

Improving The Quality of Lectures through The Application of Hybrid Learning with The SIPDA Application at Elementary School Teacher Education of Universitas Negeri Medan

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Elementary School Teacher Education of Universitas Negeri Medan, Indonesia 2022¹,

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Abstract. The purpose of this study is to find out whether the SIPDA application can be used in the hybrid learning process at Elementary School Teacher Education so that it can improve the quality of lectures, and to find out whether the SIPDA application is more effective than conventional LMS so that it can improve the quality of lectures in the Elementary School Teacher Education Program. This study is an experimental study with a pre-and post-test control design, in-class training followed by field practice and evaluated using three components: pre-test and post-test evaluation (score scale: 0–100), skills observation during disaster training (score scale: 1-4). Participants consist of 24 students of Elementary School Teacher Education of Universitas Negeri Medan. The evaluation scores before and after the test show improvement in post-test results by 71.4 ($p < 0.005$). This study fully evaluates the effectiveness of the use of the SIPDA Application in its application to the Hybrid learning process in the Elementary School teacher education program

Keywords: hybrid learning, SIPDA application

1 Introduction

Nowadays, as the spread of the COVID-19 virus begins to decline, in early 2022 the government issued a new policy regarding face-to-face learning procedures. The government through the Ministry of Education and Culture opens the possibility of face-to-face learning with consideration of continuing to look at the conditions of transmission of the COVID-19 virus and continuing to implement strict health protocols. This is a follow-up to the results of the evaluation of the process of implementing Distance Learning throughout the COVID-19 pandemic.

The implementation of distance learning which was carried out online from the beginning of the pandemic until now, it is feared that it will have a negative effect on the psychosocial aspects of students, so that there is a need for changes related to the technicalities of online learning which were previously purely in the network so that a combination of offline (off-network) or offline (face-to-face) learning or better known as Hybrid Learning, is carried out, namely a learning model that integrates innovation and technological advances through an online learning

system with the interaction and participation of traditional learning models (Sumardiana, Fergina, Nurmala, Nanda, & Oktaviani, 2022). This learning system also combines two kinds of choices of who will play the main role, namely whether it is the student or the teacher. So that in general in the early stages of applying the role of the teacher is more dominant and when it has gone well, it is changed to the role of a more dominant student (student center) (Makhin, 2021).

In response to this, the learning process within Medan State University in the 2021/2022 Academic Year began to be carried out by applying mixed learning methods, namely face-to-face and in-network (hybrid learning). This is stated in the circular letter issued by the Rector of Medan State University No: 000119 / UN33 / KP / 2022 concerning guidelines for Academic activities for the Even Semester of FY 2021/2022 within UNIMED on January 11, 2022. In the circular letter, according to the rector's direction, every academic activity in the form of face-to-face is directly regulated by the study program in coordination and with the knowledge of the faculty. Furthermore, regarding UNIMED lecture participants limiting the number of lecture participants to a maximum of 50% of the number of lecture participants (rombel) this is done as a preventive measure if later the curve of the spread of COVID-19 increases again.

To support the effectiveness of the application of hybrid learning methods in learning, UNIMED always strives to motivate lecturers to optimize the Online Learning System (SIPDA) LMS so that later students who take part in virtual classes can do assignments and lecture instructions properly. SIPDA was developed based on moodle and is an update of SIPOEL (Portal Electronic Learning System) which was previously used by Medan State University in online learning. The e-SIPDA system has been adapted to the latest technological developments so that it can facilitate the learning process. SIPDA uses opensource CMS-based LMS (Learning Management System) (Prasetya, Hasruddin, & Syahputra, 2019)

