



Original Research

The Effectiveness of Prezi Web-Based Teaching Media to Improve Nursing Students' Comprehension

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Abstract

The process of nursing education requires a teaching media which straightforward to be comprehend. Inappropriate determining the teaching media leads nursing students face difficulties to receive an adequate course's guidance from the educators. Prezi is a web-based presentation program which comprehensively integrates text, picture, animation, video and audio into one presentation file. This study is aimed to determine the effectiveness of Prezi web-based teaching media on improving nursing students' comprehension. A quantitative-experimental method with pretest-posttest control group design was applied. A total of 176 nursing students were recruited by using non probability sampling approach. The study indicated Prezi web-based teaching media showed significant result on improving students' knowledge. The determination of Prezi web-based program is suggested to improve students' comprehension in nursing education.

INTRODUCTION

Learning media is one of the important components of the learning process. The ideal learning process is done by implementing the well-designed learning media.¹ The implementation of learning media should be a focal point for an educator, especially a lecturer in every learning process.^{2,3} A well-designed learning media will help the students a lot in comprehending the learning material.⁴

The development in information technology could improve the performance and enable the fast, precise, and accurate completion of any activities which contribute to productivity improvement.⁵ The development of information technology

could also be beneficial to convey information during the learning process. Therefore, the developed multimedia should be employed as a learning media.⁶

Prezi is one of the presentation programs which make use of digital information development. The appearance of Prezi is in the form of a single slide zooming presentation.⁷ It enables the presenter to design a presentation with a linear and flexible storyline. Just like the traditional presentation software, Prezi can integrate text, images, animation, audio, and video neatly in a single presentation file.⁸⁻¹⁰

Higher education is required to provide an attractive learning process. Related to this, Prezi is an attractive medium to deliver a

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material. Certain research concluded that students found that Prezi is more interesting than any other presentation media.¹¹ Prezi could also stimulate students to be more productive in writing the report.¹² In this case, nursing education learns about humans as the learning object. Therefore, comprehension and observation of the object of learning are highly required during the nursing subject learning process. Prezi can integrate the interesting visual and storyline to make the viewer comprehend the material deeper.¹³ The result of the interview from 20 nursing students found that 40% of students did not interested in the presentation delivered by the lecturers. From the background above, the researcher would like to find out the significance of Prezi as learning media toward nursing students; comprehension.

METHODS

It was an experimental quantitative research with a pretest-posttest control group design. The subject of the research was the students of undergraduate and diploma programs in nursing in the second semester who actively attended the lecturing in the classroom. The research subject was taken using non-probability sampling. Meanwhile, the number of research subjects was counted using the G-Power Program by considering Compute required sample size analysis which drawn 176 students to be divided into two groups. Therefore, the sample size for each group was 88 students.

The research was conducted from February to June 2019. In that period, the students attended classical lecturing. This research was conducted in undergraduate and diploma programs in nursing. One of the teaching methods used during the learning process was lecturing. The research data were obtained from multiple sources, which were students and other lecturer or the peer observer.

The data was collected using a mini-quiz technique. The mini-quiz was designed to

assess students' comprehension of the given material. it was in the form of questions to assess students' knowledge and comprehension, the ability of students in comprehending the material was descriptively analyzed using comparative descriptive by comparing the result of the mini quiz before and after the implementation of Prezi as the learning media.

The research objectives and stages were explained to the respondents before the research process. Therefore, the score from the data collection was not recorded as academic achievement. The name of the respondents was not written to keep the consent.

RESULTS

The research was conducted at the undergraduate and diploma program of nursing of the Faculty of Nursing and Health Sciences at Universitas Muhammadiyah Semarang. The research subject was the second-semester students of the mentioned programs. All of the respondents had the same characteristics and treatments in terms of material.

The treatment was in the form of learning media implementation. The research subject was divided into two groups of treatment. Both groups received the same material, yet the lecturer implemented the different learning media for each group. It was Prezi for one group, and Microsoft PowerPoint for the other group, therefore, the group was then named after the Prezi group and PowerPoint group.

Table 1

Characteristics of Research Respondents, n = 176		
Indicators	f	%
Group		
Power Point	88	50.0
Prezi	88	50.0
Study program		
Diploma program in Nursing	60	34.1
The undergraduate program in Nursing	116	65.9
Gender		
Male	32	18.2
Female	144	81.8

The research finding showed that both groups had the same proportion, which was 50:50. However, the number of undergraduate students was more than the diploma students. Meanwhile, the Prezi group was dominated by female students with 79.9% and the rest 20.5% was male students. It was also the same in the PowerPoint group, with 84.1% female students and 15.9% male students.

The efficacy of the learning media implementation was scored based on the student comprehension of the given material. The students' comprehension included the knowledge and comprehension about the mind map of the nursing process. The measured points in knowledge comprehension were definition, new terms, clinical manifestation, cause, effect, and affecting factors. On the other hand, the measured points in mind map comprehension were mechanism on how problems affect human health, the mechanism of health problem along with the symptoms, and the process of nursing problem.

The data were analyzed using the non-parametric statistical test as an alternative since the data distribution for each group was nonnormal. The difference of means between groups was analyzed using Mann-Whitney Test, while the difference of means before and after the intervention was analyzed using the Wilcoxon test.

