Al-Ishlah: Jurnal Pendidikan
Vol.14, 2 (June, 2022), pp. 2605-2614
ISSN: 2087-9490 EISSN: 2597-940X, DOI: 10.35445/alishlah.v14i1.1201

The Effectiveness of Blended Learning During the Covid-19 Pandemic at the High School Level

Tengku Mohd Khairal Abd[1], Badi Atussolihah[2], Fransisca Dania Prima Kasillia[3], Dilla Swaestya[4]

[1] Binus Business School, Jakarta, Indonesia; tabdullah@binus.edu
[2] Binus Business School, Jakarta, Indonesia; badi.atussolihah@binus.ac.id
[3] Binus Business School, Jakarta, Indonesia; fransisca.kasillia@binus.ac.id
[4] Binus Business School, Jakarta, Indonesia; dilla.andariani@binus.ac.id

ARTICLE INFO

Keywords:

The Effectiveness;
Blended Learning;
Covid-19 Pandemic

Article history:

Received 2022-01-13
Revised 2022-04-25
Accepted 2022-06-24

ABSTRACT

The purpose of this study was to determine the effectiveness of the application of blended learning on student motivation, student characteristics, and student interaction. The method used in this study is comparative quantitative by comparing the final grades of students before and during the covid-19 pandemic as supporting data. The population in this study were all students of classes XI and XII with a total sample of 218 students with a sample of 160 students taken using purposive sampling. Furthermore, the data collection technique was carried out by distributing questionnaires using google form media. And analyzed using content analysis. The results showed that there was a significant difference in students' final grades as evidence of the effectiveness of applying blended learning compared to face-to-face classes for mathematics, English, and Indonesian subjects; There is no significance between student characteristics and the effectiveness of blended learning; No significance between student interaction and the effectiveness of blended learning; There is a significance between learning motivation and the effectiveness of blended learning.

Corresponding Author:
Tengku Mohd Khairal Abd
Binus Business School, Jakarta, Indonesia; tabdullah@binus.edu

1. INTRODUCTION

The Covid-19 pandemic has caused very drastic and sudden changes in every aspect of life, including education. In carrying out learning, every level of education from elementary school to university seems to be "forced" to adapt to the conditions that hit the world today (Ariyandi, 2020). Teachers are required to carry out online teaching and learning activities (Atsani, 2020) according to the instructions and directions from (Mendikbud, 2020) set on March 24, 2020. Online learning is actually

not a foreign thing in the world of education during a pandemic in certain countries that It has been a demand of the world of education since a few years earlier (Rahmi, 2020) who thought that offline learning was a traditional learning, for that we needed even better learning facilities through the use of technology (Panigrahi et al., 2018) which was able to give birth to a modern learning environment. (Huda et al., 2018). However, the implementation of learning in Indonesia before the Covid-19 outbreak was still using the traditional way (offline), although there were certain schools that had difficulty implementing IT-based learning, the main priority was still traditional learning (Rahmi, 2020). However, when this epidemic struck, the application of traditional learning turned into modern/online learning which required all parties to be able to adapt. Although it looks difficult, this method is the only solution that can bridge so that teaching and learning activities can be carried out even in the midst of a pandemic. Of course, this drastic change is not something that is easily accepted by some, but this policy is the only solution so that education can be distributed to students. For this reason, education can be defined as a means to direct humans to become individuals who are able to meet the challenges of the times. Therefore, education must also be ready to respond to every form of change in the times itself. Thus, innovation in the world of education is nothing but a must.

One form of innovation in the world of education during the COVID-19 pandemic is related to learning models. The learning model is defined as a framework regarding the procedures applied to gain learning experiences in achieving goals (Al-Tabany, 2017) or in other words, the learning model is also said to be an illustration that will be used in the implementation of learning (Yanti & et al, 2019). For this reason, one of the learning models that can be applied during the COVID-19 pandemic is Blended Learning as the impact of technological innovation in the world of education while still paying attention to social interactions that occur during learning.

