Reading Comprehension Skills: The Effect of Online Flipped Classroom Learning and Student Engagement During The COVID-19 Pandemic

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Abstract: The Coronavirus disease (COVID-19) pandemic outbreak in the Indonesians nowadays, the public education department established the policy of the online education system to all education levels. Most educators employ an online flipped learning method to support the policy. Research aimed to measure the effect of online based-flipped classroom learning between using Microsoft Team and WhatsApp and student engagement on reading comprehension skills. The research approach was a quasi-experimental model with a 2 x 3 factorial pre-test-post-test non-equivalent control group design. The sample of this investigation was early period undergraduates of the management economics study program. Data analysis employed a two-way ANOVA test. The result confirmed that the online flipped learning scheme using Microsoft Team was better than WhatsApp in improving student engagement and reading comprehension skills. We advise English lecturers to apply better online media services, pay attention to the completeness of the learning features and train their competence in implementing distance learning to use compatible synchronous flipped classroom teaching based on internet technologies.

Keywords: *Reading comprehension, online flipped classroom learning, student engagement.*

Introduction

Indonesian schools applied distance learning and banned face-to-face learning in school from March 16, 2020, under the policy of the Ministry of Education and Culture of the Republic of Indonesia. Since then, all lecture models have shifted to online learning that demands extreme change and brings various challenges for educators to begin to habit work with online flipped learning (Simamora, 2020). They can employ different digital-based instruments to facilitate their online class, such as WhatsApp, Facebook, YouTube, Instagram, Google Classroom, Google Meet, and Microsoft Team. They can also use online reality games as alternative teaching to enhance student motivation and achievement (Loup-Escande et al., 2020).

Microsoft Team applies online learning under Windows 365-based applications. This application keeps improving the quality of its application services by offering completed digital classroom features. Lecturers can share class schedules via a link to all students enrolled in online study classes. We call this process integrating technology into pedagogy. This term aimed to help them employ distance learning by using a laptop or smartphone (Brady et al., 2010; Bryer & Zavattaro, 2016; Lee & McLoughlin, 2010; Webel & Otten, 2015). Therefore, the use of smartphones facilitates students to repeat their lessons outside the classroom. In addition, this integration can also foster student learning independence, which allows them to be more active in searching for knowledge through a student-centered learning approach.

We implement a student-centered approach in this research by using a constructive approach. For this reason, lecturers must increase this technology integration to support online learning programs at home during the COVID-19 pandemic. We employ the WhatsApp application and Microsoft Team in integrating technology into pedagogy by using the flipped classroom learning method.

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The flipped class-based online teaching method is a teaching method that has two parts, learning outside the classroom and learning for online class sessions. In the online-based flipped classroom learning method, the lecturer first gives assignments to students to study outside the classroom or at home. Before starting online classes, all students must individually learn in offline groups. They also have to learn to do all the tasks given (Henderson et al., 2020; Martin & Tapp, 2019). In the online class session, the lecturer invites all registered participants through a virtual meeting.

Previous research reported was an effect of the flipped classroom method by using WhatsApp on learning outcomes. With these media, students can easy to follow learning through chat rooms and WhatsApp calls. Students can browse the link of teaching material that the lecturer has sent to the WhatsApp group and interact with their teacher and colleague from home. Based on previous research, we can assume that there is an effect of the flipped classroom method using WhatsApp and student engagement in learning outcomes (Arifani et al., 2020; Gilboy et al., 2015; Guraya, 2020; Zen et al., 2019).

Meanwhile, research the online-based flipped learning by using Microsoft Team needs increasing student engagement and learning achievement. Henderson's research tested the effectiveness of the online-based flipped classroom learning method using Microsoft Teams and student engagement related to medical learning (Henderson et al., 2020). Unique from previous research, this study uses an updated online flipped learning method that measures the impact of the flipped classroom method based on the use of two different online media applications, WhatsApp and Microsoft Team. These designs meet the need for better teaching methods in the era of the COVID-19 pandemic. Online learning is the best choice considering it is delicate to do a face-to-face meeting. This research offers a new study to analyze the effect of the flipped classroom online by using WhatsApp and Microsoft Team and student engagement as a moderating variable on students' reading comprehension skills. The moderator variable is helpful to examine if there is an interaction between two different media (Microsoft Team and WhatsApp) used with student engagement on reading comprehension learning outcomes.

