Inovasi Kurikulum

https://ejournal-hipkin.or.id/index.php/jik

The influence of digital comic-assisted PBL Model on science learning motivation in grade V

Nuralifah Zakiyyah[1], Mayarni[2]
[1,2] Universitas Muhammadiyah Prof. Dr. Hamka, Kota Jakarta, Indonesia
zakiyyah3302@gmail.com[1], mayarni@uhamka.ac.id[2]

ABSTRACT

Learning motivation has an important role in supporting the effectiveness of the learning process. However, the low motivation of students to learn in science lessons at the elementary school level is still a problem that needs more attention. It aims to see the influence of the Problem-Based Learning (PBL) model combined with digital comic media on the learning motivation of grade V elementary school students. This study applies a quantitative approach using a posttest-only non-equivalent control group design quasi-experimental design. The research sample was taken using non-probability sampling techniques and census sampling methods. The instrument, in the form of a learning motivation questionnaire, was tested for validity and distributed to two classes, namely the experimental class and the control class, consisting of 31 students in each class. Hypothesis testing using an Independent Samples T-test showed a significant difference between the two classes. The experimental class had a higher learning motivation than the control class. The results showed that students who participated in IPAS learning with the PBL model assisted by digital comics experienced a higher increase in learning motivation compared to students who participated in conventional learning. It can be concluded that the PBL model assisted by digital comics is effective in increasing the learning motivation of elementary school students in science subjects.

ABSTRAK

Motivasi belajar memiliki peranan penting dalam menunjang efektivitas proses pembelajaran. Namun, rendahnya motivasi belajar peserta didik pada pelajaran IPAS di tingkat sekolah dasar masih menjadi persoalan yang perlu mendapatkan perhatian lebih. Bertujuan untuk melihat pengaruh model Problem Based Learning (PBL) yang dikombinasikan dengan media komik digital terhadap motivasi belajar peserta didik kelas V sekolah dasar. Penelitian ini menerapkan pendekatan kuantitatif memakai desain quasi eksperimen tipe posttest-only non-equivalent control group design. Sampel penelitian diambil memakai teknik Non-Probability dengan teknik sampling jenuh. Instrumen yang dipakai berupa angket motivasi belajar teruji validitasnya dan dibagikan kepada dua kelas, yaitu kelas eksperimen dan kelas kontrol, terdiri dari 31 peserta didik tiap kelas. Uji hipotesis memakai Independent Samples T-test menyatakan adanya perbedaan signifikan antara kedua kelas. Kelas eksperimen mempunyai motivasi belajar yang lebih unggul dibanding kelas kontrol. Hasil penelitian menunjukkan bahwa peserta didik yang mengikuti pembelajaran IPAS dengan model PBL berbantuan komik digital mengalami peningkatan motivasi belajar yang lebih tinggi dibandingkan dengan peserta didik yang mengikuti pembelajaran konvensional. Dapat disimpulkan bahwa model PBL berbantuan komik digital efektif dalam meningkatkan motivasi belajar peserta didik sekolah dasar pada mata pelajaran IPAS.

Kata Kunci: IPAS; komik digital; motivasi belajar

INTRODUCTION

Basic education in Indonesia continues to evolve to accommodate students' needs as they face contemporary challenges. This transformation requires active, enjoyable, and meaningful learning to shape 21st-century competencies. In its implementation, learning is expected to integrate essential components, including objectives, materials, methods, and evaluation (Tomas & Prasetyo, 2020). These demands place educators in the role of learning strategy designers who are not only systematic but also innovative and responsive to the dynamics of student learning needs (Joyoleksono *et al*., 2022). Optimal learning outcomes cannot be separated from motivation, an internal driving force for students in the learning process (Fernando *et al*., 2024). Motivation in the learning process has a substantial influence on student learning behavior. This internal drive can direct, sustain, and intensify students' active participation in achieving academic goals (Lindra *et al*., 2025). In addition to reinforcing goal attainment, motivation is a key factor in fostering a resilient and persistent attitude toward learning (Hamdani *et al*., 2022).

However, findings in the field indicate that elementary school students' learning motivation remains low. This low motivation is evident in students' lack of discipline, diminished curiosity, and reduced engagement during the learning process (Sari *et al*., 2021). This reality is further highlighted in the context of IPAS (Natural and Social Sciences) learning, which is often considered difficult for students to understand in practice. Students' lack of interest in IPAS material is largely attributable to the way educators deliver it, which does not make optimal use of media that support visualization and active student involvement (Ferdiyansyah *et al*., 2025).