Blended learning is a part of e-learning. In the context of learning, e-learning is defined as something that is general in nature and has a broad scope that explores the use of various electronic technologies with the aim of delivering learning (Chaeruman, 2017). The technology referred to in this discussion can be in the form of computers/laptops, smartphones, internet television, and other devices that can be utilized in the online learning process (Rahmi, 2020). In addition, e-learning is also designed to create a more optimal learning experience. Regarding this, blended learning can be interpreted as learning that combines offline learning with online learning (Widaningsih, 2019) at the same time. The same thing was expressed by (Graham, 2006) that Blended Learning is a mixed learning system that combines offline methods with computer-assisted methods. Thus, the weaknesses that exist in offline learning can be combined with the advantages found in online learning, and vice versa. It aims to support teaching and learning activities optimally. Furthermore, through blended learning, it can provide teachers and students with a potential learning environment to carry out effective teaching and learning activities (Yaumi, 2018).

Referring to the statement above, the effectiveness of learning is defined as one of the quality standards of education and is often measured by the achievement of goals, or can also be interpreted as accuracy in managing a situation or known as "doing the right things" (Miarso, 2007). Regarding this, (Swan, 2003) in his research states that online learning is said to be effective if the final results of students participating in learning are at least the same as offline learning. Furthermore, research conducted by (Shachar & Neumann, 2003) measures the effectiveness of learning from 4 (four) factors, namely student academic performance, student satisfaction, student attitudes in learning, and evaluation of instructions issued during the learning process. For subjective measurements in the form of student performance, it was concluded that online learning showed higher effectiveness where the results obtained by students were better than offline learning. Furthermore, (Deivam & Devaki, 2015) also uses students' final grades as a comparison for offline blended learning. The findings show that blended learning is a good and effective option for students to better understand the learning material. This study also stated that the level of satisfaction from blended learning was higher than the traditional method. Thus, blended learning has an important role to play in increasing achievement for both teachers and students. Thus, from several previous studies that the authors present, it can be seen that

the implementation of blended learning is effectively applied during the covid-19 pandemic. Furthermore, the research (Haeruman et al., 2021) describes the findings from the results of his research that the application of blended learning shows good effectiveness in learning mathematics. (Yaghmour, 2016) also presented the results of his research on the effectiveness of the Blended Learning strategy in the achievement of third graders in Mathematics using 97 samples distributed into four classes; male, female, experimental and control groups showed that there was no significant difference between the mean performance of study group members on achievement tests for third graders in the bilateral interaction between Blended Learning and Gender.

However, even so, in the implementation of blended learning related to the effectiveness of the implementation of the learning process, especially during the COVID-19 pandemic, it caused a number of changes in student behavior, including: changes in student independence behavior, punctuality, ability to socialize with peers in the school environment, as well as learning carried out regularly. Online learning makes students tend to be indifferent, indifferent to ongoing learning, because screen learning can only say words without any touch or mysticism. Based on this description, it is interesting to study further regarding the application of blended learning at Madrasah Aliyah Al-Ma'ruf Bina Madina Vocational High School during the COVID-19 pandemic whether it can be assigned to all subjects or even only certain subjects. Based on a review of previous studies, it was found that blended learning was very effective in being applied to mathematics learning. Meanwhile, the author's attention is mathematics, Indonesian, and English subjects. The author argues that blended learning can also be used effectively in other subjects. Therefore, to answer this conjecture, the authors formulate several problem formulations as follows: how is the effectiveness of the use of blended learning, especially in Mathematics, Indonesian, and English subjects; Whether the implementation of blended learning can be a solution for implementing learning in the Covid-19 Pandemic Period and able to become an innovation in the world of education in the future and what factors affect the effectiveness of the implementation of blended learning.

2. METHODS

This type of research will use comparative quantitative analysis by comparing the learning methods used before and during the pandemic. In addition, this study also uses several variables and types of data being tested. This research was conducted for 3 months starting from July-October 2021. Based on the data collection period used, the study was a cross-sectional study. This type of research allows researchers to see the relationship between influencing factors and the results that are the object of research. In this study, the final grades of the same students will be measured in 2 different periods to test the effectiveness of implementing blended learning within a span of 6 months. The final score of students is taken from the school database according to the data of selected students who are included in the sample list of this study. The scores used are the final grades of students in 3 subjects, namely Indonesian language, English, and mathematics lessons for the learning period ending in December 2019 and June 2020. The selection of the three subjects was made considering the availability of delivery of material received by all students in each grade level and type of school attended. Meanwhile, the collection of student responses through filling out questionnaires was carried out using Google Form media which was sent to a list of respondents according to predetermined criteria. Students were asked to fill out a questionnaire according to their respective learning preferences. Incoming responses are quantified into 5 scales, namely values 1 to 5, where a value of 1 represents the response Strongly Disagree to a value of 5 for the response Strongly Agree.