Formulations of the problem in this study are 1) is there a difference in reading comprehension skills between students who received treatment of flipped classroom online learning to use Microsoft-Team and WhatsApp, 2) whether there was a difference in students' reading comprehension skills with high, medium and low student engagement and 3) whether there was an interaction between the online flipped classroom learning method and student engagement on reading comprehension skills.

Literature Review

Flipped classroom

The flipped classroom is the opposite of conventional learning. Teachers carry out face-to-face teaching after students learn and understand the material provided by the teacher first outside the classroom through independent or group study. In this way, they gain experience from the learning process through their discovery and analysis. In contrast with conventional, flipped learning gave assignments for reinforcement at home first before online class sessions begun. Students answer and do all the tasks from the lecturer through the distance learning media used, both by using WhatsApp and Microsoft Team (Bergmann & Sams, 2012; Bishop & Verleger, 2013).

The online-based flipped classroom learning method supported integrated information technology systems in a teaching process. This learning method builds an academic atmosphere that can generate creative ideas in class discussions. In this way, students gain more direct knowledge from their analytical process to seek the truth (Abeysekera & Dawson, 2015). In this system, teachers can prepare lessons before class and apply formative evaluation during the flipped classroom online learning process to synchronize student understanding with lecturer explanations. This method encourages students to learn in obtaining their excited knowledge actively. This learning method is more directed at a student-centered learning process (Slomanson, 2014).

This student-centered teaching method then adopted the synchronous flipped learning online approach. These activities support the student's engagement in acquiring knowledge based on their experiences. Active and independent learning leads students to solve various problems or assignments given by lecturers through videos, web-based texts, or other internet software resources (Bergmann et al., 2015).

The method developed by Graham Brent is an effort to minimize direct teaching by maximizing student engagement in individual learning outside of the class. Using technology in the digital teaching materials enables students to do assignments given by the teacher better. In this way, students can learn to use their smartphones to dig into their interested knowledge. Teachers conduct face-to-face discussions in the virtual classroom after students complete all assignments given. Students can use this media technology to solve problems, develop concepts, and engage in active individual learning and group (Tucker, 2012). The advantages of this method are that it encourages active student engagement, time efficiency, class, and learning ease. Students can access online learning and download their teachers' materials through WhatsApp, Google Classroom, Microsoft Team, and other applications.

Student Engagement

Student engagement is the frequency of students taking part in a learning program. They showed this in their engagement and interactions inside the class and outside the classroom. Thus, student engagement is the willingness to perform all routine school activities with behavioral, emotional, and cognitive indicators in carrying out all learning tasks provided. Student engagement is also student participation in learning activities as part of the school program (Grant-Smith et al., 2019).

Student engagement comprises three elements, behavioral engagement, emotional engagement, and cognitive engagement. Behavioral engagement is persistence, concentration, attention, asking questions, and contributing to their knowledge in class. Students with positive behavioral engagement showed their obedience to class rules and norms well and not causing problems. Emotional engagement is a student's reaction, interest, boredom, joy, sadness, and anxiety. Measurement of emotional engagement is to measure students' emotions towards teachers and schools. Emotional engagement focuses on the extent to which students have positive and negative reactions to teachers, peers, and academics. This engagement includes a sense of belonging and pride in the school. They go to school every day as well as appreciate the success of academic results. Cognitive engagement is the student's investment in performing the struggle required to understand complex ideas. Cognitive engagement occurs when individuals have strategies and can regulate themselves (self-regulating). Students with high cognitive engagement will get chief desires to master knowledge better (Fredricks & Mccolskey, 2012).

Reading comprehension

Reading comprehension is the ability to understand a reading well and can summarize it. Reading comprehension skills is the students' ability to conclude and understand the content and main ideas for reading correctly. The goals of reading for the student are to 1) determine the main idea, sentence, paragraph, or discourse; 2) determine core points; 3) understand the flow and instructions; 4) determine the organization of reading materials; 5) determine visual images and other images of reading; 6) conclude; 7) predict meaning and conclusion; 8) summarizing the discourse read; 9) distinguish between facts and opinions, and 10) get information from various sources, such as encyclopedias, atlases, maps, or digital annotation tools (Azmuddin et al., 2020).