The Online Learning System (SIPDA) with the Moodle Learning Management System (LMS) platform is configured to make it easier for teachers to compile learning activities and manage their learning evaluations. Moodle provides the services a teacher needs in managing a class. Moodle has a simple, efficient, and lightweight appearance, and is compatible with many browsers. In addition, this LMS is also supported by many languages, and there are many menus of activities in learning such as discussion forums, live chat, online book modules, and pages that can be managed like website pages in general. The page on Moodle also supports a lot of multimedia, making learning more interesting. In addition, Moodle also provides many menus to evaluate. Quizzes on Moodle consist of many types such as multiple choice, true / wrong, matching , short answers , essays, and many menus that support answers in the form of numbers, formulas, and programs. In addition, in the grading system, teachers can choose to judge directly, use marking guides, or use rubrics. (Irawan & Surjono, 2018)

In the Elementary School Teacher Education Program, the application of the hybrid learning method is always carried out by optimizing SIPDA as a medium that can help lecturers to provide material effectively to students who are carrying out the learning process virtually. Lecturers as facilitators can upload material and additional material at any time without being limited by space and time, so that learning can take place at any time and students are required to be able to learn independently no longer centered on lecturers, With SIPDA, students can get used to building their own knowledge so that the material is well absorbed, build mutual helping character between friends who have learning difficulties, and make more optimal use of time.

When hybrid learning lectures take place, of course, lecturers can also provide practice questions and quizzes on the SIPDA page so that in tandem the virtual and face-to-face lecture processes can take place relevantly. Sipda optimization carried out in the Elementary School Teacher Education Program is expected to be a solution in building an effective learning process so that the learning objectives of each course can be achieved.

This research refers to several studies including the Development of a WEB-Based Learning Management System to measure the Understanding of Concepts and Characters of Students (Wibowo, Akhlis, & Nugroho, 2014). Further research with the title Analysis of the Effectiveness of Using Hybrid Learning Models at SMK Negeri 2 Surabaya (Triyono & Dermawan, 2021). Next are (Prawijaya, Rozi, & Siregar, 2022) and The Use of Online Learning Systems (SIPDA) as an Online Learning Management System on Learning Outcomes of Financial Accounting Subject: A Mediation Effect of Learning Motivation (Zainal, Tampubolon, Herliani, Silalahi, & Dharma, 2022)

2 Research Method

This research is classified as experimental research. Experimental research is a research design that provides the most rigorous hypothesis testing compared to other types of research. The experimental method is also a study used to look for the influence of certain treatments on their impact under controlled conditions, : (1). Choosing subjects that have a similar (homogeneous) background through non-random elections. (2). Randomly, each subject assigned is assigned to be assigned to an experimental group or to a control group (3). Gave pretests to obtain Y1 scores in the experimental and control groups. (4). Treating experimental groups, for example, being treated with new methods that are prioritized. (5). Providing treatment of the control group can be taught with the same material as other methods used usually by the teacher of the class without providing new methods, not with the methods being experimented. (6). Give Postes to obtain a Y2 score of both the experimental and control groups. (7). Using statistical methods, the difference between the average pre-test value, Y1 score and Y2 score from the post-test from both the experimental group and the control group was sought (for example: using covariance analysis). (Ratminingsih, 2010)

This research uses a quasi-experimental design that is a development of True experimental design that is difficult to implement, especially in the social and educational fields. Nevertheless, this design is better than pre-experimental design. Pseudo-experimental is a form of design that involves the least two groups. One group as an experimental group and the other group as a control group. The implementation of the research in the Quasi-experimental group was (1) the group was given treatment .the experimental group was given treatment using a learning strategy that would be tested for effectiveness and the control class was also given treatment with existing learning strategies. . (2) then the two groups were given a final test or post test. To analyze the results of empirical data, the final test results of the experimental group and the control group are compared with the statistical hypothesis test and if the results are higher post test, it is concluded that the treatment or treatment given is effective and if the pretest value is more than 51 higher than the post test, it can be concluded that the treatment applied is not effective. (Hastjarjo, 2019)

3 Results and Discussion

3.1 Pre-Implementation

At the beginning of the research process, perception equalization with the research team was carried out to determine the course that would be used as the object of research. Researchers have discussions with the KDBK Lecturer Team who will later compile a learning module loaded in SIPDA. Optimizing SIPDA as the main LMS at UNIMED is one of the strategies to implement the hybrid learning process to be more effective.



