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Optimization Of Blended Learning With OBS Studio Assisted By Domino Multiplication Media

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A B S T R A C T

The purpose of this study was to improve student learning achievement by optimizing Blended Learning with Open Broadcaster Software (OBS) assisted by Domino multiplication media for fifth grade students at the Indonesian School of Davao. The learning achievement in question is student activities and learning outcomes. This type of research is classroom action research with two cycles, each cycle is consisting one meeting. Each meeting consisting four stages, namely planning (planning), action (acting), observation (observing), and reflection (reflecting). The data analysis technique used were quantitative and qualitative analysis techniques. The results showed that student activity increased in each successive cycle obtaining a mean score of 2.97 (good): 3.18 (very good). Student learning outcomes increase in each cycle. In cycle 1 the classical completeness was 75% with an average value of 82.5. Cycle II classical completeness was 87.5% with an average value of 87.5. Cycle II data shows that classical completeness has reached the target of 85%, which was 87.5%. The conclusion of this research is that optimizing Blended Learning with Open Broadcaster Software assisted by Domino Multiplication Media can improve Learning Achievement in Grade V Mathematics Learning at the Indonesian School of Davao Philippines.

A R T I C L E I N F O

1. INTRODUCTION

Republic of Indonesia Law Number 20 of 2003 Article 37 paragraph 1 (d) states that the curriculum for primary and secondary education must include Mathematics education. Permendikbud No. 103 of 2014 article 1 concerning Learning in Primary and Secondary Education explains that learning in the 2013 curriculum is aimed at developing the potential of students so that they have the ability to live as individuals and citizens who are faithful, productive, creative, innovative, and affective, and able to contribute to the life of society, nation, state, and civilized world.

Education in Indonesia is currently still consistently in the bottom 10 based on a survey of evaluations of education in the world. Based on data released by The Organization for Economic Co-operation and Development (OECD) regarding the results of the 2018 Program for International Student Assessment (PISA) stated that Indonesia's mathematical ability is in the 7th bottom of the 79 countries surveyed.

Indonesia's education process during the current pandemic has shifted and experienced changes that require the use of digital technology that can be used for the sake of enhancement and quality education. In addition, the application of a new learning model that refers to blended learning is also needed. This makes significant changes to the learning system that is generally applied to schools and affects the learning process and results obtained. One of the popular applications used by online learning is the zoom meeting application (Putri et al., 2021). However, the use of technology should adapt with the conditions of the accessibility and flexibility of the students.

The results of the study of the Mathematics curriculum at the Indonesian School of Davao found problems in Blended Learning Mathematics for grade V including students' lacking mathematical reasoning, 62.5% of students did not pass the Minimum Completeness Criteria (KKM), only a few students wanted to express their opinion on the results of their work, and students lacking self-confidence and lacking cooperation. It was a challenge since mathematics education in 21st century requires students to have 4C Skills, consisting: communication, collaboration, critical thinking and problem solving, and creativity and innovation (Huda & Huda, 2021). More so, face-to-face teaching is ready to turn into learning from home by optimizing a wide variety of applications (Putri et al., 2021).

Based on the problems mentioned above, researchers are motivated to optimize Blended Learning in Mathematics with Open Broadcaster Software (OBS) assisted by Domino Multiplication (Qorib, 2021). The reason researchers chose Blended Learning with OBS is that it can help students get interesting learning video material online in real time or offline with learning material files in the form of documents, audio and video that can be embedded in the school's Learning Management System (LMS) (http://diskkbb.org).

The use of Open Broadcaster Software is more optimal if the researcher combines it with the Domino Multiplication media. This is because the use of Domino multiplication cards can encourage students to be more active in participating during the learning process. The general objective of this classroom action research is to improve student achievement in Mathematics grade V at Indonesian School of Davao. The targets to be achieved are: 1) increasing student activity in Blended Learning Mathematics with Open Broadcaster Software assisted by Media Dominoes Multiplication Grade V at the Indonesian School of Davao, 2) improving student learning outcomes in Blended Learning Mathematics with Open Broadcaster Software assisted by Media Domino Multiplication for Grade V Indonesian School of Davao. Open Broadcaster Software (OBS) assisted by Domino Multiplication is expected to optimize Blended Learning Mathematics for Grade V Multiplication at the Indonesian School of Davao.

