The Effect of Blended Learning and Student Learning Styles on Student Learning Outcomes

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Abstract

This study aims to determine and describe (1) the effect of learning outcomes using Blended learning and non-Blended learning on grade 3 students, (2) the effect of student learning outcomes using the V-A-K learning style on grade 3 students, and (3) the effect of interaction between learning Blended learning and learning styles on student learning outcomes in grade 3 SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk. This study used an experimental design with a population and research sample of 3rd grade students at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk. Data collection techniques through questionnaires and tests as well as data analysis techniques using two-way analysis of variance. The calculation results obtained FA value (learning) = 7.010 with a significance value smaller than α <0.05, namely 0.011, meaning that there are differences in grade 3 student learning outcomes between those taught using blended learning and non-blended learning; FB value (Learning style) = 12.926, has a significance less than α <0.05, namely 0.000, meaning Fcount > Ftable, meaning that there are differences in grade 3 student learning outcomes between students who have visual, auditory and kinesthetic learning styles; and FAB scores (factors A and B) obtained an Fcount of 3.250 with a significant level of 0.038, so that there is an effect of using blended learning and non-blended learning models on student learning outcomes in terms of different student learning styles at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.
Keywords: Blended Learning, Learning Styles, Learning Outcomes

Abstrak

Penelitian ini bertujuan untuk mengetahui dan mendeskripsikan (1) pengaruh hasil belajar siswa dengan menggunakan gaya belajar V-A-K pada siswa kelas 3, (2) pengaruh hasil belajar siswa dengan gaya belajar V-A-K pada siswa kelas 3, dan (3) pengaruh interaksi antara pembelajaran Blended learning dan gaya belajar terhadap hasil belajar siswa kelas 3 SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk. Penelitian ini menggunakan desain eksperimen dengan populasi dan sampel penelitian siswa kelas 3 SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk. Teknik pengumpulan data melalui angket dan tes serta teknik analisis data menggunakan analisis varian dua arah. Hasil perhitungan diperoleh nilai FA (pembelajaran) = 7,010 dengan nilai signifikansi lebih kecil dari α < 0,05 yaitu 0,011, artinya terdapat perbedaan hasil belajar siswa kelas 3 antara yang dibelajarkan menggunakan blended learning dan non blended learning; Nilai FB (Gaya Belajar) = 12,926, memiliki signifikansi lebih kecil dari α < 0,05 yaitu 0,000, artinya Fhitung > Ftabel, artinya terdapat perbedaan hasil belajar siswa kelas 3 antara siswa yang memiliki gaya belajar visual, auditori dan kinestetik; dan skor FAB (faktor A dan B) diperoleh Fhitung sebesar 3,250 dengan taraf signifikan 0,038, sehingga terdapat pengaruh penggunaan model blended learning dan non blended learning terhadap hasil belajar siswa ditinjau dari perbedaan gaya belajar siswa di SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.
Kata Kunci: Blended Learning, Gaya Belajar, Hasil Belajar

INTRODUCTION

The high and low achievement of student learning outcomes is influenced by certain conditions, namely internal factors and external factors. One of the external factors that influence learning outcomes is the application of a learning model ("A Cooperative Learning Model Combines between PBL and CDIO," 2022; Supardi, 2022; Yustitia & Kusmaharti, 2022). The selection and use

of learning models that are appropriate and in accordance with competency goals is very necessary, because learning models are the methods used by teachers to establish relationships/interactions with students during teaching and learning activities. This provides an explanation that teachers must be creative in implementing learning that can attract and motivate students to be actively involved in teaching and learning activities in class.

Basically, a lot of learning can increase student activity and involvement, one of which is cooperative learning. However, because cooperative learning has many approaches or types it needs to be sorted and selected according to the conditions and characteristics of the students/classes to be taught so that learning objectives can be achieved optimally.

Current conditions should encourage teachers to carry out lessons that apply online and offline learning. This means that the old paradigm must begin to change where learning must be student-oriented, meaning that active student involvement is a necessity and the teacher is only a facilitator and directs students well.