Fig. 1. Discussion Process With Research Team

The form of one of the SIPDA displays that has been developed by the KDBK Seni Team is as follows:

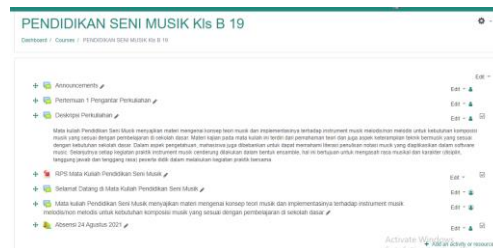


Fig. 2. Example of SIPDA Display in Music Arts Education Course

Each module compiled by the KBDBK Lecturer Team contains several materials that are described briefly and clearly. For media and learning resources, the KDBK Lecturer Team also designs assignment forms, learning instructions and also relevant references to be able to support students in exploring information and SIPDA can be optimized properly.

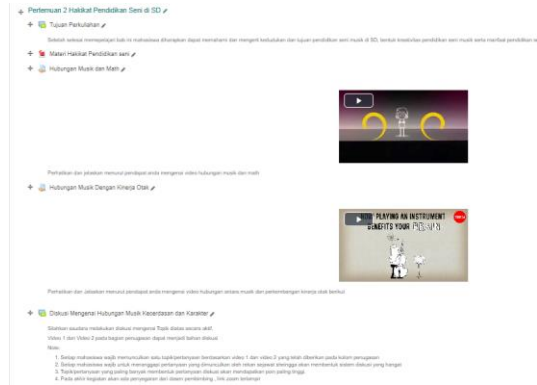


Fig. 3. Content Of SIPDA

In some courses, SIPDA can be maximized to share several application installers to be able to help students in conducting practicum materials. This means that Medan State University has floated the SIPDA LMS to be used flexibly for the hybrid learning process.



Fig. 4. Download One Of The Digital Applications To Help The Learning Process

Furthermore, in several courses, SIPDA is also used to provide practicum practice videos to be able to assist students in carrying out independent exercises.

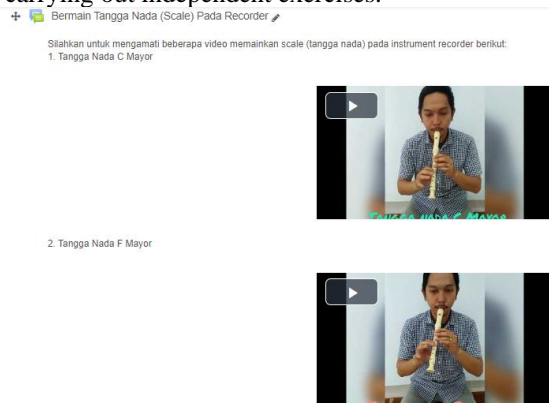


Fig. 5. Practicum Videos as a Medium That Can Help Students In Hybrid Learning

Researchers try to back up all the data of the KDBK Lecturer Team who have designed SIPDA according to learning needs. This can later become the Department's data to develop modules from the aspects of content, assignments, learning resources and media used. Back Up data, of course, can also be used as evaluation material from the KDBK Lecturer Team to develop effective learning tools and in accordance with the needs of the times

