



The Effectiveness of Audiovisual Media in Laboratory Learning on Improving Student Learning Outcomes during the Covid-19 Pandemic

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ABSTRACT

The COVID-19 pandemic has spread since the end of 2019 until now throughout the world. Educational institutions inevitably innovate face-to-face conventional learning into online distance learning. Online learning on cognitive achievement can be done, but a solution is needed for learning clinical skills both in the laboratory and in practice. This study aims to determine "The Effectiveness of Audiovisual Media in Laboratory Learning on Improving Student Learning Outcomes during the Covid-19 Pandemic". This type of quantitative research uses a quasi-experimental design method and uses a pretest-posttest one group design. The population involved were all active students of Stikes Yogyakarta Academic Year 2020/2021 totaling 164 people. The sampling technique used purposive random sampling. To find out the difference after and before treatment on the sample using Non Parametric analysis with the Wilcoxon Signed Rank Test technique. There is an effect of audiovisual media in laboratory learning on improving student learning outcomes during the Covid-19 pandemic with $T_{count} < T_{table}$, 1.697 with a probability of 0.002. There is an effect of audiovisual media in laboratory learning on improving student learning outcomes during the Covid-19 pandemic

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1. INTRODUCTION

The classroom-based face-to-face learning process underwent a total revolution, switching to an internet-based (online) learning process due to the COVID-19 pandemic. The government closed all educational facilities including universities as an effort to prevent the spread of COVID-19. Face-to-face classroom learning, clinical skills laboratories and student placement in practice areas have been delayed [1]. In general, the elements most closely related to online-based learning are teachers and students or lecturers and students. Educational institutions inevitably innovate face-to-face conventional learning into online distance learning [2]. Online learning on cognitive achievement can be done, but a solution is needed for learning clinical skills both in the laboratory and in practice [3].

Several factors are able to measure online learning readiness, namely technological factors, innovation factors, human factors and self-development factors [4]. Learning innovations need to be continued, especially to help develop clinical skills, one of which is by developing audiovisual learning

media. The use of video can help develop psychomotor clinical skills [5]. Provide demonstrations of reusable clinical skill steps; as a guide to learn clinical skills without the presence of an instructor [6].

All parties involved in this learning process (students, lecturers, institutions) must be able to adapt to the changes that occur. Learning is the ability to adapt (adaptation) to the influence of internal and external factors. The learning mechanism is a process in the adaptation system (cognator) which includes perceiving an information, either in implicit or explicit form [7]. Students as adaptive systems that receive stimuli from the internal and external environment.

2. RESEARCH METHOD

This research is a research using a quasi-experimental design or an experiment that is not real, because this experiment does not meet the requirements such as the scientific way of experimenting following certain rules [8]. In this study, a pretest-posttest one group design was used, consisting of one group to be given, but before that, a pre-test was carried out and after the treatment was carried out a post-test. The treatment in question is the provision of audiovisual media skills in the nursing skills lab practicum.

The population is the entire object of research or the object under study. The target population in this study were all 164 active students of STIKES Yogyakarta Academic Year 2020/2021. In this study, the sample used was part of the affordable population that met the inclusion and exclusion criteria, namely some nursing students at STIKES Yogyakarta in the 2020/2021 academic year. With a sample of 33 students, this sampling technique was carried out using a purposive random sampling technique.

The instrument used for data collection in this study was an observation sheet, which was used to measure the results of skills before being given audio-visual media and after being given audiovisual media.

Prior to data collection, the researcher made a skill video with the material "Wound Care", which is one of the competency achievements of the Medical Surgical Nursing course. Video skills are made in accordance with the Standard Operating Procedure (SOP) material. Data collection uses primary data, which is directly sourced from nursing students. Active nursing students for the Academic Year 2020/who are given the treatment of providing skills videos, observe the skills videos that have been given, then their lab skills will be measured.

Univariate data analysis was conducted to describe or describe each of the variables studied. Each respondent's skills were measured using a measuring instrument and then after being added up a percentage was made. In this study to determine the difference after and before treatment on the sample using non-parametric analysis with the Wilcoxon Signed Rank Test technique.

3. RESULTS AND DISCUSSIONS

Result

Table 1. Frequency Distribution of Student Learning Outcomes During the Covid-19 Pandemic

| Variabel | Category | Frekuensi | % |
|---|----------|-----------|------|
| Student Learning Result <i>Pretest</i> | Less | 5 | 15.2 |
| | Enough | 12 | 36.4 |
| | Good | 16 | 48.5 |
| Student Learning Result <i>Posttest</i> | Less | 0 | 0 |
| | Enough | 13 | 39.4 |
| | Good | 20 | 60.6 |

Based on table 1. it can be seen that, student learning outcomes in the pretest with less categories amounting to 5 (15.2%), sufficient category 12 (36.4%), good category 16 (48.5%) and on posttest student learning outcomes most of them have entered the good category with a total of 20 (60.6%) and the sufficient category of 13 (39.4%).