The use of the Blended learning model will change a learning process that is focused on the teacher to switch to a student-oriented learning situation. Learning that combines conventional learning with information and communication technology-based learning is what is developed as mixed learning or known as Blended learning, which combines conventional (face-to-face) learning with learning that utilizes information and communication technology (Dwiyogo, 2018; Kurniasari et al., 2021; Wihartini, 2019).

This merger means that there are several conditions, face-to-face, or e-learning. This condition will encourage students to be active in finding, solving a problem through guidance from the teacher. Students will be directed to find information, process it, and discuss it in their respective groups. In the process of searching, processing, verifying and generalizing the data or facts obtained, each student has different methods, methods and styles which are very dependent on the learning styles possessed by students. So that learning styles have an impact on improving the quality and results of student learning. This research defines that learning style is the tendency of students to capture and understand a material or concept that is being studied, students can search, obtain data by observation and visualization then process, verify and generalize data based on visual captures (Alhafiz, 2022; Amaliya & Fathurohman , 2022; Setyawati et al., 2022). However, on the other hand, students can also search for, obtain data based on the information heard, capture it as material to be studied, then process, verify and make generalizations regarding the data in question. In addition, there were also students who searched data through movements, existing notes, then students processed, verified and made generalizations regarding data or material.

METHODS

This study used an experimental design method by giving different treatments to the two sample groups, conditioning them to be homogeneous. Where there will be two groups, namely the

control group and the experimental group. One of the sample groups was given treatment in the form of applying Blended learning. Classes that apply blended learning will use computers/laptops through the Microsoft PowerPoint application and utilize the network (online/internet) and mobile phones through the WhatsApp application. Data collection techniques using questionnaires, interviews, observations, tests, documentation and so on. The instruments used to collect data in this study were tests and questionnaires. While the requirements to be a good instrument, the validity and reliability of tests and questionnaires must be tested. In carrying out calculations on the data obtained, the researcher will then use the SPSS for windows program which will speed up the calculations and be more accurate in the calculations because the formula has been computerized so the possibility of error is smaller.

RESULTS AND DISCUSSION

Results

Based on the questionnaire that has been distributed, three learning styles are obtained from each student, although the number of students who have a certain learning style is a certain number so that the focus of the research remains visual learning styles, auditory learning styles and kinesthetic learning styles. The visual learning style is a learning style that tends or emphasizes visualization, while the auditory learning style relies more on hearing than other learning methods or styles.

While the kinesthetic learning style is a learning style that requires touch or touch for students so that certain information can be remembered by students who have this learning style.

The descriptive results of the classes involved in this study are as follows.

Table 1. Research Descriptive Test Results

Descriptive Statistics

Dependent Variable:Hasil Belajar

Pembelajaran	Gaya Belajar	Mean	Std. Deviation	N
Blended Learning	Visual	83.8462	4.16025	13
	Auditory	83.5714	6.02194	14
	Kinestetik	73.3333	2.88675	3
	Total	82.6667	5.83292	30
Non Blended Learning	Visual	75.4545	2.69680	11
	Auditory	82.1875	6.31631	16
	Kinestetik	70.0000	.00000	3
	Total	78.5000	6.45275	30
Total	Visual	80.0000	5.51677	24
	Auditory	82.8333	6.11433	30
	Kinestetik	71.6667	2.58199	6
	Total	80.5833	6.45005	60

Based on the table it can be explained that the students involved in this study were two classes, namely class 3-A and class 3-B at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk with a total of 60 students, where in the implementation of this study the entire population was sampled so

that this research was also known as total sampling, so that the samples were class 3-A and class 3-B. The learning implementation applied to class 3-A is by using blended learning and class 3-B is by using non-blended learning.

The table above explains that applied blended learning and non-blended learning can improve student learning outcomes, as indicated by the final learning outcomes obtained by students. For class 3-A in general there was a significant increase where at the beginning of learning it had an average of 75.03 while at the end of learning the learning outcomes obtained were 82.67, while in class 3-B which applied non blended learning there was a significant increase enough even though it doesn't look too big, where at the beginning of learning it has an average of 74.00 while at the end of learning the learning outcomes obtained are 78.00.