To get students' reading comprehension skills, the instructor can provide a reading comprehension test. This test is a test of the ability to read information submitted by other parties through written means. The reading skill test aims to measure students' ability to understand the content or information read in the reading. Therefore, the discourse test must contain information that demands student comprehension (Irwansyah & Nurgiyantoro, 2019). Another reading ability test is students' understanding of the information they get with the intelligence to remember and evaluate (Febrina et al., 2019).

Reading intelligence test results call for students' ability to analyze specific information in an essay they read. They observe, identify, differentiate messages and opinions, so on. A cognitive activity required in this task is more than just understanding the discourse content. Another required reading comprehension is a more critical understanding and detail to determine a more specific section from an essay. This reading ability test can relate to and generalize discourse concepts through synthesis skills. These skills are to generate new communications, predict, and solve problems comprise synthetic level cognitive activities. These are high-level and complex activities (Lazarus, 2020; Salem, 2018).

Methodology

Research purposes

This research intended to investigate the online-based flipped learning method influence using different media Microsoft Team and WhatsApp, and student engagement on reading comprehension skills.

Method

The approach of this research was quantitative research with a Quasi-experimental method to use a non-equivalent control group design pre-test-post-test factorial 2 x 3. This factorial design provided an opportunity to investigate the two different treatment variables' effect called factors on the group under study (Creswell & Poth, 2016). Experimental research is the study to reveal the systematic, logical, and thorough truth on observed variables through the treatment group (Creswell, 2014).

Sample and Data Collection

The population of this research was the early semester students of the College of Economics (STIE) West Sumatra in Pariaman. The research sample comprised students from the Management study program. We divided them into four classes that take 117 registered students In the Economics English course. There were 63 people selected from 72 students as an experimental class and 54 people from 66 students as a control class. We held lecture sessions for

treatment class by using Microsoft Team and control class by using WhatsApp. We conducted learning in each group twelve times for six weeks. Learning outside the class required students to understand the reading and answer the reading questions given. We took each student from both groups to self-study for a minimum of two hours a day for ten hours per week and asked them to report their work done every week to the lecturer one day earlier before the online class session began. Experimental groups communicated through the chat feature in Microsoft Teams and sent completed assignments to lecturers through the assignments and grades feature. Control group students interacted via the WhatsApp chat feature and sent all tasks given via email.

The data collection used a questionnaire instrument and a reading comprehension test. We collected student engagement data using a 5-point Likert scale questionnaire. The questionnaire used was the Student Engagement in Schools Questionnaire (SESQ). The Likert-type questionnaire focuses on a comprehensive assessment of the construct of student engagement. Students respond according to a Likert-type scale of 1-5 (e.g., one = never, 5 = always), and it takes about 35 minutes to complete. For this study, the items taken only indicators of behavioral, emotional (affective), and cognitive engagement. We distributed the validity and reliability tests to 30 people outside the respondents. Reading comprehension skills are obtained from the results of students' reading comprehension tests. We developed the test by carrying out the procedure, planning the difficulty level of the questions, recording items, editing each question, and analyzing them.

Data analysis

Based on the problems and hypotheses proposed in this study, data analysis begins by presenting descriptive statistical analysis. It comprises the mean score, standard deviation, minimum and maximum score, and histogram for reading comprehension skills. The hypothesis analysis of research used inferential statistics of Two-Way ANOVA 2 x 3 factorial. This test analysis helped measure the effectiveness method and student engagement and their interaction in reading comprehension skills. Before processing, all confirmed data had met the prerequisites for normality, homogeneity, and correlation feasibility tests.

Results

The analysis of the effect of the online-based flipped classroom method by using different media between Microsoft Team and WhatsApp on student engagement and students' reading comprehension skills are:

Learning Outcomes of Reading Comprehension

The results of the ability to understand English reading material among students who take online learning to use Microsoft-Team in the economics English course are the following findings:
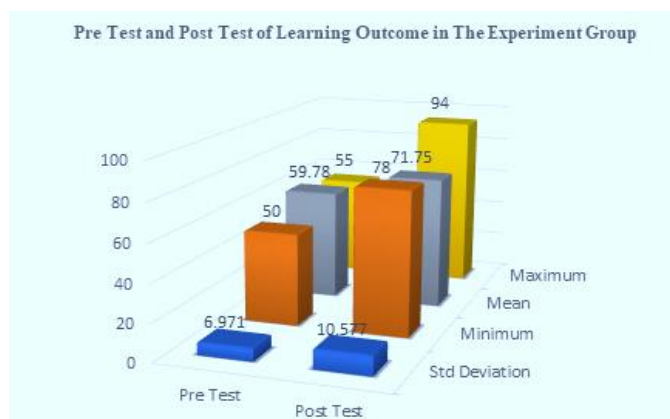

