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Inquiry-Based Learning Model Assisted by Canva Media on Motivation and Mathematics Learning Achievement

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ABSTRAK

Matematika masih dianggap suatu pelajaran yang sukar dipahami serta membosankan, menakutkan, sehingga banyak hasil belajar siswa memperihatinkan. Penelitian ini bertujuan untuk menganalisis motivasi dan prestasi belajar matematika dengan menerapkan model inquiry based learning *(IBL) berbantuan media canva. Metode penelitian ini menggunakan* quasi experiment *dengan* Posttes Only Control Group Design*. Populasi penelitian yaitu Siswa kelas 5 SD sebanyak 8 Sekolah. Sampel penelitian diambil 6 SD yang dipilih dengan menggunakan teknik* random sampling*. Pengumpulan data menggunakan instrumen angket motivasi belajar dan tes prestasi belajar. Data dianalisis menggunakan Anova dan Manova. Hasil penelitian menunjukkan bahwa terdapat perbedaan motivasi belajar antara kelas eksperimen dan kelas kontrol dengan signifikansi 0,000. Terdapat perbedaan prestasi belajar antara kelas eksperimen dan kelas kontrol dengan signifikansi 0,000. Terdapat perbedaan secara simultan motivasi dan prestasi belajar antara kelas eksperimen dan kelas kontrol dengan signifikansi 0,000. Simpulan bahwa model IBL berbantuan media berbasis canva terbukti berpengaruh terhadap motivasi dan prestasi belajar matematika siswa kelas V. Implikasi penelitian ini motivasi dan prestasi belajar siswa dapat meningkat dengan menggunakan model IBL berbantuan media berbasis canva.*

ABSTRACT

Mathematics is still considered a subject that is difficult to understand, boring, and scary, so many students' learning outcomes are worrying. This research analyses motivation and achievement in mathematics by applying the inquiry-based learning (IBL) model assisted by Canva media. This research method uses a quasi-experiment with a posttest-only control group design. The research population was 5th-grade elementary school students in 8 schools. The research sample was taken from 6 elementary schools selected using random sampling techniques. Data collection used learning motivation questionnaire instruments and learning achievement tests. Data were analyzed using Anova and Manova. The results showed a difference in learning motivation between the experimental and control classes, with a significance of 0.000. There is a difference in learning achievement between the practical and control classes, with a significance of 0.000. There is a simultaneous difference in motivation and learning achievement between the experimental and control classes, with a significance of 0.000. The conclusion is that the IBL model assisted by Canva-based media has been proven to affect motivation and learning achievement in mathematics for class V students. This research implies that student motivation and learning achievement can be increased using the IBL model assisted by Canva-based media.

1. INTRODUCTION

Mathematics, one of the basic subjects at every level of formal education, plays an important role. Mathematics is a tool that can clarify and simplify a condition or situation through abstraction, idealization, or generalization to become a study or problem-solving (P. D. P. Dewi & Suniasih, 2022; Effendi et al., 2021). The purpose of learning mathematics in schools is to prepare students to use mathematics and mathematical thinking patterns in everyday life so that they are expected to apply mathematics in solving everyday problems. In addition, one of the goals of learning mathematics for students is to have the ability

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or skills to solve mathematical problems or questions to improve careful, critical, and creative reasoning (Bosica et al., 2021; Zayyadi et al., 2020).

In reality, mathematics is still a problem in the world of education because there are still many students who think that mathematics is a subject that is difficult to understand and, boring, scary, and there are still many other assumptions that cause many students to get very worrying grades in mathematics subjects (Irman et al., 2022; Widyaputri & Agustika, 2021). A teacher needs to make changes/innovations that can satisfy the interests and motivation of students, for example, by including media in the learning process (Gunadewa S & Japa, 2022; Laswadi et al., 2023). Mathematics learning is needed to focus on learning models. Learning media must be a consideration in learning (Diani & Agustika, 2023). In designing learning media, it should be adjusted to the needs of students so that learning media has benefits and can convey abstract concepts into concrete ones. Learning media is a tool that can support the teaching and learning process so that the meaning and message conveyed can be clearer and learning objectives can be achieved effectively. In school, mathematics is one of the subjects that is still considered difficult for students to understand. Learning mathematics in elementary schools is one of the subjects that is less popular with students. Many elementary school students consider mathematics scary, uninteresting, boring, and difficult. Several factors cause this, namely cultural factors, education systems, assessment systems, parents, the nature of the field of study, and teacher factors. In addition, there are several causes of low interest in mathematics for students, which can be reviewed from the sense of pleasure, attention to learning, and interest in the material and teachers. This teacher factor is often considered the most important reason why many students feel afraid or have a low interest in mathematics.