The table above also describes the number of students in class 3-A who have visual learning styles, auditory learning styles and kinesthetic learning styles, namely students with visual learning styles totaling 13 students with an average score of 83.84, students with auditory learning styles totaling 14 students with an average score of 83.57, while students with a kinesthetic learning style totaled 3 students with an average score of 73.33. Likewise with class 3-B which has a visual learning style, auditory learning style and kinesthetic learning style, namely students with a visual learning style of 11 students with an average score of 75.45, students with an auditory learning style of 16 students with an average score of 82.19, while students with a kinesthetic learning style of 3 students with an average value of 70.00

Based on observations and results of calculations, it is known that there are more students with blended learning who have an auditory learning style and better average scores are obtained by students with a visual style, in contrast to non-blended learning where students who have a visual learning style are fewer than students who auditory learning style and the average value of students dominated by the auditory learning style has an average value more than other learning styles. And overall, students who are the research sample are more likely to have an auditory learning style both in the application of blended learning and non-blended learning.

Based on the table above, it can be explained that in general differences occur between the application of blended learning and the application of non-blended learning, both for students who have a visual learning style or students who have an auditory learning style. Based on the results of this descriptive calculation it can be explained that there are differences in student learning outcomes between students who are taught using blended learning and those taught using non-blended learning for students with a visual learning style, students with an auditory learning style and students with an auditory learning style even though to see the differences If it is significant or not significant, it needs evidence with statistical calculations.

With regard to the 2 factor analysis of variance carried out can be seen in the following table.

Table 2. 2 Factor Analysis of Variance Test Results

Tests of Between-Subjects Effects

Dependent Variable:Hasil Belajar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1087.631[a]	5	217.526	8.593	.000
Intercept	226544.566	1	226544.566	8949.403	.000
Pembelajaran	177.445	1	177.445	7.010	.011
Gaya_Belajar	654.393	2	327.196	12.926	.000
Pembelajaran * Gaya_Belajar	164.555	2	82.277	3.250	.046
Error	1366.952	54	25.314		
Total	392075.000	60			
Corrected Total	2454.583	59			

a. R Squared = ,443 (Adjusted R Squared = ,392)

Based on the table above it can be explained with regard to factor 1 (learning), factor 2 (learning style) and Factor 1 and Factor 2 which are interactions between the application of blended learning and non-blended learning and learning styles with the following results.

1. The value of FA (learning application) = 7.010 with a significance value smaller than α <0.05, namely 0.011, with df1 = 1 and df2 = 59 obtained the value of F table = 4.02 so that it can be explained that F count > F table, meaning that there are differences in the learning outcomes of Grade 3 students between those taught using blended learning and those taught using non-blended learning at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.

2. FB value (Factor 2/Student learning style) = 12.926, with a significance value smaller than α <0.05, namely 0.000, with df1 = 2 and df2 = 59 obtained F table value = 3.15 so that it can be explained that F count > F table, meaning that there are differences in grade 3 student learning outcomes between students who have visual learning styles, auditory learning styles and kinesthetic learning styles at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.

3. The FAB value (factors A and B) obtained a calculated F value of 3.250 with a significant level of 0.038, comparison with F table and a significant level = 0.05; (3.250 > 3.15), so that it can be explained that there is an effect of using blended learning and non-blended learning models on student learning outcomes in terms of different student learning styles at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.

Based on the results of research and calculations carried out using analysis of variance of the 2 factors, it can be explained that in general it is related to the hypotheses that have been given before. Based on these calculations it can be explained that all hypotheses can be accepted based on calculations using two-way analysis of variance. In detail, with respect to the hypothesis that has been proposed, it can be explained that in this study there are differences in student learning outcomes caused by the use of blended learning and non-blended learning in students with visual learning styles, auditory learning styles and kinesthetic learning styles, resulting in interactions between the use of learning methods applied to student learning outcomes. Where in this study, the use of blended

learning is more able to improve student learning outcomes compared to the use of non-blended learning. In addition, students with visual learning styles also have better learning outcomes compared to students with auditory learning styles and kinesthetic learning styles.

