STRATEGIC ANALYSIS OF TOOLS/MEDIA COMBINATION FOR DISTANCE LEARNING IN SCIENCE COURSES

Muhammad Syazali¹, Muhammad Erfan², Lalu Wira Zain Amrullah³, Hasnawati⁴
¹,²,³,⁴Elementary Education Study Program, Universitas Mataram, Indonesia

ABSTRACT

Negative responses to the learning process and the high cost of buying quotas are problems that arise due to the implementation of online learning during PJJ. The purpose of this research is to analyze strategies for using a combination of distance learning tools/media that are effective and low-cost in the teaching-learning process in science courses. This survey research uses a closed questionnaire as a research instrument. Questionnaires were distributed to 112 PGSD students. The questions asked were 10 items related to network and internet access, and the PJJ tools used. The data obtained were analyzed using descriptive statistics. We found the fact that the University of Mataram has provided good e-learning for use in online learning. The vicon media and social media that are most frequently used sequentially are Google Meet (96.4%) and WA (99.1%). Therefore, the online tool/media that we recommend is the use of a combination of the three tools/media together with the surrounding environment as a Natural Laboratory in science learning. This recommendation is not only relatively cheaper in cost, but also has the potential to develop aspects of students’ knowledge, attitudes and science process skills.

1. INTRODUCTION

The COVID-19 pandemic has had an impact on various fields in Indonesia including education. Various universities adopted or adapted policies to change face-to-face teaching methods in class to distance learning as an effort to prevent the spread of the pandemic. In the context of higher education, distance learning itself is a learning process that allows lecturers and students to be in different locations (Widyaningrum et al., 2020). In Indonesia, the distance learning policy is known as "Learning from Home" referring to the circular letter of the Ministry of Education and Culture of the Republic of Indonesia Number 701/LL7/AK/2020. At the University of Mataram, the implementation of distance learning refers to the circular letter of the Chancellor of the University of Mataram Number 4945/UN18.1/TU/2020 Concerning the Implementation of Academic Activities Online to Prevent the Widespread Spread of the COVID-19 Outbreak at the University of Mataram. This applies to all Study Programs including Elementary School Teacher Education.

The policy of implementing distance learning creates problems in the Elementary Education Study Program. The results of the evaluation of its implementation show that student perceptions tend to be negative. This is due to limited costs to buy quotas and an unstable internet connection (Widodo, Nursaptini, Novitasari,
The purpose of this research is to analyze strategies for using a combination of distance learning tools/media that are effective and low-cost in the teaching-learning process in science courses. The results of this research itself can be used to determine the most appropriate combination of platforms for science learning during the implementation of distance learning. In addition, theoretically the results of this study are also useful for: (1) adding to the repertoire of knowledge related to the combination of distance learning tools/media used in science courses, (2) providing additional information related to the combination of distance learning tools/media used in science courses, and (3) can be used as additional references for further research. Another important benefit is that lecturers can use the results of this research as a basis for designing lecture plans that are more effective and efficient and have relatively lower costs in implementing distance learning.
2. RESEARCH METHOD

This research is a type of descriptive research that uses a quantitative approach. The research consisted of three stages, namely adaptation of survey instruments, data collection process and analysis of survey results. The output to be achieved from these stages is a recommendation for a relatively low-cost implementation strategy tool for implementing distance learning in science courses. This research itself was carried out for second year students (semester 5) of the 2021/2022 Academic Year. These students were chosen as research subjects because they were facilitated by distance learning since studying at the PGSD FKIP Study Program, Mataram University.

The instrument used in this study was a closed questionnaire distributed via the Google form link. This questionnaire was adapted from an instrument developed by Utomo, M. N. Y. et al. (2020). There are a total of 10 questions from two groups, namely (1) related to network and internet access, and (2) distance learning tools. The adaptation made was by adding several question items related to science learning. The adapted instrument was validated by an expert validator. Then the input from the expert validator is used as a basis for modifying and perfecting the instrument that will be used as a data collection tool.

Data was collected from a sample determined by simple random sampling. The minimum number of samples is determined using the Slovin equation. The google form link that leads to the questions in the questionnaire will be shared via the WhatsApp Group of each class. The data is then analyzed qualitatively and quantitatively. Qualitative analysis is used to map the types of tools or combinations of tools used during the implementation of distance learning. The quantitative analysis was carried out using descriptive statistics in the form of proportions. Data analysis results are then visualized in the form of a bar chart using Ms. Excel.