The population in this study were all students of Class XI and XII at the Madrasah Aliyah Al-Ma'ruf level, totaling 114 students and the Bina Madina Vocational High School totaling 104 students or equivalent to Senior High School in the 2020-2021 academic year which totaled 104 students. 218 people. This study will use the Slovin formula to determine the minimum number of samples. This study uses an error rate of 0.05 or 5%. So based on the calculations, the minimum number of samples produced is 142 people. To reduce the risk of giving responses that do not meet the criteria by students, this study

takes additional respondents from the minimum number of samples. So the minimum number of respondents for this research is 160 people. The sampling method that will be used in this research is purposive sampling method. Purposive sampling technique is carried out by taking samples from the population by taking into account the suitability of the sample selection with the characteristics that want to be studied further in accordance with the research objectives. This is done to ensure that the selected sample is in accordance with the conditions at the core of the research, namely the implementation of blended learning for students during the Covid-19 pandemic. Because the research wants to see the effectiveness of blended learning learning by comparing the results (student scores) with face-to-face learning, it is important to choose students who have followed both learning methods as respondents. Students who were selected as respondents for this study according to the purposive sampling technique were students who were studying in class XI and XII in the 2020-2021 school year. The selection of students in the 2 (two) batches was based on the consideration of face-to-face learning experiences in the July-December 2019 period and blended learning in the March-June 2020 period that had been undertaken.

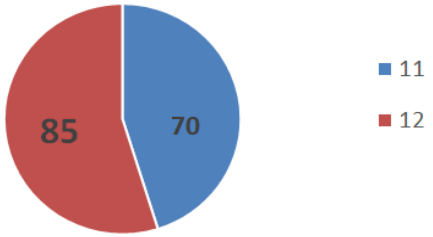
The data collection technique in this study used a questionnaire/questionnaire. for collecting student responses through filling out questionnaires, it is done using Google Form media which is sent to a list of respondents according to predetermined criteria. Students were asked to fill out a questionnaire according to their respective learning preferences. Incoming responses are quantified into 5 scales, namely values 1 to 5, where a value of 1 represents the response Strongly Disagree to a value of 5 for the response Strongly Agree. The distribution of questionnaires was carried out proportionally to students to maintain the representation of the type of school that the students participated in (Madrasah and Vocational High School) and the representation of each generation (XI and XII).

As described above, this study contains several variables consisting of student characteristics, interactions, and student motivation. First, the Student Characteristics Variable (TCHA) was measured by borrowing the Online Self-regulated Learning Questionnaire (OSLQ) which was previously also used by (Kintu et al., 2017) in a study that looked at the relationship between blended learning effectiveness and student characteristics. There are a total of 19 questions to measure student characteristics consisting of 6 dimensions, namely goal setting, learning environment development, task execution strategies, time management, how to seek help, and self-evaluation. The two Student Interaction Variables (TINT) were measured using 2 (two) dimensions, namely the role of the teacher in the interaction and the interactions contained in the learning design by the school. For the role of the teacher in terms of interaction, a questionnaire will be used to evaluate the role of the teacher in online learning. In total, there are 5 (five) questions that will be used to measure the teacher's role in interactions during blended learning. Meanwhile, to measure the interactions contained in the learning design by the school will use the questionnaire used previously by (Campbell et al., 2011). In order to obtain student responses to the learning design, 4 (four) questions will be used. This study will use student motivation in participating in blended learning as a mediating variable. Measurement of students' responses to motivation using a questionnaire previously used by (Tuan et al., 2005) in their journal that measures students' motivation in learning. In total there are 21 (twenty one) questions that will be used in the questionnaire to measure student motivation.