Figure. 1. Learning Outcomes with Online-Based Flipped Classroom Method by using Microsoft Team

Distributing the post-test scores above showed the experimental group got 55 for the minimum value, 94 for the maximum, a mean of 71.75, and 10,577 for a standard deviation. These scores were higher than the pretest: just 50 for a minimum score, 78 for a maximum score, and mean of 59.78, and a standard deviation of 6.971. Meanwhile, students' reading comprehension skills for the control group taught using WhatsApp are:
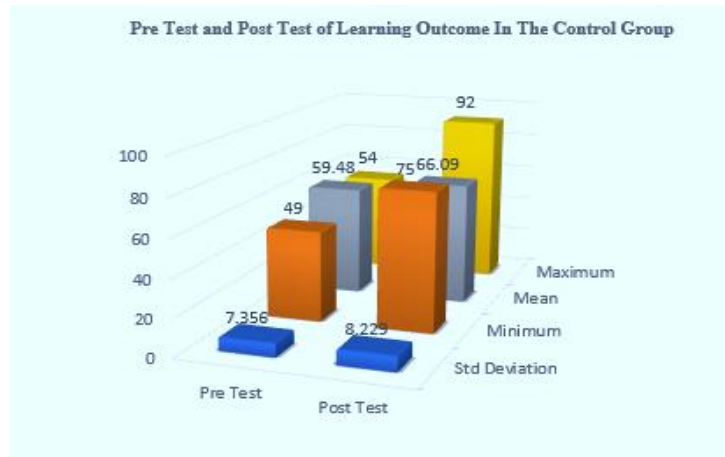
Figure 2. Learning Outcomes with Online-Based Flipped Classroom Method by using WhatsApp

The graphic above explained that the score distribution of the control group pretest was 49 for minimum score and 75 for a maximum score with a mean value of 59.48 and a standard deviation of 7.356. These values were lower than the post-test gotten 54-minimum and 92-maximum, with mean values 68.09 and a standard deviation of 8.229.

Student Engagement

We can point research on the effect of online learning to use WhatsApp and Microsoft Team on student engagement of management study program students who took English reading comprehension course out the result are:

Table 1. Student Engagement in Online-Based Flipped Classroom Method by Using Microsoft Team

Student Engagement	Category			Meaning	Level
	Low (1.00-2.33)	**Moderate (2.34-3.66)**	**High (3.67-5.0)**		
Behavior	9 (16.7%)	18 (35.3%)	27 (50.0%)	3.823	High
Emotional	21 (38.9%)	20 (37.0%)	13 (24.1%)	3.565	Medium
Cognitive	18 (33.3%)	25 (46.3%)	11 (20.4%)	3.876	High
Average				3.755	High

The table above explains that students' engagement in taking English reading comprehension classes by using Microsoft Team showed low behavior engagement of nine people (16.7%), medium 18 people (35.3%), and high 27 (50.0%). The low emotional engagement of students of 21 people (38.9%), 20 people (37.0%) were moderate, and 13 people (24.1%) were high. Meanwhile, with low cognitive engagement, there were 18 people (33.3%), moderate were 25 people (46.3%), and high 11 people (20.4%) with a mean of 3.755. It means learning English with the online-based flipped classroom method using Microsoft Team showed top student engagement enough.