The solution to overcome these problems with the aim that students become active, creative, effective, and enjoyable can be created in learning is the IBL (Inquiry-Based Learning) learning model. Inquiry-based learning is one of the student-based learning models used to make student responses effective and implemented successfully (Becker et al., 2020; Laudano et al., 2020). The inquiry-based learning model cannot be separated from investigative activities because this inquiry-based learning model is based on discoveries that students will obtain through a series of investigative or scientific activities (Al Mamun et al., 2020). In the inquiry-based learning model, students search for learning materials independently. Students learn the material by asking questions and conducting research or studies independently. The Inquiry-based learning model is a learning activity that emphasizes the development of investigative skills and thinking habits that enable students to continue the search for knowledge. This is the opinion of Sukirman (2012: 29) that learning media is everything that is used to convey messages from the sender to the recipient to stimulate the thoughts, feelings, attention, interests, and desires of students in such a way that the learning process can run effectively according to the learning objectives to be achieved.

Previous research findings indicate that the application of the IBL model has a positive impact on increasing student motivation and learning achievement (Mulyani, 2023). The Inquiry Learning Model influences mathematics learning outcomes in fourth-grade students (Rawa et al., 2019). The inquiry learning model greatly influences learning outcomes because student activity is influenced by several factors, namely student activity and student motivation, which also influence good learning outcomes (Maknun & Haryanti, 2022). Previous studies only used learning media in the form of Student Worksheets. In inquiry-based Learning (IBL), interactive learning media is needed. The orientation stage says that the process focuses on stimulating interest and curiosity related to studying the learning material and overcoming learning challenges through problem statements. During this stage, learning materials are introduced or given by the teacher. As a consideration in utilizing Canva-based learning media so that the application of IBL is optimal, the author considers several journals that have utilized Canva-based learning media. This study aimed to analyze the motivation and achievement of learning mathematics by applying the Inquiry-Based Learning (IBL) model assisted by Canva media. Applying the Inquiry-Based Learning (IBL) model assisted by Canva media is expected to increase student motivation and learning achievement.

2. METHOD

This research method uses a quasi-experimental research design, namely Post-test Only Control Group Design. This design will involve two groups: the experimental group with treatment using the Inquiry-Based Learning model and the control group using a conventional learning model. Based on this design, the experimental group was given treatment in the form of an Inquiry-based Learning model assisted by Canva-based learning media, and the control group was given treatment using a conventional method. To find out whether there is an effect of implementing the Inquiry-Based Learning model assisted by Canva-based learning media on motivation and learning achievement after receiving treatment, the two groups were given a learning motivation questionnaire and a post-test (final test) as an instrument used to

prove the research hypothesis. Before the instrument was used in the study, the researcher first tested the validity of the questions in 2 ways, namely expert testing and empirical validity testing. After conducting a validity test on the research expert team, the expert validity test used two experts from Ganesha University of Education lecturers. Then the researcher conducted an empirical validity test by analyzing each question item. In this study, the validity coefficient of the test was calculated with the help of the SPSS program version 25.0 with the Pearson Product Moment formula. Product moment correlation. The validation calculation of the motivation and learning achievement instruments obtained results of r count ≥ r table (2-sided test with sig, 0.05) to consider the instrument valid.

The sample set was 126 students taken from 6 schools, with details of 3 schools with 63 students as the experimental class and three schools with 63 as the control class. The data obtained in this study were the motivation and achievement of learning Mathematics in fifth-grade elementary school. The data collection method used in this study was non-test and test. The research instrument used was a student learning motivation questionnaire based on student responses, which aimed to obtain learning motivation data after participating in mathematics learning. In contrast, the test instrument was a learning achievement test with a multiple-choice test type, which aimed to obtain learning achievement data after taking action. Motivation and learning achievement data were then analyzed using quantitative descriptive analysis by determining the mean, median, and mode. To determine the category of motivation and mathematics learning achievement data using univariant analysis. This analysis is based on the ideal mean score (Mi) and ideal standard deviation (SDi). The reference for changing the score to a scale of five is in Table 1.