Backup course: PSM-19B

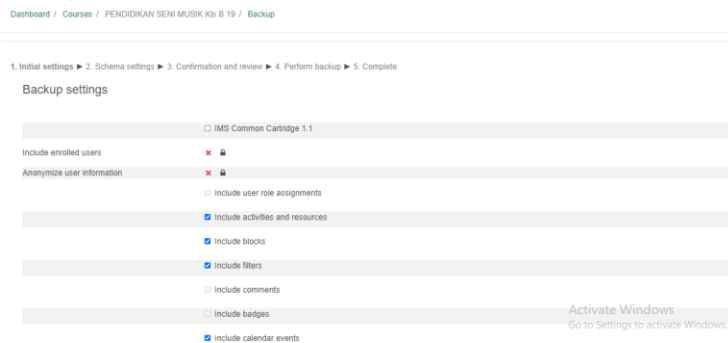


Fig. 6. The Process of BackIng Up Data in SIPDA

MANAGE BACKUP FILES

User private backup area

Filename	Time	Size	Download	Restore
backup-moodle2-course-2404-psm-19b-20220813-1052-nu.mbz	Saturday, 13 August 2022, 10:52 AM	10.3MB	Download	Restore
backup-moodle2-course-2395-psm-19a-20220612-1812-nu.mbz	Sunday, 12 June 2022, 6:13 PM	10.3MB	Download	Restore
backup-moodle2-course-2662-pstd21c-20220220-1323-nu.mbz	Sunday, 20 February 2022, 1:23 PM	6.2KB	Download	Restore
backup-moodle2-course-2002-ak-21-20211124-2046-nu.mbz	Wednesday, 24 November 2021, 8:47 PM	1.2MB	Download	Restore
backup-moodle2-course-2002-ak-21-20211104-0617-nu.mbz	Thursday, 4 November 2021, 6:17 AM	840KB	Download	Restore
backup-moodle2-course-2002-ak-21-20211021-0612-nu.mbz	Thursday, 21 October 2021, 6:12 AM	6.7KB	Download	Restore
backup-moodle2-course-2002-ak-21-20211014-0822-nu.mbz	Thursday, 14 October 2021, 8:22 AM	484.5KB	Download	Restore
backup-moodle2-course-2002-ak-21-20210923-1037-nu.mbz	Thursday, 23 September 2021, 10:37 AM	6.7KB	Download	Restore

Fig. 7. Results of Back Up Data in SIPDA

3.2 Description of the Differences between Experimental and Control Group

Experimental Group

In the initial stage, what was done after preparing the SIPDA device and researching the experimental group's data was to give a pre-test to both groups. The test given is a learning outcomes test in the form of an objective test in the form of multiple choices covering material given in several courses that are used as research objects. From the results of the pre-test conducted, researchers will conduct an analysis of the quality of lectures based on the hybrid learning process carried out. the courses that are the object of this research are Music Arts Education.

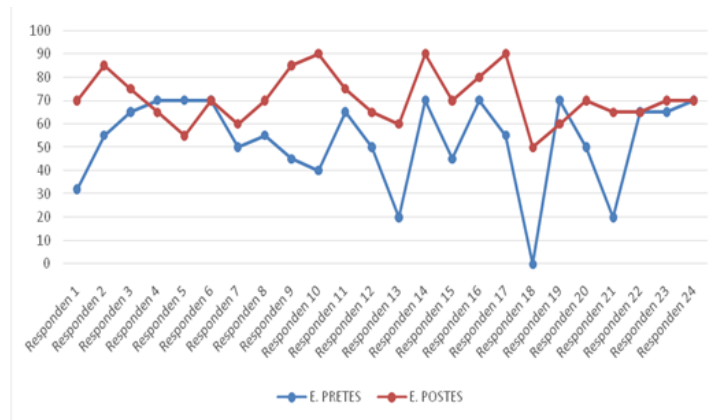


Fig. 8. Pretest and Posttest Results of the Experimental Group

The graph above shows that the difference in student academic scores before being given Hybrid learning using the SIPDA application. Of the 24 students seen to get significant learning outcomes. The conclusion is that Hybrid learning becomes more effective by using SIPDA.