3. FINDINGS AND DISCUSSION

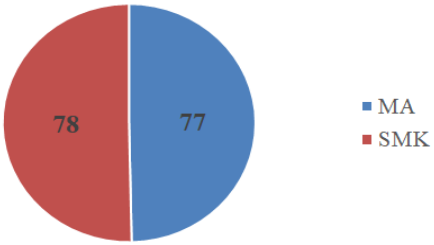
This research was conducted at Madrasah Al-Ma'rif and Bina Medina Vocational High School to determine the effectiveness of blended learning during the COVID-19 pandemic in mathematics, Indonesian, and English subjects. The selection of the three subjects was made considering the availability of delivery of material received by all students at each grade level and the type of school attended. In this study, the authors examine the effectiveness of blended learning before the COVID-19 pandemic with face-to-face learning by comparing student learning outcomes before the pandemic and during the pandemic based on data obtained from each school's database. Based on the results of testing on 161 incoming respondents, it was found that there were 6 respondents who became outliers in this

study. 6 These respondents were excluded from the next test because they did not pass at least 2 of the 3 outliers tests carried out. Of the 155 respondents who have passed the outlier test, it is known that 45% of respondents are in class 11 and another 55% of respondents are studying in class 12 in the 2020-2021 school year.



Ficture 3.1. Respondents *Education Level*

Meanwhile, when viewed from the type of school the respondents came from, this research can be seen that 50% of the respondents came from MA and 50% of the other respondents came from SMK.



Ficture 3.2. Types of Respondents' Schools

Furthermore, based on the validity and reliability tests, the questionnaire questions for Student Characteristics number 1 and 2 (CHA_1 and CHA_2) and Motivation questions numbered 2, 7, 9, 10, and 11 (MOT_2, MOT_7, MOT_9, MOT_10, and MOT_11) will not be used. in the next stage of testing. When the classical assumption test is carried out, the Final Mathematics Score (NA_MATH) that does not pass the Normality test will not be used in the next stage of testing.

To test the effectiveness of the implementation of blended learning, a Paired Sample T-Test was conducted on student scores before the implementation of learning with the blended learning method in December 2019 (NB) with scores after the implementation of learning with the blended learning method in June 2020 (NA).

Table 3.1. Testing Results Paired Sample T-Test

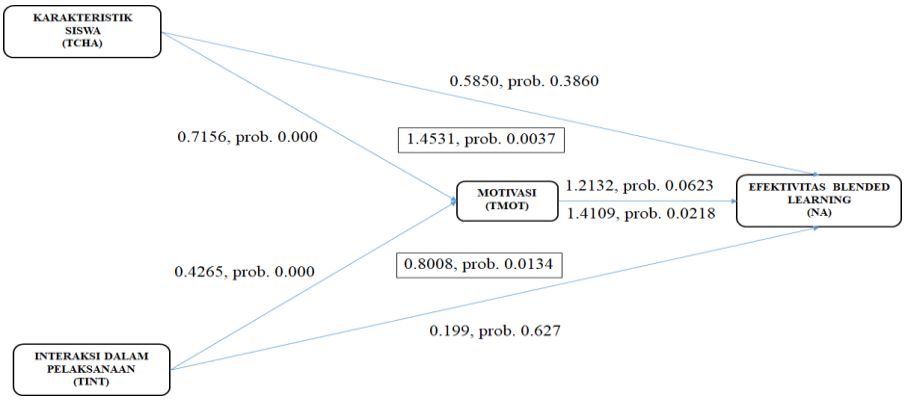
Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	NB_ENGLISH - NA_ENGLISH	-1.852	4.006	.322	-2.487	-1.216	-5.754	154	.000
Pair 2	NB_BAHASA - NA_BAHASA	-1.665	4.379	.352	-2.359	-.970	-4.733	154	.000
Pair 3	NB_MATH - NA_MATH	-1.335	6.568	.528	-2.378	-.293	-2.532	154	.012

Based on the test results above, it can be seen that there are differences in the scores before the implementation of learning with the blended learning method and the scores after the

