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Analysis of the Effectivines of Flipped Classroom Implementation Through WhatsApp, Web, and Google Classroom in Elementary Schools

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ABSTRACT
The Development Of Information Technology Can Change The Learning Model That Tends To Be Passive Into Active Learning With An Innovative Digital-Based Classroom Model. Learning Models That Are By Technological Development And Related To Learning Outside The Classroom And In The Classroom Are Needed. The Purpose Of The Study Was To Determine The Effectiveness Of Flipped Classroom Learning On The Learning Outcomes Of Elementary School Students. This Research Is Quantitative Research And Has Gone Through A Data Analysis Test. The Finding In This Study Is The Existence Of Flipped Cl Classroom Learning Flows On Whatsapp, Web, And Google Classroom. The Results Showed That There Were Variants Of Differences In Learning Results In Each Tool Used By Schools. The Findings In This Study Are Conducive Learning Flows Based On Flipped Classroom Studies And Learning Outcomes That Have Been Researched By Previous Researchers.

KEY WORDS AND EXPRESSIONS: Flipped Classroom; Application; Student Learning Outcomes.

INTRODUCTION

The rapid development of technology makes it easier for people to get information from various online media through their digital devices (Wulandari &; Aslam, 2022). In the 21st century in terms of learning, education requires changes due to advances in science and technology that can make students understand the use of technology appropriately (Wulandari &; Aslam, 2022). The rapid development of technology and information must be balanced with the speed at which teachers adapt to it. Teachers must be able to understand students in directing the process through the classroom virtually using Technology-based and Information learning media (Tine Wulandari, 2015).

Learning models that have developed since the pandemic are blended and hybrid has been used by schools to support teacher competence in the field of technology. Teachers adapt by using learning applications that can be used online to support students learning at home and school, such as Whatsapp, school web, and google classroom (Wulandari &; Aslam, 2022)

Learning activities as the core activity of the Educational process. The success or failure of learning activities can be assessed during the teaching process because it will be seen the readiness of teachers with the material and strategies carried out by teachers when teaching. **Learning in schools** has experienced a period of learning transformation, namely learning before the pandemic **which was carried out with a direct method (***synchronous*), during the pandemic learning was carried out with an independent method (*Asynchronous*) and during the *New Normal* period learning was carried out in a mixed manner that combined the two methods or known as the *Blended Learning* method (Rindaningsih, Findawati, &; Hastutik, 2021).

Strategies in learning activities that are less creative, effective, and fun can be the cause of low learning outcomes in students. Low learning outcomes in students can also be influenced by two factors that come from outside including parents, home atmosphere, and lack of motivation from parents, while the second factor is from oneself, including health, talents, interests, and others (Oktaviana, Wulandari, &; Hazwani, 2022). During pandemic conditions for 2 years,s students must study at home and teachers

in the post-pandemic period must restore high enthusiasm for learning in students. The importance of choosing the right learning strategy for the characteristics of *online* learning and utilizing technology in it (Khasanah, 2023). For this reason, researchers are interested in the importance of learning that can facilitate learning at school and home by flipping, namely Flipped Classroom learning.

Flipped Classroom is a learning model that applies to students, before learning in class, students must study first at home according to the tasks given by the teacher (Jusuf &; B. Nasaru, 2022). This Flipped Classroom aims to enable more effective use of time in the classroom and teachers get immediate feedback from students (Widyaningrum &; Imbar, 2021). Flipped Classroom learning has the potential to be applied at the elementary school or madrasah ibtidaiyyah level, even though the pandemic period has ended because this learning has a flexible nature *Flipped Classroom* learning is effective and efficient when learning in class because activities that should be done at home are done at school and vice versa activities that are usually given by teachers at home are done in class (Agustin Nur Laili, 2023).

Flipped Classroom **learning** is student-centred learning to increase learning effectiveness and also provide opportunities for students to build their knowledge and also develop their potential (Widyaningrum &; Imbar, 2021). With *Flipped Classroom*, students are cane a better learning experience and visualization in the form of videos provided by the teacher can be a substitute for the figure of the teacher in the classroom, so it is expected to affect the improvement of student learning outcomes in the classroom (Alimustofa, Elly, &; Luthfiana, 2023).