Table 2. Student Engagement in the Online-Based Flipped Classroom Method by using WhatsApp

Student Engagement	Category			Meaning	Level
	Low (1.00-2.33)	**Moderate (2.34-3.66)**	**High (3.67-5.0)**		
Behavior	10 (15.9%)	23 (36.5%)	30 (47.6%)	3.804	High
Emotional	26 (41.3%)	21 (33.3%)	16 (25.4%)	3.564	Medium
Cognitive	10 (15.9%)	17 (27.)	36 (57.1%)	3.702	High
Average				3.693	High

The table above explains that the WhatsApp class on student engagement in online learning activities with the level of achievement of participation in Reading Comprehension learning for lower behavioral engagement of ten people (15.9%), 23 people (36.5%) were moderate and, 30 (47.6%) were high. Meanwhile, for the lower emotional engagement of 26 students (41.3%), 21 people (33.3%) were moderate, and 16 people (25.4%) were high. For lower cognitive engagement 10 people (15.9%), 17 people (27.0%) were moderate, and 36 people (57.1%) were high. The average student engagement achieved was 3.693.

The Effect of Online-Based Flipped Classroom Method and Student Engagement on Reading Comprehension

Based on the findings of the ANOVA factorial analysis on the effect of the online-based flipped classroom method by using Microsoft Team and WhatsApp and engagement on students' reading comprehension skills during the COVID-19 pandemic, they are:

Table 3. The Effect of Online-Based Flipped Classroom Method using Microsoft Team and WhatsApp and Student Engagement on Students' Reading Comprehension Skills.

Source	Sum of Squares Type III	df	Square Average	F	Sig.
Corrected Model	3401,617a	5	680,323	7.311	.000
Intercept	588077.951	1	588077.951	6.319E3	.000
method	1332,617	1	1332,617	14.320	.001
engagement	1531,855	2	765,927	8.231	.004
Method with different media* Engagement	678,829	2	339,415	3.647	.029
Error	10329,579	111	93.059		
Total	609650.000	117			
Corrected Total	13731,197	116			

A. R Square = .248 (Adjusted R Square = .214)
Dependent Variable: Reading Comprehension Skill

Two-way ANOVA analysis shows that flipped classrooms using Microsoft Teams are much more effective than WhatsApp on reading comprehension skills with a significant value of .001 and F = 14.320. The effect of student engagement variables on reading comprehension skills using Microsoft Team is more effective than WhatsApp, with a significance value of .004 with an F value of 8.231. It shows that the effect of learning flipped classrooms online by using Microsoft Team and WhatsApp is different. Learning methods and student engagement interacted with students' reading comprehension skills with a significance value of .029 and F = 3.647. To find out how the interaction between learning method and student engagement, high, medium, and low on reading comprehension skills is predictable through the following post-Anova follow-up test:

Table 4. Post-Anova Follow-up Test Using Scheffe.

					95% Confidence Interval	
Multiple Comparison						
Reading Comprehension Skills						
(ME) Student Engagement	(J) Student Engagement	Average Difference (IJ)	Std. Error	Sig.	Lower limit	Upper limit
High	Moderate	-1.15	2.185	.858	-6.34	4.04
	Low	6.67*	2.185	.008	1.48	11.86
Moderate	High	1.15	2.185	.858	-4.04	6.34
	Low	7.82*	2.185	.001	2.63	13.01
Low	High	-6.67*	2.185	.008	-11.86	-1.48
	Moderate	-7.82*	2.185	.001	-13.01	-2.63

The table above describes the interaction between high, medium, and low student engagement with flipped learning methods with different media. The results are:

1. The interaction between students' high learning engagement versus moderate is Sig. .858. The value of Sig > 0.05 then Ho accepted. This finding concludes that there is no difference in reading comprehension skills between high and moderate student engagement.

2. The interaction between students' moderate learning engagement versus low is Sig. .001. The value of Sig < 0.05 then Ho rejected. It concluded that there were differences in reading comprehension skills between students with moderate and low engagement.

3. The interaction between students' low learning engagement versus high is Sig. .008. The value of Sig < 0.05 then Ho rejected. It showed that there were differences in reading comprehension skills between students who have high and low engagement.