Table 2. Results of the Pre-Post T-Test of Audiovisual Media in Laboratory Learning

| Group | Average | T _{hitung} | T _{tabel} | P |
|-----------|---------|---------------------|--------------------|-------|
| Pre test | 2.33 | -3.464 | 1.697 | 0,002 |
| Post test | 2.61 | | | |

Based on table 2, it can be seen that the average value of the pre-test is 2.33 and the average value of the post-test is 2.61. For the calculated T, it is obtained -3.464 while the T table is 1.697 using the df value of 32. The significance value is 0.002 < 0.05

Discussion

The results of the analysis showed that, after being given audiovisual media intervention in laboratory learning, student learning outcomes during the covid19 pandemic in the pretest-posttest increased for the good category with a presentation of 48.5% to 60.6%, for the sufficient category also increased from 36.4 % to 39.4%.

This study is supported by other studies which reveal that student learning outcomes between those taught using audio-visual media (images, video, audio) and without audio-visual media showed a difference with a significance value of 0.000. Instructional videos provide a visual demonstration of clinical skills in close simulations in real settings; allows students to practice skills by applying theory in class (face to face) by learning practice. In particular, the use of videos to teach and learn clinical skills in nursing is the right choice [5]. Thus, audiovisual media is effective in improving learning outcomes [9].

Laboratory learning aims to train psychomotor abilities (skills), knowledge, and affective (attitudes). Laboratory learning that is carried out effectively will assist students in building self-confidence and communication achievements, thus requiring media that can improve student learning outcomes [19].

According to [18] suggests that the use of learning media in the teaching and learning process can generate new desires and interests, generate motivation and stimulation of learning activities and even bring psychological influences on students.

This study shows that student learning outcomes increase by learning using audiovisual media, so that during the current covid-19 pandemic they can better understand what the lecturers are saying even though they are not face to face. Thus it can be concluded that audiovisual media in laboratory learning can improve learning outcomes and new interests for students by bringing psychological effects on students. In line with research [10] said that, in the pretest, the average value of knowledge was less than satisfactory and after being given instructions, students' knowledge increased but was still unsatisfactory. In a sense, the intervention given can affect students' knowledge, besides that they also reveal that there is a significant difference between live demonstration and a combination of two methods (live demonstration and video-based method. Therefore, they recommend appropriate learning methods.

The pandemic period certainly cannot be separated from technology, especially in the context of teaching and learning. The use and integration of technology must of course be directed at educational needs to optimize learning outcomes. Various technology applications have been used to increase learning engagement [11]. In addition, the media used also supports the learning process. In our research, it was found that there was an effect of audiovisual media in laboratory learning on improving student learning outcomes during the covid-19 pandemic. This is also supported by other studies which reveal that universities around the world incorporate online learning often relying on video (asynchronous multimedia). Adding video to existing teaching has powerful learning benefits. Although the results may be subject to some experimental and publication bias, they suggest that video is unlikely to be detrimental and usually enhances student learning [12]. 11 students from 31 medical schools also the majority of them found OSCE videos effective for learning their clinical skills and in preparing for OSCE. In addition to the videos provided, it turns out that videos made by students can

support the provision of interventions and have a significant effect on student learning. It can be concluded, receiving videos or making videos for students can improve learning outcomes.

Video has proven to be an effective and valued knowledge transfer and training tool for healthcare professionals, but the narrative genre of video can influence knowledge acquisition. Thus it should be considered in giving narrative genres. Other studies also explain the results of research showing that audio-visual learning media can be used optimally to help students achieve learning goals, and the use of audio-visual learning media is basically intended to make learning activities more effective so that learning objectives can be achieved properly. In addition, the results of other studies show that learning media through hyperlink-based audio visuals used in learning activities have a high level of effectiveness and student interest in learning process activities.

4. CONCLUSION

Student learning outcomes during the COVID-19 pandemic in the pretest-posttest increased for the good category with a presentation of 48.5% to 60.6%, for the moderate category also increased from 36.4% to 39.4%. There is an effect of audiovisual media in laboratory learning on improving student learning outcomes during the Covid-19 pandemic with $T_{count} > T_{table}$, 1.697 with a probability of 0.002.