Control Group

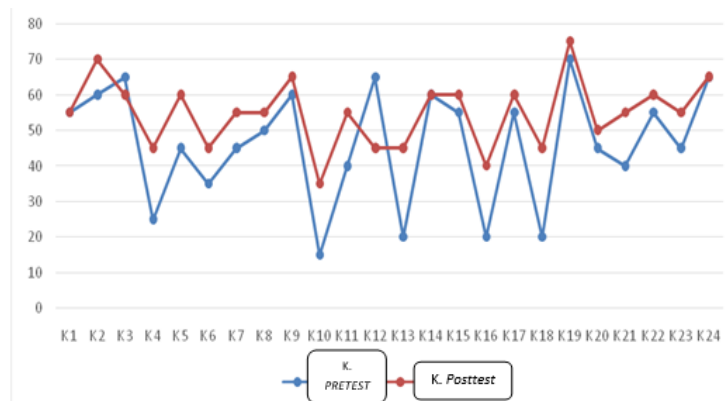


Fig. 9. Pretest and Posttest Results of the Control Group

The graph above shows that the difference in student academic scores before being given Hybrid learning without using applications that work for assignments. From 24 students, it was seen that they could improve learning outcomes but not significantly. Even one of the respondents got the same posttest score from the previous results.

Table 1. Post-test normality test in the experimental and control groups

Group	Shapiro-Wilk*			Group
	Statistic (<i>Posttest</i>)	Df	Sig.	
Control	0.961	24	0.451	Normal
Experiment	0.9393	24	0.156	Normal

The table above describes the normality test on the data after treatment in the experimental and control groups. The data is said to have a normal distribution if the p value is above 0.05. In the control and experimental groups, the data showed a normal data distribution (p value > 0.05). Because the data has a normal distribution, the analysis uses an independent statistical analysis t-test

Table 2. Comparative test of test results after treatment (posttest)

Group	Mean (SD)	p-value	Conclusion
Experiment (<i>Posttest</i>)	71.04 (11.03)	0.000*	There is a difference
Control (<i>Posttest</i>)	54,79 (9.61)		

Based on the table above, the results of the comparison test show that the pretest score has a significant difference between the experimental group and the control group (p value <0.05). Thus the hypothesis which states that the significant difference in posttest results from the experimental and control groups is acceptable

Table 3. Comparative Test of Test Results Scores Before and After in the Experimental Group

	Mean (SD)	p-value	Conclusion
<i>Pretest</i>	52.79 (19.07)	0.000*	There is a difference
<i>Posttest</i>	71.04 (11.03)		

The results of the comparison test using the Wilcoxon test showed that both before and after treatment had a significant difference because the value was below 0.05. That is, this treatment has an influence on the score of training results. Thus, the hypothesis which states that there is a significant difference in the results of the training before and before the experimental group treatment can be accepted. It can be interpreted that the use of the SIPDA application has an effect on improving student learning outcomes

Table 4. Comparative test of test results before and after on control group

	Mean (SD)	<i>p-value</i>	Conclusion
Pretest	46.25 (16.43)	0.000*	There is a difference
Posttest	54.79 (9.60)		

The results of the comparison test using the paired t test showed that both before and after treatment the difference was significant because the value was below 0.05. Thus, the hypothesis which states that there is a difference (but not too significant) from the training results before and before treatment in the control group can be accepted.

The learning process is carried out by applying a Hybrid learning system that conditions students to learn with face-to-face techniques and virtual meetings at the same time. In practice, lecturers use the zoom platform to facilitate students attending in the form of virtual meetings. Furthermore, students who are present in class will get direct knowledge in accordance with the material being taught. This is done as a form of student activity in learning in the current pandemic conditions.

4 Conclusion

Based on the results presented, it can be concluded that:

In the pre-implementation stage, researchers held discussions with several KDBK Lecturer Teams to prepare SIPDA content that would be used during the treatment stage carried out by the Researcher with the Team. After using the SIPDA application, the experimental group got a significant increase in value. Furthermore, the control group continued to experience an increase but not too significant.

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