Following is a graph of the estimated marginal mean between online flipped learning methods with different media and student engagement on reading comprehension skills:
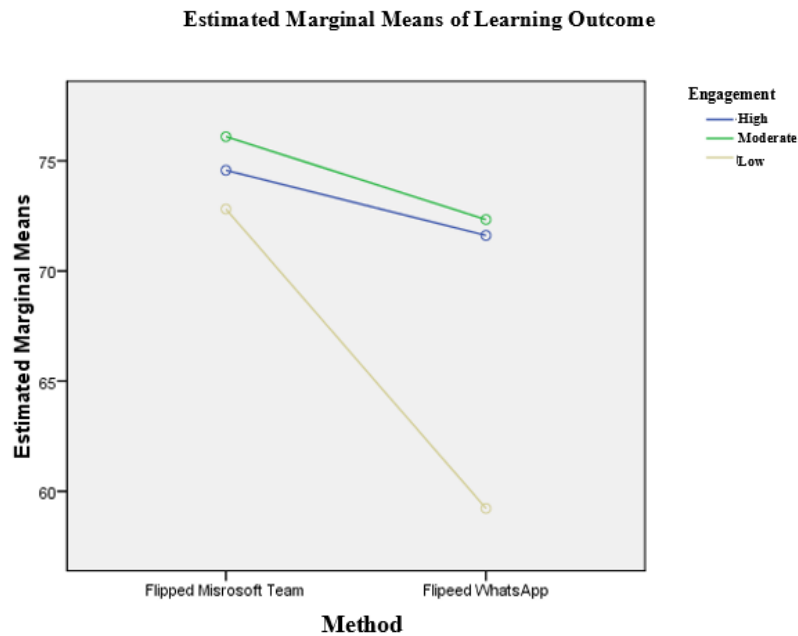
Figure 3. Estimated Marginal Mean of Students' Reading Comprehension

The estimated marginal mean on the graph above showed the interaction graph with three lines that are not parallel (will intersect). It means that there is an interaction between the usage of Microsoft-Team and WhatsApp in the flipped classroom online method with high, medium, and low engagement toward reading comprehension skills.

Discussion

This study attempts to explain and prove the hypothesis that there are differences in the online-based flipped classroom learning effect using Microsoft Team and WhatsApp and student engagement on reading comprehension skills. Using a quasi-experimental design, we can explain the details of the analysis of the findings:

The Effect of Online-Based Flipped Classroom Learning Method by using Microsoft Team on Students' Reading Comprehension Skills

This research dealt with three hypotheses: 1) Is there a difference in reading comprehension skills between online flipped learning classes with Microsoft Team and WhatsApp? 2) Are there differences in reading comprehension skills among high, moderate, and low student engagement? 3) Is there an interaction between the learning method and student engagement? Two-way ANOVA analysis reported that Microsoft teams class had a more significant effect on students' reading comprehension than WhatsApp.

In the Microsoft Team application, many features support distance learning processes by lecturers. The difference is, WhatsApp only has a chat feature, but Microsoft Team has many features that are more equipped with a schedule to arrange the desired online meeting. The Microsoft team has also provided other supporting online tools such as assignment and evaluation access, material uploading accessible, and communication access. They can invite friends as guests to join the created online class. The difference in these tools affects the students' reading comprehension ability because of the completeness of these features. Indeed, the two had displayable teleconference media with several interactive participants, but Microsoft Team features possibly enabled the involvement of many people more than WhatsApp. It is one of the Microsoft Team's advantages compared to WhatsApp (Arifani et al., 2020; Martin & Tapp, 2019; Singh & Arya, 2020).

Research analysis revealed that students' reading comprehension skills in the Microsoft Team class were more effective than WhatsApp. This finding is consistent with the research of Henderson et al. (2020), and Arifani (2019) reported that the experience of discussion in an interactive question and answer led to an increase in students' reading comprehension skills. She also revealed that online learning media create interactive learning classes if supported by completed virtual class features.

The learning process no longer must be in the classroom but enabled from home. Lecturers and students can carry out the learning process from their homes through many usable online digital media devices such as WhatsApp, Facebook, Instagram, Google Meet, Zoom Meeting, and Microsoft Team. We installed all tools on the smartphone to make it easy to carry anywhere and anytime (Arifani, 2019; Guraya, 2020). The advantage of this digital media makes it easier for students to access the material provided by the lecturer from home to be studied more intensely outside the virtual

class session. Students can read all their accessed reading materials whenever they have time via their smartphone. The weakness of WhatsApp features is too standard for their functions. This weakness causes teachers to take much time to check student learning outcomes because all activities appear in one chatroom. This condition makes teachers busier, compared to Microsoft Team that already has separated assignment and evaluation rooms, class schedules, chatrooms, and more supportable teleconference features than WhatsApp.