Table 1. Guidelines for Conversion of Motivation and Mathematics Learning Achievement

No.	Range of Scores	Category
1	Mi + 1,5 SDi ≤ X ≤ Mi + 3,0 SDi	Very High
2	Mi + 0,5 SDi ≤ X < Mi + 1,5 SDi	High
3	Mi - 0,5 SDi ≤ X < Mi + 0,5 SDi	Medium
4	Mi -1,5 SDi ≤ X < Mi - 0,5 SDi	Low
5	Mi - 3,0 SDi ≤ X< Mi -1,5 SDi	Very Low

The normality test used in this study uses the Kolmogorov and Smirnov formulas with the help of the SPSS version 25.0 application. The calculation results are stated to be normally distributed if the significance value α ≥ 0.05. Conversely, the data is said to be not normally distributed if α <0.05. To carry out further data analysis, the data studied must be normally distributed. At the same time, the homogeneity test uses SPSS 25.0 with the criteria used to conclude, namely. Significant value <0.05 then the data from the population with unequal variance / is not homogeneous. Significant value ≥ 0.05 then the data from the population with the same variance / is homogeneous. The correlation test uses the person Product Moment Correlation technique. The correlation test uses SPSS 25.0 with the criteria used to conclude. Significant value <0.05 then correlated. Significant value ≥ 0.05 then not correlated. Hypothesis testing to determine the effect of independent variables on dependent variables is carried out using one-way ANOVA for Univariate Significance Testing, a separate test. Univariate significance testing is used to determine which variables cause differences in the average of two groups through univariate testing, namely learning motivation data and hypotheses on learning achievement data. At the same time, the MANOVA test is used for Multivariate Significance Testing. This test determines whether the independent variables affect the dependent variables simultaneously. In hypothesis testing, SPSS IBM 25.0 for Windows software was used to test criteria using significance figures. If the significance figure *(Sig)* ≥ 0,05, then H0 is accepted. If the significance figure (Sig) <0.05, then H0 is rejected.

3. RESULT AND DISCUSSION

Result

The study's results, reviewed from the results of the first hypothesis test, showed that there was an influence of mathematics learning motivation between students who were taught the Inquiry-Based Learning model assisted by Canva-based learning media and students who were taught conventionally in the fifth grade of SD Gugus I Sidemen. The results of the analysis can be seen in Table 2.

Table 2. Results of Student Learning Motivation Data Analysis Using One-Way ANOVA

	Sum of Squares	Df	Mean Squares	F	Sig
Between Groups	570.032	1	570.032	13.272	0.000
Within Groups	5325.841	124	42.950		
Total	**5895.873**	**125**			

Table 2 shows that the Fcount is 23.573 while the Ftable is at a significance level of 5% = 3.12. The significance value of mathematics learning motivation is obtained with a significance of 0.000 or <0.05, so H0 is rejected, and H1 is accepted, which means that there is a difference in mathematics learning motivation between students who are taught the Inquiry-Based Learning model assisted by Canva-based learning media and students who are taught conventionally. Then, the results of the second hypothesis test show an influence on mathematics learning achievement between students taught the Inquiry Learning model assisted by Canva-based learning media and students taught conventionally in fifth-grade students of SD Gugus I Sidemen. The results of the analysis are presented in Table 3.

Table 3. Results of Student Learning Achievement Data Analysis Using One-Way ANOVA

	Sum of Squares	Df	Mean Squares	F	Sig
Between Groups	3616.071	1	3616.071	30.779	0.000
Within Groups	14568.254	124	117.486		
Total	**18184.325**	**125**			

Based on Table 3, it can be seen that the mathematics learning achievement value obtained a significance of 0.000 or <0.05, so H0 is rejected, and H1 is accepted, which means that there is an influence of mathematics learning achievement between students who are taught the Inquiry-Based Learning model assisted by Canva-based learning media and students who are taught conventionally. The results of the third hypothesis test show that simultaneously, there is an influence of motivation and mathematics learning achievement between students who are taught the Inquiry Learning model assisted by Canva-based learning media and students who are taught conventionally in the fifth grade of SD Gugus I Sidemen. The results of the simultaneous Hypothesis Test of motivation and mathematics learning achievement are presented in Table 4.