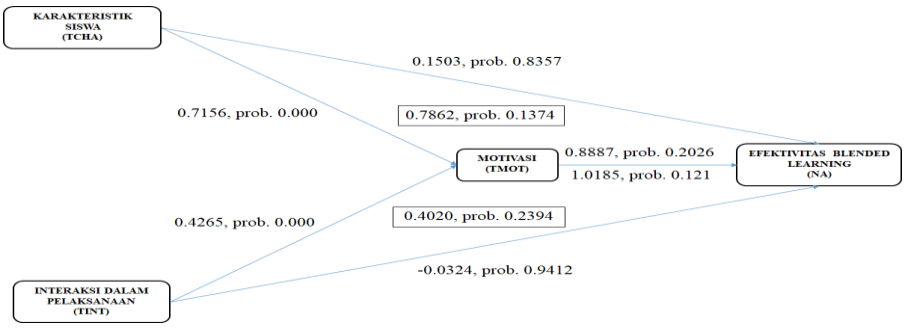
implementation of learning with the blended learning method for all subjects that were sampled in the test, namely English, Indonesian, and Mathematics. It is also seen that the average score before being compared after participating in blended learning is 1.33 to 1.85 points. Thus it can be concluded that the H1 of this study is accepted. There is sufficient evidence that there are differences in students' final scores as evidence of the effectiveness of implementing Blended Learning compared to face-to-face learning. In the author's opinion, the use of blended learning during the covid-19 pandemic is effectively applied to mathematics, Indonesian and English subjects. this is in line with research conducted (Ibrahim & Suardiman, 2014) which states that there is a positive influence on the use of e-learning on student motivation and learning achievement.

Further research was conducted to examine the effect of each independent variable on students' final grades as an indicator of the effectiveness of the implementation of learning using the blended learning method. The mediation effect test was carried out in accordance with the formulated research stages (Baron & Kenny, 1986).



Ficture 3.3. Results of the Research Hypothesis Model NA_ENG

In the data set of English scores (NA_ENG), it can be seen that Student Characteristics (TCHA) has a significant influence on Motivation (TMOT). However, the effect of Motivation (TMOT) on the Effectiveness of Blended Learning (NA_ENG) and the direct effect of Student Characteristics (TCHA) on the Effectiveness of Blended Learning (NA_ENG) were not significant. Student Characteristics (TCHA) has a significant influence on the Effectiveness of Blended Learning (NA_ENG) with the mediating effect of Motivation (TMOT). Interaction (TINT) has a significant effect on motivation (TMOT), but has no direct significant effect on the effectiveness of Blended Learning (NA_ENG). However, Motivation (TMOT) has a significant effect on the Effectiveness of Blended Learning (NA_ENG) and has a mediating effect which causes the effect of Interaction (TINT) on the Effectiveness of Blended Learning (NA_ENG) to be significant.



Ficture 3.4. Results of the NA_BHS. Research Hypothesis Model

In the Indonesian Language score data set (NA_BHS) it can be seen that Student Characteristics (TCHA) has a significant influence on Motivation (TMOT). However, the effect of Motivation (TMOT) on the Effectiveness of Blended Learning (NA_BHS) and the direct effect of Student Characteristics (TCHA) on the Effectiveness of Blended Learning (NA_BHS) were not significant. Student Characteristics (TCHA) still does not have a significant effect on the Effectiveness of Blended Learning (NA_BHS) with the mediating effect of Motivation (TMOT). Interaction (TINT) has a significant effect on motivation (TMOT). However, the effect of Motivation (TMOT) on the Effectiveness of Blended Learning (NA_BHS) and the direct effect of Interaction (TINT) on the Effectiveness of Blended Learning (NA_BHS) were not significant. Interaction (TINT) still did not have a significant effect on the Effectiveness of Blended Learning (NA_BHS) with the mediating effect of Motivation (TMOT).