This is supported by the research that was successfully carried out by Roshinah, et al (2020) entitled "Application of the Blended Learning Model to Improve Mathematics Learning Achievement at SDN Pisangan 01". In the first cycle, the percentage of students' completeness in achieving KKM 75 is 72% with a class average of 80. In cycle II, the percentage of completeness of students in achieving KKM 75 is 94% with a class average of 96. This research is recommended for the topics LCM and GCF, while the research that will be carried out is on the topic of multiplication and the properties of multiplication of numbers.

In addition, similar research that supports this research is the research conducted by Mailili, Wahyuni from Alkhairaat University (UNISA) Palu entitled Application of Learning Media in the Form of Domino Cards to Improve Student Learning Outcomes for Class VIIA Mts Alkhairaat Kalukubula on Multiplication and Integer Division Materials. The selection of Open Broadcaster Software (OBS) is strengthened by the research conducted by Anggraini, Putri, et al from Dharma Andalas University entitled "Optimizing the Use of Stream Labs (OBS) to Support the Making of Online Materials for Lecturers of the Information Systems Study Program of UNIDHA". The combination of the three research results will strengthen the research to be carried out.

Based on the description of the background, the researchers are interested in carrying out classroom action research (CAR) to examine the problem of the lack of student achievement with the title "Optimizing Blended Learning with Open Broadcaster Software assisted by Domino Multiplication Media to improve Student Achievement in Mathematics Learning Grade V Indonesian School of Davao, Philippines".

2. METHODS
2.1. Sample

Blended mathematics learning with multiplication of fractions served as the focal point of this research endeavor. The study unfolded within the academic confines of the Indonesian School of Davao, Philippines, a setting chosen for its conducive environment and diverse student demographics. Specifically, the participants in this investigation were the fifth-grade students of the aforementioned institution. This cohort comprised 8 students, evenly split between genders, with 4 male students and 4 female students, thereby ensuring a balanced representation conducive to comprehensive analysis.

The research unfolded over a span of two distinct periods, commencing on October 25, 2021, and concluding on November 8, 2021. These dates were strategically selected to align with the school's academic calendar, facilitating seamless integration into the existing curriculum framework. Throughout the research duration, meticulous attention was paid to ensure that the learning interventions were seamlessly integrated into the students' regular academic schedule, thereby minimizing disruptions while maximizing the potential for meaningful learning outcomes. Additionally, the implementation of the research protocol was carefully orchestrated to ensure consistency and reliability across both cycles, allowing for comparative analysis and the identification of discernible trends or patterns in the students' mathematical proficiency.

2.2. Statistical analysis

This research uses classroom action research. The research was carried out in 2 cycles, each cycle consisting of 1 meeting. The action research step according to (Arikunto, 9: 16) consists of four components, namely planning (planning), action (acting), observation (observing), and reflection (reflecting)
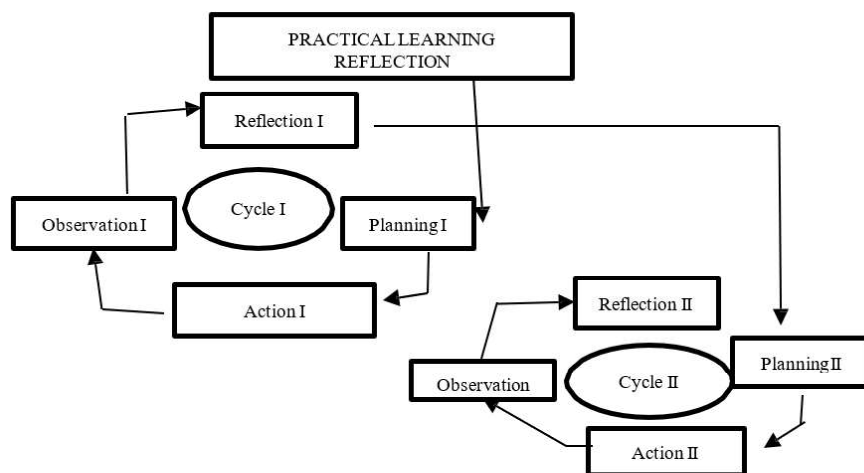
Figure 1. Research Design

The variables of this research are student activities and learning outcomes in Blended Learning Mathematics with Open Broadcaster Software (OBS) assisted by Domino multiplication media for fifth grade students at the Indonesian School of Davao, Philippines. The source of this research data comes from students and documentation. Data collection techniques used the test method and the non-test method (observation of student activities and documentation of field notes). Quantitative data analysis techniques in the form of cognitive learning outcomes were analyzed using descriptive analysis.