3. RESULT AND DISCUSSION

Based on the survey results of student responses to the variety of online tools used and costs incurred during PJJ, we recommend using 3 combinations of online learning tools and the environment around students as natural laboratories (Figure 1) a combination of these tools is e-learning Unram, WA and Google Meet. Unram e-learning that can be used is SPADA Unram or Daring Unram. The function of this tool in learning is assignments, quizzes and exams, namely UTS and UAS. WA functions as an online discussion forum media and conveys lecture information through the chat menu. Meanwhile, Google Meet is used for face-to-face learning online through vicon.

Figure 1. Recommendations for a combination of media in implementing Distance Learning

The combination of media we recommend is different from the recommendations from Utomo, M. N. Y. et al. (2020), Google Classroom was replaced with Unram e-learning because the survey results showed that the LMS-based media was of good quality (Figure 2). On the other hand, LMS-based online media has advantages. Some of them are automation and administrative centralization of online learning activities such as registration, delivery of learning materials to tracking and reporting student learning progress (Ferdianto et al., 2018). Some of these advantages lead to positive student responses to online learning (Yildiz, Tezer, & Uzunboylu, 2018). In the aspect of the learning process, the use of implementation in distance learning can increase learning independence and active participation (Brian Chen, Kathy Huang, Gribbins, & Swan, 2018). In the aspect of science learning outcomes, the use of Moodle-based LMS is empirically proven to be able to develop student creativity. This is because LMS allows lecturers to manage learning and exchange information.
with students quickly and flexibly (Gunawan, Sahidu, Susilawati, Harjono, & Herayanti, 2019). In addition, the use of LMS as an online learning medium also has a positive impact on student involvement in learning, information literacy and academic performance (Avcı & Ergün, 2022).

Another difference is that Zoom was changed to Google Meet. This refers to survey results in which 96.4% of students stated that the tool for vicon commonly used by lecturers was Google Meet (Figure 3). On the other hand, the use of Google Meet as an online learning medium has a positive impact. Some of these positive impacts include: (1) the best vicon application, students are satisfied with class management and the process can be recorded and increases interest in learning because it is easy to use, time is flexible and can be accessed anywhere, as long as there is internet access (Minhas, Hussain, Ghani, Sajid, & Pakistan, 2021; Septantiningtyas et al., 2021), and (2) effective and learning runs smoothly during the implementation of PJJ, lecturers and students can more easily interact during learning (Guntur Gunawan, Kristiawan, Risdianto, & Monicha, 2021; Nasution, Nandyanto, & Department, 2021). The reason for choosing WA is because it is used most often compared to other social media (Figure 3b).

The combination of media that we recommend is also different from the recommendations from Syazali & Ilhamdi (2022). In this strategy recommendation, we add learning by utilizing the environment around students as a Natural Laboratory. This of course will save internet costs because it is implemented offline. In addition, the implementation of the Natural Laboratory in learning can also develop students’ science process skills (Syazali, Widiada, & Zain, 2022), which has been difficult to do due to the low weight of science courses (Tim Penyusun, 2020), so that learning is focused on mastering aspects of the product. This also reduces barriers to online learning such as a stable network/internet connection that is unevenly distributed, insufficient internet quota, lack of ICT literacy for some lecturers and students, and boredom in online learn-
In the results of this survey, only a small proportion of students have a fast internet connection (Figure 4). This of course can reduce the quality of the process and results of learning science.

The difference in internet speed is caused by the uneven distribution of infrastructure in each region. PGSD FKIP Unram students come from different regions, mainly from NTB but are scattered in different districts/cities. Some came from West Lombok district, Mataram city, Central Lombok to Bima district which is the easternmost area of NTB province. Another factor is due to differences in providers used by students. Even though there is a free package/quota/free wifi policy (Figure 5a), most students use quota (cellular data) compared to special internet such as wifi (Figure 5b).

The strategy for using the combination of tools/media that we recommend is not only considering the effectiveness aspect, but also the lower cost aspect. In its implementation, it is recommended to minimize the use of Google Meet as a media vicon in conveying theory. For practicum activities, take advantage of the environment around students as a Natural Laboratory. This recommendation is based on the results of research which found that 90.2% of PGSD FKIP Unram students stated that the costs incurred for implementing PIJ were relatively expensive. This can cause many students to stop taking distance learning. The one that consumes the most internet quota is vicon so that its use must be reduced, except for things that are important and cannot be done without a vicon.

4. CONCLUSION

The results of a survey of 112 PGSD Study Program students at the University of Mataram showed that the most frequently used media vicon for face-to-face learning online was Google Meet. The most frequently
used social media is the WA application. Based on this fact, we recommend a combination of the two media to be used together with UNRAM e-learning and the surrounding environment as a Natural Laboratory in science learning. In Merdeka Belajar curriculum, these recommendations can be implemented in Elementary Science Education courses (3 credits) and Basic Sciences.

REFERENCES


Syazali et al. (2023). Strategic Analysis of...