Table 3.2. Conclusion of the Hypothesis

	Hipothesis	**Set Data**		
		NA_MATH	**NA_ENG**	**NA_BHS**
H1	There is a difference in students' final scores as evidence of the effectiveness of implementing Blended Learning compared to face-to-face learning	Received	Received	Received
H2	There is an influence of student characteristics on the effectiveness of the implementation of blended learning	NA	Rejected	Rejected
H3	There is an interaction effect on the effectiveness of the implementation of blended learning	`NA	Rejected	Rejected
H4	There is an influence of motivation on the effectiveness of the implementation of blended learning	NA	Rejected	Rejected
H5	There is an influence of student characteristics on the effectiveness of the implementation of blended learning mediated by motivation	NA	Received	Rejected
H6	There is an interaction effect on the effectiveness of the implementation of blended learning mediated by motivation	NA	Received	Rejected

Based on the test results on the effectiveness of the implementation of Blended Learning, it was obtained that the difference in the final grades of students as evidence of the effectiveness of the implementation of Blended Learning compared to face-to-face learning for Mathematics, English and Indonesian lessons so that the results of the H1 hypothesis were accepted. This is in line with previous research by (Shachar & Neumann, 2003) which concluded that online learning shows higher effectiveness where the results obtained by students are better than face-to-face learning. Previous research by (Khader, 2016) which showed that there were differences between groups that carried out blended learning and groups that carried out traditional learning where the blended learning method was more effective than traditional learning groups was also in line with the results obtained in this study.

In this study, there was no significant evidence for the direct effect of Student Characteristics on the effectiveness of blended learning. This is in line with research (Selim, 2007) which shows that blended learning results are not affected by student characteristics on student motivation in participating in blended learning.

The results of the interaction test show different results from previous research by (Kintu et al., 2017) which explains that the interaction provided by the teacher during the distance learning process affects the blended learning process. This is possibly influenced by the differences in the interaction components used in this study. Infrastructure has not been included as one of the factors that affect the effectiveness of the implementation of blended learning.

Tests on the direct effect of motivation on the effectiveness of the implementation of blended learning are not supported by sufficient evidence. However, the effect of Motivation on the mathematics scores data set is evident with significant evidence. This is in line with previous research conducted by Slavin in (Syarif, 2012) and research (Sardiman, 2012) which explains that learning motivation has a major influence in providing passion and enthusiasm for learning. However, in this study different results were obtained for the English and Indonesian data sets. However, no further research has been conducted on the factors that determine the difference in the results obtained for the two subjects. In addition, one of the limitations of this study lies in the number of samples that only come from one foundation. Future research is expected to be able to take more samples to be able to describe the conditions more broadly. Additional testing of factors that affect the effectiveness of the implementation of blended learning can also be done considering that there are still many other related factors that have not been tested in this study, such as the supporting facilities or infrastructure used.

4. CONCLUSION

The results of this study indicate that the implementation of blended learning is proven to be effective compared to traditional learning or the face to face method with indicators of student final grades. While the factors that affect the effectiveness of the implementation of blended learning such as student characteristics and interactions that occur during learning cannot stand alone. It is necessary to have a role of motivation that strengthens the influence on the effectiveness of the implementation of blended learning. And it can be said that the Blended Learning method can be an alternative for Schools in the Covid-19 Pandemic Period and also does not rule out the possibility of being an innovation in the future in order to increase the value of the school and the sustainability of the school itself.

REFERENCES

Al-Tabany, T. I. B. (2017). *Mendesain Model Pembelajaran Inovatif, Progresif, dan Konstektual: Konsep, Landasan, dan Implementasinya pada Kurikulum 2013 (Kurikulum Tematik Integratif/KTI)*. Kencana.

Ariyandi, N. (2020). Ngobrol Publik 2020 Klaster Education Technologi. *Konten Adalah Koentji: Jurus Guru Zaman Now Mahir Konten Digital*.

Atsani, L. G. M. Z. (2020). Transformasi Media Pembelajaran Pada Masa Pandemi Covid-19,. *Alhikmah: Jurnal Studi Islam*, *Vol.1 Nomo*.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *Vol. 51 No*, 1173–1182.

Campbell, M. C., Floyd, J., & Sheridan, J. B. (2011). Assessment Of Student Performance And Attitudes For Courses Taught Online Versus Onsite. *The Journal of Applied Business Research*.