Discussion

Based on the research results, data presentation, and data analysis on the effect of using blended learning and non-blended learning models on student learning outcomes in terms of different student learning styles, it can be analyzed and interpreted as follows.

Application of Blended Learning and Non-Blended Learning

At the beginning of learning the learning outcomes of grade 3 students, namely class 3-A and class 3-B, have learning outcomes that can be said to be the same, indicated by the student learning outcomes or test scores that are not much different, namely around the value of 74. This means that these two samples meet the criteria as a research sample where the data owned by both are homogeneous so that the results of the implementation of blended learning and non-blended learning can be a comparison in order to determine student learning outcomes. After implementing blended learning and non-blended learning in each class according to the research stages, the results showed an increase in student learning outcomes through the application of this learning. This is shown by the results of descriptive calculations of each application of learning that was applied before and after the application of this learning, where it was found that classes taught using blended learning had better student learning outcomes compared to classes taught using non-blended learning. .

In general, the application of blended learning and non-blended learning is very dependent on the time of implementation and the learning styles possessed by students. The increase in student learning outcomes based on the results of calculations is quite different between the beginning of learning and after learning is treated. In addition, related to blended learning and non-blended learning methods can be said to be significant because it is proven by the average difference test with a significance value below 0.05, so that it can be explained that the student learning outcomes obtained by students in the two groups are significant (not the difference can be ignored), meaning that there are differences in learning outcomes from the implementation of blended learning and non-blended learning.

Based on the calculations, it was found that FA (F calculated for the learning application factor) showed that the FA calculated was greater than F table, meaning that the use of learning applied in class in this study had differences in learning outcomes, between classes that applied blended learning and non-blended learning. This explains that student learning outcomes are influenced by the implementation of learning in the classroom.

The results of this calculation indicate that basically student learning outcomes are influenced by the implementation or application of learning so that the hypothesis proposed can be accepted, namely there are differences in student learning outcomes in classes taught using blended learning models and those taught using non-blended learning models In general, the implementation of

blended learning in the classroom obtains better learning outcomes when compared to non-blended learning. blended learning obtains better learning outcomes where in the teaching and learning process in class, the teacher has been able to plan and implement it properly. This is inseparable from and in line with what is a definition of Blended learning, which is a combination of various harmonious learning media to create superior learning activities. Blended learning has two core components, namely face-to-face learning and online learning (e-learning. Blended learning emphasizes that students can be active, independent and responsible for learning (Islami et al., 2021; Rahman et al., 2021; Wihartini, 2019).In the application of Blended learning applied in this study the teacher carries out a learning process that combines various learning methods, learning models, and various media from technology.In this learning, the teacher uses the network to encourage students to be learn independently and can find more learning resources Students who carry out learning activities as recommended by the teacher tend to prepare themselves better, such as having knowledge related to the material to be taught by students so that it will be easy to capture and understand what is conveyed by the teacher teacher in the learning process In addition, through blended learning the teacher d can use various learning methods and strategies that are felt to be suitable for the class being taught so that they will be preferred and encourage student learning interest.

In addition, the application of blended learning that utilizes online learning, using video and the WhatsApp application can help students learn through the help of parents, where the parents of students are involved in the intended implementation. Furthermore, that the implementation of blended learning that is implemented fulfills or is in line with the characteristics presented (Islami et al., 2021; Rahman et al., 2021; Ul haq & Hamami, 2020) including: (1) Communication between students and teachers can be done either through one-way or two-way communication (two ways communication). The process of teaching and learning in distance education is still possible by holding face-to-face meetings, although it is not a requirement. (3) During learning activities, students are more likely to form study groups, even though they are not appropriate and not mandatory. In this learning activity, research uses blended learning using mixed methods, namely online and offline, (4) Because of the things mentioned above, the teacher's role is more as a facilitator and students act as participants.