The analysis of success or the percentage of student learning completeness is taken after the teaching and learning process takes place in each cycle, carried out by providing an evaluation or end-of-cycle test in the form of written test questions. According to Hamdani (2011: 60) complete learning can be achieved by students if > 85% as a whole is the object of research. The qualitative data analysis technique is the result of observing student activities in Blended Learning Mathematics with Open Broadcaster Software (OBS) assisted by Domino Multiplication media.

3. RESULTS AND DISCUSSION

The Learning activities include introduction, core activities, and closing activities. Activities carried out in Grade V Mathematics learning, especially on multiplication topic using Blended learning. Blended learning combines face to face learning in class and online learning to increase active independent learning by students and reduce the amount of face to fce time in class (Nasution, 2019).

Activities during the introduction, the teacher carried out the first phase of blended learning syntax, namely Phase 1 Information. The teacher carries out preliminary and apperception activities in the form of conveying the objectives and benefits of learning about the topic to be taught. The teacher conveys an outline of the scope of the material and the steps of learning.

The core activity carried out is by applying Blended Learning with Multiplication Dominoes. Indicators of blended learning according to NNST (in Dewi, 2005) are in accordance with the new blended learning Syntax, namely: 6 Phases, namely Information, Blended Activity, Formative-Evaluation, Practice & Mentoring, Dissemination, and Summative Evaluation.

In the core activity, Phase 2 of Blended Activity, students pay attention to the explanation of the material displayed in OBS Studio-based media in the form of PowerPoint Presentation.

In delivering material in OBS during lessons, students pay attention to the instructions for the Multiplication Domino game. Students asks when they have difficulty understanding the material displayed through OBS or direct explanations. Students are also expected to actively answer questions from the teacher. Phase 3 Formative Evaluation is a multiplication quiz. Indicators at this stage students solve the problems given, respond to questions / feedback from the teacher, pay attention to strengthening the material from the teacher, and listen to the teacher's explanation of the correct answers / procedures and are able to improve the results of the task. Phase 4 Practice and Mentoring, students practice problem solving with the Domino Multiplication game. In groups they complete the Student Worksheet (LKPD) that has been given. Phase 5 Dissemination. Students present the results of group work completing the Domino Multiplication LKPD.

Closing activities are carried out with reflection and evaluation activities (Phase 6 Summative Evaluation). This final activity begins with the teacher and students reflecting and concluding the lesson for two hours of lessons. Students carry out reflective learning activities that have been carried out, then convey conclusions according to the material. Students record conclusions in notebooks. The teacher invites all students to pray according to their respective religions and beliefs then closes the learning activities with greetings.

Slameto (2015) states that learning achievement is a change that is achieved by a person after following the learning process. These changes include overall behavioral changes in attitudes, skills and knowledge. The results of student achievement in the form of changes in learning outcomes and student activity results can be described as follows:

Table 2. Result of Observation of Student Activity Cycle I and Cycle II

No.	Student Activity Indicator Referred from expert opinion (Dewi, 2005)	Cycle I	Cycle II
1	Phase 1: Infromation – Students pay attention to the information provided	3,37	3,50
2.	Phase 2: *Blended Activity* Students pay attention to the topic	3,12	3,25
3.	Phase 3: *Formative-Evaluation* Students solve the given Problem	2,62	3
4.	Phase 4: *Practice* & *Mentoring* Students practice problem solving with multiplication dominoes	2,75	3
5.	Phase 5: *Disemination* Students presents their results/product	3	3,12
6.	Phase 6: *Summative Evaluation* Students do reflection activities	3	3,2
Total Score		17,8	19,2
Average Score		2,9	3,18
Criteria		**Good**	**Very Good**

Table 2 shows increased student activity in Blended Learning through the Open Broadcaster Software model with Domino Multiplication as media, it can be seen in the first cycle of student activity getting a score of 17.8 with an average score of 2.97 including good criteria. Student activity in the second cycle obtained a score of 19.12 with an average score of 3.18 which was included in the very good criteria.

Bloom in Suprijono (2010) explains that learning outcomes or learning achievements include three abilities, namely: cognitive, affective, and psychomotor learners.