Chaeruman, U. A. (2017). *PEDATI: Model Desain Sistem Pembelajaran Blanded Panduan Merancang Matakulliah Daring SPADA Indonesia, Kerjasama Direktorat Pembelajaran, Direktorat Jenderal Pembelajaran dan Kemahasiswaan, dan Kementerian Riset , Teknologi, dan Pendidikan Tinggi* (p. 9).

Graham, C. R. (2006). *The Handbook of Blanded Learning: Global, Perspectives, Local Designs*. Pfeiffer Publishing.

Haeruman, L. D., Wijayanti, D. A., & Meidianingsih, Q. (2021). Efektivitas Blended Learning Berbasis LMS dalam Pembelajaran Matematika. *JRPMS: Jurnal Riset Pembelajaran Matematika Sekolah*, *Vol.5 Nomo*.

Huda, M., Maseleno, A., Teh, K. S. M., Don, A. G., Basiron, B., Jasmi, K. A., Mustari, M. I., Nasir, B. M., & Ahmad, R. (2018). Understanding Modern Learning Environment (MLE) in big data era. *International Journal of Emerging Technologies in Learning*. https://doi.org/10.3991/ijet.v13i05.8042

Ibrahim, D. S. marsa, & Suardiman, S. P. (2014). Pengaruh Penggunaan E-Learning terhadap Motivasi dan Prestasi Belajar Matematika Siswa SD Negeri Tahunan Yogyakarta. *Jurnal Prima Edukasia*, *Vol. 1 Nom*.

Khader, N. S. (2016). The Effectiveness of Blended Learning in Improving Students' Achievement in Third Grade's Science in Bani Kenana. *Journal of Education and Practice.*, 109–116.

Kintu, zhu, & Kagambe. (2017). Blended learning effectiveness: the relationship between student characteristics, design features and outcomes. *International Journal of Educational Technology in Higher Education*, 1–20.

Mendikbud. (2020). *Surat Edaran Menteri Pendidikan dan Kebudayaan Nomor 4 tahun 2020 Tentang Pelaksanaan Kebijakan Pendidikan Selama Masa Darurat Penyebaran Coronavirus Desease (Covid-19)*.

Miarso, Y. (2007). Menyemai Benih Teknologi Pendidikan. In *Computer*. https://doi.org/10.1038/cddis.2011.1

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. In *International Journal of Information Management*. https://doi.org/10.1016/j.ijinfomgt.2018.05.005

Rahmi, R. (2020). Inovasi Pembelajaran di Masa Pandemi Covid-19. *Al-Tarbiyah: Jurnal Pendidikan (The Educational Journal)*, *Vol.30 No.*, 111–123.

Sardiman. (2012). *Interaksi dan Motivasi Belajar dan Mengajar*. Raja Grafindo Persada.

Selim, H. M. (2007). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & Education*, *Vol.49 Nom*, 396–413.

Shachar, M., & Neumann, Y. (2003). Differences Between Traditional and Distance Education Academic Performances: A Meta-Analytic Approach. *The International Review of Research in Open and Distributed Learning*, *Vol.4 Nomo*.

Swan, K. (2003). The Effectiveness of Online Learning: A Review of the Literature. *Interaction, Educational Technology, Learning Outcomes, Virtual Environments*, 2225–2232. https://www.learntechlib.org/results/?q=swan&source=EDMEDIA%2F2003%2F1

Syarif, I. (2012). Pengaruh Model Blended Learning Terhadap Motivasi Dan Prestasi Belajar Siswa. *Jurnal Pendidikan Vokasi*, 213–248.

Tuan, H. L., Chin, C. C., & Shieh, S. H. (2005). he Development of a Questionnaire to Measure Students' Motivation towards Science Learning. *International Journal of Science Education*, *27*, 634–659. https://doi.org/http://dx.doi.org/10.1080/0950069042000323737

Widaningsih, I. (2019). *Strategi dan Inovasi Pembelajaran Bahasa Indonesia Di Era Revolusi Industri 4.0*. Uwais Inspirasi Indonesia.

Yanti, F. A., & Dkk. (2019). *Teori Aplikasi Model Cooperative Research Project Based Learning di Perguruan Tinggi*. Gre Publishing.

Yaumi, M. (2018). Media dan Teknologi Pembelajaran. In *Jakarta*. Prenadamedia Group