REFERENCES

- C. F. Agu, J. Stewart, N. McFarlane-Stewart, and T. Rae, "COVID-19 pandemic effects on nursing education: looking through the lens of a developing country," *Int. Nurs. Rev.*, vol. 68, no. 2, pp. 153-158, 2021, doi: 10.1111/inr.12663.
- A. Sumantri, andrian ari Anggraeni, A. Rahmawati, A. Wahyudin, and asep hermaawan, "Booklet pembelajaran daring," *direktorat jenderal Pendidik. tinggi kemendikbud RI*, vol. 53, no. 9, pp. 1689-1699, 2020.
- M. M. K. Chan, D. S. F. Yu, V. S. F. Lam, and J. Y. H. Wong, "Online clinical training in the COVID-19 pandemic," *Clin. Teach.*, vol. 17, no. 4, pp. 445-446, 2020, doi: 10.1111/tct.13218.
- B. Budhianto, "Analisis perkembangan dan faktor yang mempengaruhi keberhasilan pembelajaran daring (e-learning)," *J. AgriWidya*, vol. 1, no. 1, pp. 11-29, 2020.
- H. Forbes *et al.*, "Use of videos to support teaching and learning of clinical skills in nursing education: A review," *Nurse Educ. Today*, vol. 42, pp. 53-56, 2016, doi: 10.1016/j.nedt.2016.04.010.
- N. Natasha, A. Shafira, A. S. Charles, and C. Maharani, "the Influence of Video Learning Media Addition on Neuromotoric Physical Examination Clinical Skill of Medical Student Faculty of Medicine and Health Sciences Jambi," *Jambi JMJ*, vol. 6, p. 2, 2018.
- Nursalam, "Buku Asuhan Keperawatan Bayi dan Anak." Salemba Medika, Jakarta, 2013.
- Arikunto, *Prosedur penelitian: Suatu pendekatan praktik*. Jaka: Rineka Cipta, 2010.
- M. Mashudi, K. Komariah, and F. Irvan, "The use of audio-visual media in improving Culinary students learning outcomes in Chicken Carcass material," *J. Pendidik. Vokasi*, vol. 11, no. 1, pp. 14-23, 2021, doi: 10.21831/jpv.viii.36439. no. 1, pp. 14-23, 2021, doi: 10.21831/jpv.viii.36439.
- L. M. Ismail, "Effect of Instructional Multimedia Methods on Learning Outcomes Among Nursing Students in Selected Topic of Health," no. January, 2021.
- F. Tuma, "The use of educational technology for interactive teaching in lectures," *Ann. Med. Surg.*, vol. 62, no. January, pp. 231-235, 2021, doi: 10.1016/j.amsu.2021.01.051.
- M. Noetel, S. Griffith, and O. Delaney, "Video Improves Learning in Higher Education: A Systematic Review," *Sage Journals*, 2021, doi: <https://doi.org/10.3102/0034654321990713>.
- H. W. Jang and K.-J. Kim, "Use of online clinical videos for clinical skills training for medical students: benefits and challenges," *BMC Med. Educ.*, 2014, [Online]. Available: <https://bmcomeduc.biomedcentral.com/articles/10.1186/1472-6920-14-56>.
- N. B. Ødegaard, H. T. Myrhaug, T. Dahl-Michelsen, and Y. Røe, "Digital learning designs in physiotherapy education: a systematic review and meta-analysis," *BMC Med. Educ.*, vol. 21, no. 1, pp. 1-18, 2021, doi: 10.1186/s12909-020-02483-w.
- C. Hébert, C. Dagenais, E. M. Sween-Cadieuxid, and V. Ridde, "Video as a public health knowledge transfer tool in Burkina Faso: A mixed evaluation comparing three narrative genres," *PLoS Negl. Trop. Dis.*, vol. 14, no. 6, pp. 1-26, 2020, doi: 10.1371/journal.pntd.0008305.
- N. Karlina and R. Setiyadi, "the Use of Audio-Visual Learning Media in Improving Student Concentration in Energy Materials," *PrimaryEdu - J. Prim. Educ.*, vol. 3, no. 1, p. 17, 2019, doi: 10.22460/pej.v3i1.1229.

- U. K. Syarifah, A. N. Fatirul, and H. Harwanto, "Development of Hyperlink-Based Audio Visual Media for Six-Grade Science Learning," *EduHumaniora | J. Pendidik. Dasar Kampus Cibiru*, vol. 12, no. 2, pp. 107–114, 2020, doi: 10.17509/eh.v12i2.21555.
- Azhar, Arsyad. *Media Pembelajaran*. Jakarta: PT Rajagrafindo Persada
- Nur Holilah, Vivi Yosafianti. 2018. *Pembelajaran Laboratorium Mahasiswa Keperawatan Di Universitas Muhammadiyah Semarang*. Prosiding Seminar Nasional Mahasiswa Unimus