Several *flipped* classroom learning studies that utilize social media that already exist in Indonesia Based on research **(**Hatanti, Holisin, &; Suprapti, 2021), **student** activities and also student responses to the process of implementing *flipped classroom* learning using the *WhatsApp* application have a high average and provide positive feedback (Widyaningrum &; Imbar, 2021). In line with that (Yulhendri &; Kurniawati, 2019) results in increasing effectiveness in classroom learning and more optimal at home, making it easier for parents and teachers to realize quality learning. The results **of the study** (Prihatin &; Oktaviana, 2022)increased the mathematical problem-solving ability of students who use *flipped classrooms* with *Google Classroom* better than those using conventional learning models.

Based on the explanation above, shows that there has been a lot of research on flipped classrooms. However, there has not been much research on the use of tools in the flipped classroom learning model. For this reason, the importance of this research is carried out by conducting a survey related to the effectiveness of *flipped classroom* learning on the learning outcomes of elementary school students using the WhatsApp, School Web and Google Classroom applications.

METHOD

This research is quantitative, using analytical survey methods (Morissan, 2018). This research method is used to analyze **the** level of effectiveness in implementing *Flipped classrooms* using learning applications in improving the learning outcomes of elementary school students. The study used a question design in the form of *closed-ended questions.* With the design of respondents from 3 different schools and have carried out learning using *flipped classrooms*, the applications used are also different from each school, namely WhatsApp (WA), School Web (Web) and Google Classroom (Gclass)

This research was carried out in the upper class, namely grade III, in the even semester of the 2021/2022 academic year. This study is a study with a population of one class in each school with a total of 75 students. Sampling techniques using the *quota sample* technique so that the samples taken amounted to 25 in each school tested.

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Table 1. School Data, Learning Media, and Number of Students

School	Application	Number of Students
SD A	WhatsApp	30 Students
SD B	School Web	30 Students
SD C	Google Classroom	30 Students

The measurement method used in collecting data in this study used the Likert scale questionnaire and *multiple-choice*, the questionnaire consisted of 6 questions with Likert scale points with the lowest score being 1 and the highest score being 5. To determine learning outcomes using 10 *multiple-choice* questions with points for each number 10 By the design of this study, the learning outcomes questionnaire was given after learning throughout the school. Data analysis measurement techniques using descriptive statistics, T-test, and ANOVA test using SPSS software version 16 *for windows* 10.

RESEARCH RESULTS AND ANALYSIS

The first thing researchers do is to measure descriptive statistical variables, this needs to be done to see a general picture of data such as the average value (Mean), the highest value (Max), and the standard deviation of each variable, namely SD A (X1), SD B (X2), and SD C (X3). The results of the Descriptive Statistical Test of research can be seen in table 2 as follows:

Table 1. Descriptive Statistical Test Results

	N	Minimum	Maximum	Mean
SD A	30	55	95	80.67
SD B	30	60	90	81.33
SD C	30	60	95	84.00
Total	90			

Based on the Descriptive Test Results above, we can describe the distribution of data obtained by researchers, namely, SD A (X1) variables from the data can be described that the minimum value is 55 while the maximum value is 95 and the average value obtained after *evaluating flipped* learning is 80.67. The variable SD B (X2) has a minimum value of 60 while the maximum value is 90 and the average value obtained is 81.33. The variable SD C (X3) has a minimum value of 60 while the maximum value is 95 and the average value obtained of 84.0 is 0.

After the Descriptive test is carried out, then the next analysis is the continT-test. This test was conducted to test research on the effectiveness of learning using *Flipped Classroom* on student learning outcomes. TT-test is obtained using SPSS 16. The basis for the decision-making T-test is: if the sign value is <0.05, tis the calculated t value > the Table t value. T table = t(a/2:n-3-1), A=5%= t(0.05/2:30-

2-1) = 2.052. H0: There is no difference in average scores between schools A, B, and C. H1: There is a difference in average scores between schools A, B, and C.

Table 2. Test T Results (Partial)

	B	Std. Error	t	**Sig.**
Constant	10.933	12.835	.852	.402
SD B	.725	160	4.529	.000

Table 2, the results of the t-test (partial)t-test that the significance value of the effect of the difference in SD A (X1) values on SD B (X2) is 0.000 < 0.05 and the calculated t value of 4.529 is greater than the the t table. Then H0 is rejected and H01 is accepted. This means that there is a significant difference in grade point average between A, B, and C schools.