Table 2

The difference of means between students' knowledge comprehension, n = 176			
Indicators	Prezi	Powerpoint	p
The mean before the intervention, (SD)	16 (1,667)	16 (1,668)	0.502*
The mean after the intervention, (SD)	18 (1,407)	17 (1,479)	0.018*
p	0,0001**	0,0001**	

* Mann-Whitney test

** Wilcoxon test

The research data showed no difference between groups' mean in comprehending the knowledge ($p > 0.05$). Therefore, it could be concluded that both groups had the same comprehension baseline about knowledge. On the other hand, the mean of both groups' knowledge comprehension after the implementation of the learning media showed a significant difference ($p < 0.05$) with Z value = -2.356. The students' comprehension after the implementation of Prezi as the learning media was significantly improved compared to the implementation of PowerPoint.

The research showed a significant difference in students' knowledge comprehension before and after the implementation of Prezi ($p = 0.0001$). It meant the implementation of Prezi could significantly improve students' knowledge comprehension. On the other hand, the implementation of PowerPoint could also improve the students' knowledge comprehension ($p = 0.0001$). From the findings, it could be concluded that both learning media could improve students' knowledge comprehension, especially Prezi which was more effective in improving students' knowledge comprehension.

Table 3

The difference of means between students' mind map comprehension, n = 176			
Indicators	Prezi	Powerpoint	p
The mean before the intervention, (SD)	10 (1,138)	10 (1,387)	0.602 *
The mean after the intervention, (SD)	18 (1,495)	13 (2,300)	0,0001 *
p	0,0001 **	0,0001 **	

* Mann-Whitney test

** Wilcoxon test

The research data showed no difference in both groups' mean in mind map comprehension ($p > 0.05$). Therefore, it could be concluded that both groups had the same mind map comprehension baseline. On the other hand, the mean of both groups' mind map comprehension after the implementation of the learning media showed a significant difference ($p < 0.05$) with $Z = -10.211$. The students' mind map comprehension improved more significantly after the implementation of Prezi than after the implementation of PowerPoint.

The research showed a significant difference in students' mind map comprehension before and after the implementation of Prezi ($p = 0.0001$). It meant the implementation of Prezi could significantly improve students' mind map comprehension. On the other hand, the implementation of PowerPoint could also improve the students' mind map comprehension ($p = 0.0001$). From the findings, it could be concluded that both learning media could improve students' mind map comprehension, especially Prezi which was more effective in improving students' mind map comprehension.

The research finding showed that Prezi was more effective in improving students' knowledge comprehension and stimulating students' mind map comprehension. The significance of the media was further described in the table below:

Table 4

The significance of Prezi implementation toward students' comprehension, n = 176			
Indicators	R Square	F	p
Understanding of knowledge	0.029	5,278	0.023
Understanding mind maps	0.613	275,455	0,0001
Linear regression test			

From the research, it was shown that the implementation of Prezi as the learning media affects students' knowledge comprehension at 2.9%, while the rest 97.1% was affected by the other factors. On the other hand, the implementation of Prezi has significantly affected students' comprehension in the mechanism or process-related material at 61.3%, while the rest 38.7% was contributed by other factors.

DISCUSSION

From the finding above, it was mentioned that both groups of students had the same knowledge comprehension baseline. The subject of the research was the undergraduate and diploma program in nursing students in the second semester. The research subject was chosen based on the criteria of freshmen students. The freshmen were expected to be able to master basic concepts to learn nursing sciences. The basic concept material would later be employed in the next learning stages. The material learned by freshmen is emphasized on human anatomy and physiology which requires comprehension of each alteration. The proper learning management will lead to nursing students' self-concept improvement.¹⁴

The material given as intervention to the students was the concept of human fulfillment of oxygenation needs. It was a basic material expected to be mastered by the students. The topic was chosen based on the existed curriculum for both diploma and undergraduate in nursing programs.

The research finding showed that Prezi was more effective in improving students'

knowledge comprehension. It was in line with previous research explained about the implementation of Prezi which can improve students' cognitive ability, and able to be used as an alternative for more conceptual learning to reduce the cognitive load of students.¹⁵

Prezi has a more attractive display compared to PowerPoint media which triggered students to give more attention to the material delivered using Prezi. An attractive learning media could improve students' learning motivation.¹⁶ Corresponding research also explained that students were more interested in Prezi than Powerpoint.¹¹ The high students' interest in visual media could be useful to achieve the learning objectives. Students' interests may contribute to students' motivation to give more attention to the given learning material.

Prezi was found to be more effective media in improving students' comprehension related to mechanism or alteration process. The comprehension of the mechanism or process needed deeper internalization on the given material. The students were required to understand each component while studying the correlation between components as a whole. In this case, Prezi offered unlimited reading room to display a mind-map.⁷

Prezi was found to significantly improve students' comprehension of process or mechanism related material. the mind map could be helpful for students in mastering knowledge about related factors, prevention, early observation and emergency treatment on the post-surgical complication.¹⁷ The improvement of critical thinking ability in students using mind map should also consider the risk of stress experienced by students, as stress might be contrary to the critical thinking ability.¹⁸

As nurses, they are required to think critically in making any decision related to the nursing care given to the patient.

Therefore, it is important to prepare the students as nurses candidates to think critically even from the early stage. As explained above, Prezi based learning media could improve the critical thinking skill of students.¹⁹ It could be concluded that the right choice of media is one of the valid predictors for better nursing care in the future. Therefore, Prezi is highly recommended as a learning media for students, especially nursing students.

CONCLUSION

The implementation of Prezi during the learning process can improve students' knowledge and mind map comprehension, as Prezi was found to be more effective in improving students' comprehension related to the knowledge and nursing process mind map. The implementation of Prezi has less significant in improving students' knowledge related comprehension, yet highly significant in improving mechanism or process-related material (mind-map).

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CONFLICTS OF INTEREST

Neither of the authors has any conflicts of interest that would bias the findings presented here.

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