Table 3. Learning Outcomes for Cycle I and Cycle II

No	Achievement	Pre-cycle	Cycle I	Cycle II
1	Lowest score	50	65	70
2	Highest score	100	100	100
3	Students who pass	3	6	7
4	Students who did not pass	5	2	1
5	Average score	68,75	82,5	87,5
6	Percentage of passing grade	37,5%	75%	87,5%
7	Percentage of non-passing grade	62,5%	25%	12,5%

Table 3 shows student learning outcomes increased in Blended Learning through the Open Broadcaster Software model with Domino Multiplication media. It can be seen that the percentage of completeness increased from cycle I to cycle II. In cycle 1 classical completeness was 75% with an average value of 82.5. Cycle II student learning outcomes obtained classical completeness 87.5% with an average value of 87.5. Cycle II data shows that classical completeness has reached the target of 85%, which is 87.5%.

The achievement of student learning outcomes is inseparable from the teacher's efforts in carrying out an interesting learning process, fostering student learning enthusiasm with multiplication domino media. Levie and Lentz (in Sukiman 2012: 39) say that learning media can increase and direct children's attention so that it can lead to learning motivation, more direct interaction between students and their environment, and the possibility of students to learn on their own according to their abilities and interests.

Sutikno (2013) states that learning is a business process carried out by a person to obtain a new change, as a result of his own experience in interaction with his environment. Learning activities in the future will dominate with the blended learning model in learning. This means that face to face learning will be increasingly abandoned. The existing traditional learning system will be further immersed by cultivating a learning environment mediated by computer technology and the internet. Blended learning combines face to face learning in class and online learning to increase active independent learning by students and reduce the amount of face to face time in class (Nasution, 2019).

Efforts to optimize blended learning learning with Open Broadcaster Software (OBS) assisted by Domino Multiplication. OBS is a free and open source video recording and live streaming application that can make it easier to make learning video materials (http://disdikkbb.org). Mathematical dominoes according to Sundayana (in Sidarta, 2019) are designed to resemble dominoes, contain pairs of questions and answers, can be played in groups and the question material used can be adapted to the material being taught. Teachers try to answer these challenges in applying various teaching and learning methods or strategies, using various teaching media to assist the implementation of the teaching and learning process, and changing the curriculum according to the times (Kaharuddin, 2020).

Researchers carry out learning in two cycles based on the syntax of the Blended Learning model with Domino Pekalian media, namely (1) Information Phase, students pay attention to the information provided, (2) Blended Activity Phase, students pay attention to the material, (3) Formative-Evaluation Phase, students solve problems given, (4) Practice & Mentoring Phase, students practice problem solving with multiplication dominoes, (5) Dissemination Phase, students present their results, and (6) Summative Evaluation Phase, students carry out reflection activities.

Based on the results of observations of student activities, and student learning outcomes, it can be seen that the studied learning has succeeded in achieving the predetermined indicators, so the research was stopped until the second cycle.Based on theoretical studies, research results and empirical studies, researchers conclude that Open Broadcaster Software assisted by Domino Multiplication can optimize Blended Learning so that the learning achievement of Class V students at the Indonesian School of Davao, Philippines can increase.

4. CONCLUSION

The conclusions from the research results based on the results of research and discussion show that learning using Open Broadcaster Software assisted by Domino Multiplication can optimize Blended Learning to improve student achievement in Grade V at the Indonesian School of Davao, Philippines in the first semester of the 2021/2022 academic year. This can be seen from the increase in student activity in cycle I and cycle II. Learning using Open Broadcaster Software assisted by Domino Multiplication can optimize Blended Learning in Fractional Multiplication material, the average student learning outcomes in cycle I are 82.5 and Cycle I II 87.5. The percentage of classical completeness in Cycle I was 75% and cycle II was 87.5%.

5. AUTHORS' NOTE

The authors of this article, entitled "Optimization Of Blended Learning With OBS Studio Assisted By Domino Multiplication Media," hereby declare that there is no conflict of interest regarding the publication of this manuscript. We affirm that all authors have contributed significantly to the conception, design, and execution of the study, as well as the analysis and interpretation of data. Furthermore, we confirm that the paper is free of plagiarism. All sources utilized in this research have been appropriately cited and referenced according to academic standards. Should there be any inquiries regarding the content or methodology of this study, please do not hesitate to contact the corresponding author.

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