After the descriptive test and the T-test, the next step is the ANOVA test to see all independent variables against the dependent variable. To analyze diversity in groups and diversity among groups. The basis for decision-making in this ANOVA test is: When sig. (P-Value) <0.01 and 0.05 then there is a difference in effectiveness on student learning outcomes in the treatment (<0.01 is very markedly different, if >0.01 but smaller than 0.05 then it is significantly different). If sig. (P-Value) > 0.05 then there is no difference in effectiveness on student learning outcomes in the treatment (treatment is not significantly different). H0: There is no difference in average scores between schools A, B, and C. H1: There is a difference in average scores between schools A, B, and C.

Table 3. ANOVA Test Results

	Df	**Mean Square**	**F**	**Sig.**
Regression	2	397.834	10.343	.000
Residuals	27	38.463		

From table 3 above, it can be concluded that the value of sig. <0.01 and 0.05, so in this study, there are differences in the effectiveness of student learning outcomes using the flipped classroom method.

The following are the results of a *post-test* ***survey*** of students in the three schools based on the use of WA, Web and Google Classroom.

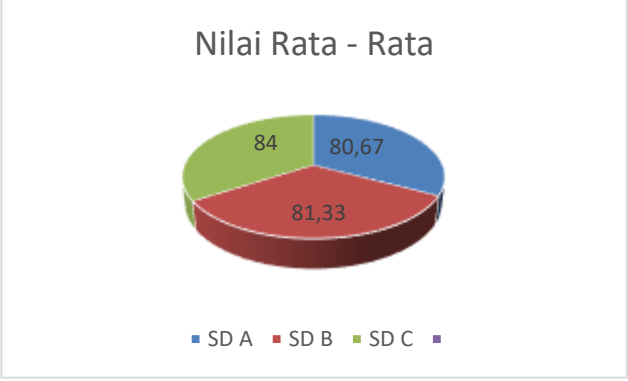

Figure 1. Average Score

From the diagram above, it can be seen that the value of student learning outcomes using several applications that support has different averages. In general, the implementation of flipped classroom learning in Sidoarjo is quite good, it can be seen from the average grades that already have good enough quality and students are trained not to rely on materials such as textbooks but most importantly learn

to organize themselves to complete the tasks given (Rindaningsih, Setyosari, Kuswandi, &; Ulfa, 2020). However, in the implementation process, it certainly does not escape the obstacles in each application. Learning outcomes are competencies or abilities that students have after receiving the learning process (Adawiah, 2022). In this study, the learning outcomes in question are cognitive abilities by giving *a posttest.* Based on the pie chart above, the average value is a high of 82.00 and a low of 80.4. The completeness of student learning outcomes is complete, and KKM is included in the good category. It's just the use of different apps that creates disputes on student learning outcomes. Each application has disadvantages and advantages.

Flipped classroom learning using any application has proven effective and this is also due to teacher and student understanding of the consistency of the flow of flipped classroom implementation and the readiness of teacher material before the teaching and learning process in class. The following researchers explain the flow of flipped classroom learning using the application.

a. Flipped classroom flow by using Google classroom

Figure 2: Google *Classroom* media *Flipped Classroom* learning implementation flow

When learning at home through Google Classroom, teachers distribute learning media, and teaching materials to students, so that students can study independently. Students can respond to the form of summaries or discuss with their friends through the discussion column in Google Classroom. Students also do practice questions on teaching materials to measure understanding after an independent learning process and then collected them in the Google Classroom assignment feature. With the implementation of this independent learning process, students can have the opportunity to develop their knowledge first. In line with the opinion of (Pebriyanti, Wena, &; Payadnya, 2020) who states the advantage of flipped classroom learning is that it can prepare students so that students can know first before learning in class and students will be more active when carrying out classroom learning.

Learning using Google Classroom has the advantage of a fast setup process. Through the sophistication of Google Classroom, teachers can easily access and start learning by sharing assignments and learning videos that have been compiled by the teacher. The disadvantage of Google Classroom is that there is no notification system from the Google Classroom application which can make students have to check often if there are assignments given by the teacher so that students do not miss information (Adawiah, 2022).

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b. Flipped Classroom flow by using School Web

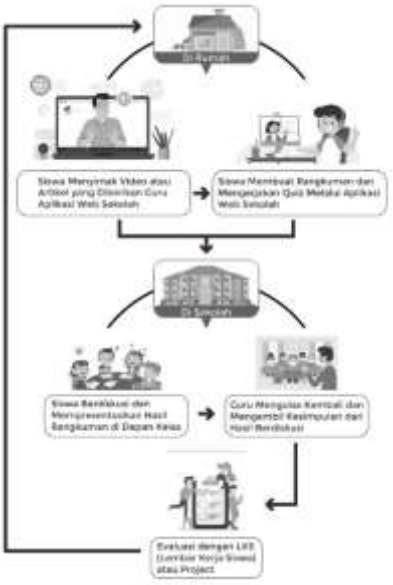

Figure 3: *Flipped Classroom* learning media *School Web*

The school's Web application-based Flipped Classroom learning model aims to make students more active and independent in learning. This flipped classroom learning has advantages because it can be used to deliver material anywhere and anytime (Usman, 2019).