WhatsApp more functioned as a communication channel between group members to share information. Most of these media services establish discussion, feedback, and comment forums to support performance. With the chat rooms feature, this application allows all group members to interact and communicate well both ways (Arifani, 2019; Gon & Rawekar, 2017).

In learning, this tool supports the communication and interactive process between lecturers and students in verbal and writing. Lecturers and students can expect the learning process during the COVID-19 pandemic faster by using the WhatsApp link installed on the smartphone. The online-based flipped classroom learning method can direct lecturers' efforts to integrate communication technology development into the pedagogic system (Arifani, 2019; Gon & Rawekar, 2017; Guraya, 2020; Arifani et al., 2020).

Using Web-based applications such as Microsoft-Team is an outgrowth of pre-existing social media applications, such as Zoom meetings, Facebook, WhatsApp, google meet, google classroom, etcetera. They walk to facilitate human activities. This tool also has advantages for online learning in applying practical learning methods. In the online flipped classroom learning method, all members do not have to attend the actual class but only present the virtual. They can take part in activities through the online link shared by the lecturer to all members. The power of this tool makes the learning process better. Besides being competent, this tool can also record all learning activities if needed for evaluation (Arifani et al., 2020; Henderson et al., 2020; Martin & Tapp, 2019).

Compared to WhatsApp, the use of Microsoft team requires students to have a large pulse and strong internet signal. However, in terms of performance to support distance learning, Microsoft Team is much better than WhatsApp because WhatsApp has limited meeting setting characteristics. These limitations force lecturers to take turns online with students during a teleconference. WhatsApp group capacity in the teleconference can only connect four to eight students. In contrast, Microsoft Teams can accommodate more student interaction equipped with assignments and evaluation features that make the distance learning process practicable (Martin & Tapp, 2019). From this explanation, we can see that the effectiveness of online flipped learning on student achievement depends on the support of the media technology used and the skills of the lecturers in implementing it.

The Effect of Student Engagement on Students' Reading Comprehension Skills

Besides looking at the effect of the online-based flipped classroom method on reading comprehension skills, this study also examines the student engagement effect on reading comprehension skills. The analysis results of comparing students' reading comprehension skills based on student engagement prove that behavioral engagement, emotional engagement, and cognitive engagement affect students' reading comprehension skills during the COVID-19 pandemic with a significance value of .004.

This finding is consistent with Henderson et al. (2020) that reported that social media that apply in learning to use Microsoft Teams affects learning outcomes. Another study by Singh and Arya (2020) and Arifani et al. (2020) revealed that the online-based flipped classroom learning method on learning outcomes had positive effects. This method makes it easier for students to access learning materials before entering face-to-face online meetings via teleconference using smartphones or laptops. The flipped classroom online learning method makes students more active in individual learning. This condition makes students' cognitive engagement increase and fosters high self-regulated learning in their participatory behavior. Both behavioral and emotional engagement, these two elements can encourage the students' academic potential development.

The result was consistent with Subramaniam and Muniandy (2019), and Talan and Gulsecen (2019) reported that student engagement and academic atmosphere affected learning outcomes. During the learning process, lecturers must create an interactive academic atmosphere to encourage students' spirit to perform in all lecture sessions. This achievement depends on their satisfaction during the online learning process, which allows them to access lecture materials. A study by Alsowat (2016) reported that student engagement influences reading comprehension skills, especially emotional engagement have a positive affected reaction of taking part of students in online English learning. Chen Hsieh et al. (2017) reported that student engagement could increase students' confidence in exploring their English skills through distance learning influenced by operating digital learning media tools. They also revealed that online learning with high engagement allows students to understand the material better than conventional classes.

The student engagement analysis showed that the Microsoft Team class is better than the WhatsApp class based on the Likert scale. This success explains the unique achievements of students' reading comprehension skills in the two groups between the Microsoft Team class with an average of 3.75 and the WhatsApp class with an average of 3.69. These results justify that the completeness of the features in the instructional media generates a different impact on the

intensity of student participation. The high engagement of the student in the online flipped learning process by using Microsoft Team is because this tool has practicable and completable learning features.