Differences in Student Learning Outcomes in Different Learning Styles

In the research conducted regarding student learning styles, it was found that there were differences in the learning outcomes of grade 3 students at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk is divided into three groups, between those who have a visual learning style compared to those who have an auditory learning style, between the learning style group and the kinesthetic learning style group and between the auditory learning style group and the kinesthetic learning style group. In the application of blended learning dominated by students with an auditory learning style, this student's auditory learning style can be seen from their tendency to learn. This learning activity, besides being identified at the time of filling out the questionnaire or the results of the student

questionnaire. The student learning styles that occur are also known from their learning activities, where it can be seen that students with an auditory learning style have a tendency and interest in things that lead to auditory, as identified in the questionnaire, namely reading aloud and talking to themselves when I put together parts -part when given instructions by the teacher. Vice versa students with a visual learning style have a tendency related to visualization. And it is different from students who have a kinesthetic learning style that requires a special touch or certain movements to be able to understand the material being taught. In each learning style group, this study identified that students with an auditory learning style dominate when compared to visual learning styles and kinesthetic learning styles. Visual learning styles dominate after auditory learning styles and kinesthetic learning styles have the least number of students, namely less than 10 of the total number of students, namely 60 students.

Based on the calculation of the average difference test with a significance value of less than 0.05, it was found that there was a significant difference in student learning outcomes between those who had a visual learning style and students who had an auditory learning style so that it could be explained that student learning outcomes were significantly different between those has a visual learning style and auditory learning style.

Based on the calculation of the average difference test with a significance value of less than 0.05, it was found that there was a difference in student learning outcomes between those who had a visual learning style and students who had a kinesthetic learning style so that it could be explained that student learning outcomes were significantly different between those with learning styles visual and auditory learning styles. While the calculation of the average different test with a significance value of more than 0.05 was obtained in student learning outcomes between those who have an auditory learning style and students who have a kinesthetic learning style so that it can be explained that student learning outcomes differ significantly between those with an auditory learning style and kinesthetic learning styles. And the average difference in learning outcomes is in students who have an auditory learning style with a kinesthetic learning style, while the second difference is a visual learning style with a kinesthetic learning style which in turn is a difference in visual learning style with an auditory learning style which has the smallest difference. However, all the differences in the three learning styles are significantly different.

However, in general, based on the calculation of the 2-factor analysis of variance, the calculated FB (learning style factor) value is greater than Ftable, meaning that there are differences in the learning outcomes of Grade 3 students between those with visual learning styles, auditory learning styles and auditory learning styles at SDN 1 Tanjung Kalang district. Ngronggot Kab. Nganjuk.

This explains that in the teaching and learning process, the learning styles possessed by students have an impact or influence on their learning outcomes. This is of course related to the material being taught, where students, with a high level of visualization, expect things or explanations of material through displays that make students understand learning.

The description above explains that student learning outcomes are also influenced by their learning style where learning styles are the result of individual interactions and learning implementation situations that are carried out (Chandra, 2022; Nur et al., 2022; Syaputra et al., 2022). In learning in classes that use blended learning, the results tend to be better, this is inseparable from the blended learning used which has a strategy and can better visualize learning such as compatibility with auditory learning styles in learning so as to produce better grades in classes that apply non-blended learning. .

Based on the description above, it can be explained that the second hypothesis can be accepted, meaning that there are differences in student learning outcomes between those with visual learning styles, auditory learning styles and kinesthetic learning styles. Through indicators of each learning style possessed by students, such as visual learning styles that are conveyed by having characteristics by seeing, observing, looking, and the like. The strength of this learning style lies in the sense of sight (Amaliyah et al., 2022; Himmi et al., 2022; Yulianti et al., 2022). In this study, the visual learning style is greatly assisted by the blended learning model where the material or method used is very appropriate, namely through video.