First, students will choose to study at home using learning videos or articles sent by teachers through the school *website*. Second, students are required to respond to the form of summaries uploaded via *the web*. Third, students make presentations in front of the class and discuss with friends in groups. Fourth, the teacher will provide conclusions and measure the level of understanding of students by giving evaluation questions or *projects* in groups.

The use of the school web has advantages and disadvantages, the advantage is that the web can speed up application development because developers can display learning content without the need to build a web view from scratch. Disadvantages school applications have limitations in handling complex educational content and can experience unstable network problems (Akbar, 2023).

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c. Flipped Classroom flow using WhatsApp

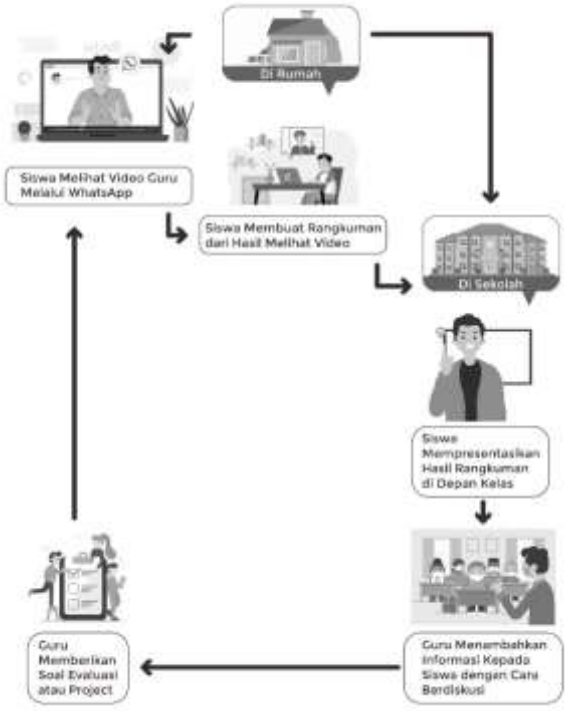

Figure 4: *WhatsApp Flipped Classroom* learning

The implementation of learning by teachers in implementing flipped classroom learning assisted by the WhatsApp application is divided into several flows. The first flow is that students apply preparation at home by watching learning videos through WhatsApp groups, and in the second stage students summarize the results of learning videos. The third flow of teacher learning implementation helps students to conclude material, inform missing material, and provide projects or evaluations individually.

The flipped classroom has advantages in the modern learning era 5.0 by using the latest applications, which provide ideas for innovative learning methods and break the limitations of teaching space (Kanedi, Utami, & Asmar, 2023). In general, the implementation of flipped classroom learning went well and received a positive response from teachers and students. Students also look enthusiastic in flipped classroom learning marked by student activeness in discussing and the results of good question practice. The existing obstacles are the condition of signal access and limited quotas owned by students. This obstacle can be overcome by researchers providing the results of discussions or responses in Google classroom, school Web, and WhatsApp to students in class so that those who cannot follow learning through applications will still know the results face-to-face.

The use of the WhatsApp application is not difficult and easily accessible to everyone, but the WhatsApp application itself has advantages and disadvantages. The advantages of learning using the WhatsApp application teachers can be more creative and able to use electronic media in learning. The disadvantage of the WhatsApp application is that sometimes existing messages are easily buried with other messages, so they cannot be read (Rahim &; Fitri, 2023).

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CONCLUSION

The implementation of flipped classroom learning has proven to be effective both before the pandemic and after the pandemic and many researchers have also stated its effectiveness across subjects. This study also proves that flipped classroom learning using different applications also has a positive influence on the learning outcomes of elementary school students. The average learning outcomes of students with the same material and different applications show good results. Based on these results, it was found that the existence of the right learning flow and teacher consistency in holding the flipped classroom principles well will produce meaningful learning and indirectly awaken student metacognitive. For this reason, the recommendation for the next researcher is to analyze other variables with these three applications so that they become new findings that are useful for the world of education.

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