Lecturers ask students to be active in individual learning and improve reading comprehension through online teaching outside the classroom. Research by Arifani et al. (2020) revealed that the lack of learning feedback in WhatsApp classes was because of the limited features available in the application. Meanwhile, Henderson et al. (2020) reported that the complete tasking room feature on the Microsoft Team Application allows the learning process by sharing materials, assignments, evaluations, and teleconference class schedules to be managed better than WhatsApp. The limited features in using online-based WhatsApp make it difficult for students to review their assignments given by their lecturer. It makes their academic achievement slow and lagging. Its contrast to the student engagement level in the Microsoft team class is quite good compared to the WhatsApp class.

This finding was consistent with the research of Gilboy et al. (2015) previously, reporting that student engagement and learning outcomes had a close relationship with the online-based flipped classroom method. They also explained the power of flipped online learning, besides being easy to use, not taking up classroom space, and accessible anywhere via a smartphone or laptop. We recommend the flipped classroom online learning method by using Microsoft Team is preferred by teachers as their teaching media during the COVID-19 pandemic outbreak. Because, by looking at the results, the Microsoft Teams application showed a much better effect on increasing student engagement and learning outcomes.

Interaction Effect between Online-Based Flipped Classroom Learning and Student Engagement on Reading Comprehension Skills.

This research revealed the interaction effect between learning method and student engagement on reading comprehension skills. Great, online learning methods with complete learning media features presented by teachers have proven to improve active student behavior during online learning. Thus, students' interest in online learning models facilitated by using Microsoft Team media affects learning outcomes. Learning media presented by the teacher will influence the interaction, emotional and cognitive intelligence. High engagement of students encourages them to be more active in independent learning in completing each task given by the lecturer. More often involved in online learning activities, the more knowledge students gain outside the classroom. In learning English Reading Comprehension, students solve questions given by the lecturer for independent study outside the class and prepare for discussion when taking part in virtual face-to-face learning.

Prediction results showed that nothing of interaction between high and medium student engagement with a Sig =.858 in flipped online learning to use different media. Meanwhile, there was a diverse interaction between moderate and low involvement in students' reading comprehension skills with Sig =.001. The interaction analysis also predicted a positive effect between students' learning engagement and reading comprehension skills between the high and low engagement groups with Sig =.008.

This study is consistent with previous findings that reported a positive interaction between the online-based flipped classroom method with different media on students' awareness and emotional stability on speaking skills (Alsowat, 2016; Reflianto, 2018). Likewise, it revealed that the flipped classroom online method with student engagement also interacted and affected students' English learning outcomes (Zen et al., 2019). Other studies reported learning models and student behavior interacting with learning outcomes that affect their learning outcomes (Hasanah & Arifani, 2020).

The interaction analysis result showed that the flipped classroom online learning method uses different media, Microsoft-Team and WhatsApp, and student engagement has an unequal effect on students' reading comprehension skills. The Student Engagement Rate in Microsoft Teams classes is higher than in WhatsApp classes. Based on these findings, the researcher concluded a positive interaction between the Online-Based Flipped Classroom Learning Method using Microsoft Team and student engagement on reading comprehension skills.

Conclusion

This study concluded that using the Microsoft Team application on Flipped Learning provides better performance than the service of WhatsApp in teaching reading comprehension. It also established interactions among the flipped classroom method using different online media with high, medium, and low engagement in reading comprehension skills. Remarkably, using an online-based flipped classroom method with Microsoft Team proved to be more effective than WhatsApp. We recommend English lecturers develop an online-based flipped classroom learning method by using Microsoft Teams to improve students' English reading comprehension skills better than ever.

Recommendation

We recommend English lecturers apply the online-based flipped classroom learning method and train their competence in implementing distance learning to use synchronous flipped classroom teaching based on internet

technologies such as Microsoft Team. To furthermore researchers, we recommend comparing the effectiveness of the flipped classroom method to use other social media such as Facebook, Instagram, Massive Open Online Courses (MOOC), and other web-based learning applications.

Limitations

The study limitations have many aspects are; First, we localized only the sample and were not representative of all subjects on a large scale. Second, unstable internet signals and limited time allocation from universities for each meeting cause restricted research. Third, the condition of the COVID-19 pandemic makes this study take longer in the field.

Acknowledgments

Author Contribution Statement

Reflianto: Conceptualization, design, data acquisition, data analysis, interpretation, and writing, Setyosari: Editing, critical analysis, and final approval, Kuswandi: Editing, statistical analysis and supervision, Widiati: Reviewing and material support.

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