Learning Interaction and Learning Styles

Based on the 2-factor analysis of variance, the calculated FAB value is > F table, with a significance level of less than 0.05 (5%) so that it can be explained that there is an effect of using blended learning and non-blended learning models on student learning outcomes in terms of different student learning styles . Based on the results of the study it can be described that there is an increase in student learning outcomes in each use of learning either by using blended learning or by using non-blended learning. Students who are taught using blended learning have better student learning outcomes than students who are taught using non-blended learning. In addition, it is also shown that the auditory learning style is mostly owned by students who are taught using blended learning. Likewise in non-blended learning, it is also dominated by students with an auditory learning style. Meanwhile, high learning outcomes are owned by classes that apply blended learning. However, the difference between students who have a visual learning style and an auditory learning style is not too big, meaning that in general the blended learning and non-blended learning classes are dominated by the two learning styles, namely the visual learning style and the auditory learning style.

Basically, the increase in learning outcomes that occur in each lesson cannot be separated from the stages of learning that are carried out well by the teacher. where in the stages of blended learning the teacher is able to apply blended learning appropriately and according to the needs of students. In addition, teachers are able to construct learning according to the blended learning syntax as conveyed by (Dwiyogo, 2018; Kurniasari et al., 2021; Wihartini, 2019) namely as follows: (1) Search for information online and offline based on relevance , validity, content reliability and academic clarity. Students are encouraged to search for learning resources beyond what has been conveyed by the teacher so that students have additional insight. In implementing research, students

are directed to search for learning resources online or offline (school library) or discussing with friends and asking teachers, (2) finding, understanding, and confronting ideas or ideas. In this stage, the teacher becomes a facilitator so that students can understand what they get, by finding it themselves, understanding it and confirming it with the teacher, (3) Interpreting information or knowledge from various sources that have been sought from various sources. The teacher facilitates in the form of questions and answers and discussions so that students dare to express opinions in accordance with what has been obtained from other learning sources, (4) Communicating ideas or ideas resulting from their interpretation using online or offline facilities, (5) Constructing knowledge through assimilation and accommodation processes from the results of analysis, discussion, and drawing conclusions from information obtained using online or offline facilities. While the relationship with learning styles can be explained that learning styles are cognitive, affective, and physiological behavior characteristics of students when receiving stimuli, interacting, and responding to their relatively stable learning environment. Each student who has a different learning tendency towards the implementation of learning, by collaborating with students will certainly have its own impact. In the implementation of blended learning, it has good learning outcomes dominated by students who have auditory and visual learning styles. It can be explained that students with visual auditory tendencies will really like learning through the blended learning method where students can study independently and adjust to the needs of what students want. , for example, most of them are very happy and able to understand something graphic in nature from sources obtained both online and offline.

With the advantages and characteristics of blended learning, it will give an impression that remains attached to students for a long time, so that students are able to understand the subject matter well because they are involved and learn independently in activities and act out what they are learning. Thus, students will be able to solve the problems being faced in the topic being discussed. Based on the description above, it can be explained that the third hypothesis can be accepted, namely that there is an interaction between Blended learning and learning styles on student learning outcomes in grade 3 SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk.

CONCLUSION

Based on the results of the research and discussion carried out above, several conclusions can be drawn as follows: (1) There are differences in learning outcomes in class 3 students at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk between those taught with Blended learning and non-Blend learning where students who were taught with blended learning had better results when compared to students who were taught with non-blended, (2) There were differences in learning outcomes for grade 3 students at SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk who has a V-A-K learning style for students. where students with auditory learning styles have better learning outcomes when compared to students who have visual learning styles and kinesthetic learning styles,

and (3) There is interaction between Blended learning and learning styles on student learning outcomes in grade 3 SDN 1 Tanjungkalang Kec. Ngronggot Kab. Nganjuk where the use of blended learning and non-blended learning models on student learning outcomes in terms of different student learning styles, it is shown that students who are taught using blended learning in students with visual learning styles have better student learning outcomes when compared to students who are taught using non-blended learning, both for students who have visual, auditory and kinesthetic learning styles.

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