

DISCUSSION

Description of learning interest before and after intervention in the control group

From the research results obtained, the indicator of attention mean before the intervention was given was 3.40 while after the intervention was given it became 3.54 with an increase in the value of 0.14. Attention is one indicator that has increased quite high, this is because in the control group, the intervention provided is virtual education with power point media about patient safety goals given through WhatsApp groups , so that it can demand students to concentrate more on learning.

Curiosity makes students pay attention to what is being studied so that students' attention increases. This is in accordance with the statement of (Wiljeng & Nasir, 2016) which states that interest affects student activities in the learning process, if students have high interest then their attention to learning will be focused on the material explained by the lecturer.

Relevance indicators of the results obtained before being given the intervention the mean value is 3.44 and after being given the intervention it becomes 3.51, with an increase of 0.07. Of the four indicators of interest in learning, the relevance indicator has the smallest increase compared to other indicators. This happens because some students still do not understand the benefits of learning patient safety goals using power point media on their lives, because basically second semester students have not studied it in academics. In line with the research of (Rosidah, 2017) who said that the relevance indicator experienced the smallest increase, it could happen because there were still some students who did not understand the relationship between learning materials and their lives.

Confidence mean indicator before the intervention was given was 3.31, while after the intervention it was 3.60 with an increase in the value of 0.29. Confidence is one of the indicators that experienced the highest increase, it can be seen when giving intervention students showed their courage to participate in the learning process using virtual education by asking questions via personal chat to researchers.

Satisfaction mean indicator before the intervention was given was 3.62 , while after the intervention it was 3.70 with an increase in the value of 0.08. Satisfaction is one indicator that has a small increase after relevance , it is shown by the lack of student feedback, and students feel bored with the media used, namely power point , so there is no satisfaction with themselves.

An overview of learning interest before and after the intervention in the intervention group

Attention mean indicator before the intervention was given, it was 3.97 while after being given the intervention it became 3.99 with an increase in the value of 0.02. Attention is one indicator that has a very small increase compared to other indicators, this is because in the intervention group, the intervention provided is virtual education with video media about patient safety goals given using a zoom forum , many factors can influence this , as explained many factors affect interest in learning such as the conditions in the learning environment, so that the attention of respondents is distracted.

In the indicator of relevance , the mean before the intervention was given was

3.69, while after the intervention it was 4.11 with an increase in the value of 0.42. This is because students understand the goals and benefits that will be obtained for now and in the future after participating in this research. This is in line with the statement of (Jamil, 2019) , which is one way to increase relevance in learning, one of which is by stating the goals to be achieved.

In the indicator of confidence mean before the intervention was given a value of 4.00, while after being given the intervention it became 3.96 with a decrease in the value of 0.04. This is because during the virtual education learning process with video media, some of the students do not seem to open the camera, so they do not develop a sense of self-confidence in their abilities. According to (KELLER, 1975) one of the strategies that can be used to increase self-confidence is to organize learning activities into smaller parts, so that students are not required to study too much.

Satisfaction indicator before the intervention was given was 3.53, while after the intervention it was 3.99 with an increase in the value of 0.46. Satisfaction is one of the indicators that has the highest increase compared to other indicators, this is because students get rewards in the form of rewards in the form of "good" words, praising and giving encouragement and rewards in the form of materials for students who actively ask and discuss about patient safety goals. . Then repeat the video if there are students who ask to be replayed. In addition, students were satisfied because they succeeded in answering the quiz given.

Differences in nursing students' learning interest before and after the intervention in the intervention and control groups

In the control group, the value of sig = 0.024 is smaller than 0.05, so Ho is accepted and Ha is rejected, which means that there is a difference but not significant between before and after the intervention. In accordance with the opinion of Sapriyah, S. (2019) which states that a learning process cannot be separated from a media, where the media acts as a tool in the teaching and learning process and students who have a good average technological literacy tend to get bored faster when learning. running conventionally or power point .

While in the intervention group the value of sig = 0.000 is smaller than 0.05, then Ho is rejected and Ha is accepted, which means that there is a difference in the average learning interest of nursing students before the intervention is given and after the intervention is given. Because according to (Pham, 2021) said that combining video and audio can be more effective and faster to convey messages than text media . According

to (Hendriyani et al., 2018) by doing virtual learning students can learn at any time and students can create their own desired learning atmosphere, so that learning will be more comfortable. In addition, video media is one of the audio-visual media that combines several human senses, students not only listen but also see what is displayed in the media, according to Baugh in (Pham, 2021) stating that approximately 90% to obtain results One learns through the sense of sight, 5% is obtained through the sense of hearing, and 5% is obtained through the other senses.

When viewed from the average value of the two groups, it can be concluded that the intervention group with virtual education using video media was more effectively used for patient safety goals compared to the control group using power point media.

The results of this study are the same as the research by Agung Ramadha n and Tien Aminatun in 2019 regarding the Effectiveness of the Auditory Intellectual Repetition Learning Model Combined with Video Media on Student Interest in Learning, that the AIR model (auditory, intellectualy, repetition) using video media is effective in increasing student interest in learning. Another study conducted by Khoirul Anam 2015 stated that the use of media in learning had a significant influence on students' interest in learning.

From the results of the Independent Sample T-Test , Asymp was obtained. Sig. 2-tailed is 0.000, which means Ha is accepted, that is, there is a significant effect between the intervention group given virtual education with video media and the control group with virtual education with power point media.

The results of this study are also in line with Feri Ardiansah's 2018 research on the Effect of Using Video Media on Interests and Learning Outcomes of Class Xi Students in Pie Lessons at Ypi Tunas Bangsa High School Palembang, which proves that the use of video media has a significant effect on student learning interest. In line with the opinion (Sari & Margana, 2019), suggests that the use of learning media in the teaching and learning process can generate desire and interest and even bring psychological effects on students.

CONCLUSION

The picture of learning interest in the control group before and after being given virtual education intervention with power point media increased, with the highest indicator, namely confidence with a value of 0.29. An overview of learning interest in the intervention group before and after being given a virtual education intervention with video media an increase, with the highest indicator is satisfaction with a value of 0.46.

There is a difference in interest in learning before and after being given virtual education with video in the control group (p value = 0.024) and the intervention group (p value = 0.000) with these results when viewed from the significance value of the two groups it can be ascertained that the intervention group carried out virtual education with video there is a significant increase compared to the control group.

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