Table 4. Results of Simultaneous Hypothesis Testing of Mathematics Learning Motivation and Achievement

	Effect	Value	F	Hypothesis df	Error df	Sig
Intercept	Pillai's Trace	0.994	9499.255[b]	2.000	123.000	0.000
	Wilks' Lambda	0.006	9499.255[b]	2.000	123.000	0.000
	Hotelling's Trace	154.459	9499.255[b]	2.000	123.000	0.000
	Roy's Largest Root	154.459	9499.255[b]	2.000	123.000	0.000
Class	Pillai's Trace	0.264	22.033[b]	2.000	123.000	0.000
	Wilks' Lambda	0.736	22.033[b]	2.000	123.000	0.000
	Hotelling's Trace	0.358	22.033[b]	2.000	123.000	0.000
	Roy's Largest Root	0.358	22.033[b]	2.000	123.000	0.000

Based on Table 4, it can be seen that the significance value obtained is 0.00 or <0.05, so H0 is rejected, and H1 is accepted, which means that simultaneously, there are differences in learning motivation and mathematics learning achievement between students who are taught the Inquiry-Based Learning model assisted by Canva-based learning media and students who are taught conventionally.

Discussion

Based on the average learning results, the first finding is that there is a difference in learning motivation between students taught the Inquiry-Based Learning model assisted by Canva-based learning media and students taught conventionally. This aligns with research conducted by Safitri (2020) on implementing the Inquiry-Based Learning (IBL) model assisted by word-list game media on motivation and learning outcomes, which states that implementing the Inquiry-Based Learning model can increase students' learning motivation. Learning motivation is one of the factors that determines the effectiveness of learning. A student will learn well if there is a driving factor: learning motivation. Students will learn seriously if they have high learning motivation. Motivation is the driving force for someone to make the greatest possible contribution to the success of the organization in achieving its goals (K. O. R. Dewi et al.,

2020; Makransky et al., 2019). Learning motivation is the overall driving force within students that gives rise to learning activities, which ensures the continuity of learning activities and provides direction to learning activities (Satyawan et al., 2021). Learning motivation is all the drive within an individual, both internally and externally, to achieve learning success. The second finding shows that there is an influence on the learning achievement of students who are taught the Inquiry-Based Learning model assisted by Canva-based learning media; there is a difference in learning achievement with students who are taught conventionally. This difference can be seen from the learning achievement scores after being given a post-test to students in the experimental and control classes.

The experimental group taught the inquiry-based learning model assisted by Canva-based learning media, which differed in mathematics learning achievement from students taught conventionally. The learning achievement of students taught with the Inquiry-Based Learning model was more effective. In other words, the Inquiry-Based Learning model can improve student learning achievement. Achievement is the result obtained from activities carried out or created. At the same time, learning is the process of changing behavior in a person through experience and training obtained from the interaction of individuals with their environment (Erna Muliastrini et al., 2019; Winarti et al., 2020). Learning achievement is an assessment of learning outcomes expressed in symbols, numbers, letters, or sentences as an embodiment of the results achieved by each child in a certain period. Learning achievement is generally related to cognitive aspects.

The third finding is that simultaneously, there is a difference in motivation and learning achievement taught by the Inquiry-based Learning model assisted by Canva-based learning media with students who are taught conventionally. This proves a significant difference between those taught by the Inquiry-Based Learning model assisted by Canva-based learning media and students taught conventionally in the fifth-grade students of SD Gugus I Sidemen. This finding is reinforced by previous studies stating that there is a significant difference in learning motivation and learning achievement between students who are taught with the inquiry learning model and those who are taught with the conventional learning model (Wiguna, 2018). In addition, the cognitive learning model that can be applied to the learning process is the Inquiry learning model. Applying the IBL model positively impacts increasing student motivation and learning achievement (Mulyani, 2023). The Inquiry Learning Model influences mathematics learning outcomes in fourth-grade students (Rawa et al., 2019). The inquiry learning model greatly influences learning outcomes because student activity is influenced by several factors, namely student activity and student motivation, which also influence good learning outcomes (Maknun & Haryanti, 2022). The implications of this research can improve students' motivation and learning achievement.

4. CONCLUSION

Based on the results of data analysis and discussion in Chapter IV, it can be concluded that the application of the model Influences motivation and mathematics learning achievement between students who are taught with the Inquiry Based model assisted by Canva-based media and students who are taught conventionally in fifth-grade elementary school Gugus I Sidemen students. Schools should encourage teachers to continuously use the inquiry-based learning model assisted by Canva-based media in mathematics and other learning. For further research, it is recommended that the results of this study be used as a reference when conducting research, especially the Inquiry-based Learning model assisted by Canva-based media.

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