Numerous studies have examined learning motivation in science education. One effective approach is Problem-Based Learning (PBL), a learning model that uses real-world problems as a starting point to encourage exploration and knowledge development among students (Amri *et al*., 2025). This model has been shown to increase student motivation and active engagement across various levels of education, including elementary school (Aliah *et al*., 2023). In its implementation, PBL not only builds critical thinking and problem-solving skills but also creates a contextual and participatory learning environment (Kurniawati *et al*., 2023). The success of PBL implementation is further supported by studies emphasizing increased learning motivation through PBL (Jayanti *et al*., 2024).

On the other hand, research shows that applying learning models alone is insufficient without support from media appropriate to students' characteristics. The role of the media is crucial in conveying information visually and attractively, thereby making the learning process more effective (Intaniasari & Utami, 2022). One form of relevant media is digital comics, as they combine narrative text with informative images (Ardiawan, 2024). Through a visual approach, this media strengthens conceptual understanding and stimulates students' interest in learning (Isnaeni & Hidayah, 2020). Digital comics are considered superior to printed comics because they are more efficient, flexible, and highly attractive to elementary school students (Willya *et al*., 2023). The effectiveness of this medium in increasing learning motivation is also supported by research results showing a significant increase in IPAS learning motivation after the use of digital comics (Rusdiana & Febrianto, 2024; Wati & Putri, 2025). In addition, the use of interactive media is a strategic approach for increasing overall student interest and engagement (Mariati, 2024). This literature review indicates that although many studies have examined the PBL model and digital comics separately, very few have integrated them as an approach to science education. In fact, this integration is believed to create a more effective, contextual, and enjoyable learning environment. The synergy between the PBL model and digital comic media has the potential to serve as an alternative learning method that addresses existing problems.

The problems identified in IPAS learning are reflected in observational results from grade V students at an elementary school in Jakarta. Students exhibited signs of boredom, were unresponsive to teachers'

instructions, and were passive in their thinking and in completing text-based tasks. This indicates that the learning approach used has not optimized their learning potential. As a result, students participate less in class and have difficulty understanding scientific concepts related to everyday life. In addition, the use of irrelevant learning media undermines student motivation, ultimately reducing learning quality (Ernita *et al*., 2024). To address these challenges, it is necessary to implement adaptive learning strategies that are more closely aligned with students' characteristics. The aspect of motivation cannot be ignored, as it directly contributes to learning success, particularly at the elementary school level (Amfotis, 2022). Based on this, the hypotheses in this study are as follows: The Alternative Hypothesis (Ha) states that the digital comic-assisted PBL model affects the learning motivation of grade V IPAS students at a public elementary school in East Jakarta. Conversely, the Null Hypothesis (H0) states that there is no effect of the digital comic PBL model on IPAS students' learning motivation at a public elementary school in East Jakarta.

Based on the background described above, this study aims to examine the effect of using the PBL model, supported by digital comics, on the learning motivation of grade V students in IPAS subjects at elementary schools in East Jakarta. This study is expected to make a significant contribution both theoretically and practically. Theoretically, the results of this study are expected to enrich knowledge on how to increase learning motivation by integrating the PBL model with digital comic media at the elementary school level. Practically, this study is expected to broaden researchers' insights and experience in exploring innovative learning media for IPAS in elementary schools, particularly by combining digital learning media with approaches that align with students' characteristics.

LITERATURE REVIEW

Motivation to Study

Learning motivation is an internal or external drive that encourages individuals to initiate and complete learning activities toward a specific goal (Elvira *et al*., 2022; Filgona *et al*., 2020). Increasing learning motivation is important for supporting optimal learning outcomes and academic achievement (Arum & Hanif, 2025). Learning motivation is influenced by various factors, including dreams, environmental conditions, and elements of the learning process (Gulo *et al*., 2024). These factors are divided into intrinsic and extrinsic motivation. Intrinsic motivation arises from within the learner, such as personal interest and perception of the subject, whereas extrinsic motivation arises from the surrounding environment, such as teaching methods, parental involvement, and the learning environment (Djalia, 2022; Simanjuntak *et al*., 2024). According to Uno in his book *"Theory of Motivation and Its Measurement: Analysis in the Field of Education,"* the indicators of learning motivation consist of six indicators, including: 1) desire to succeed; 2) motivation to learn; 3) future expectations; 4) rewards; 5) interesting activities; and 6) a conducive learning environment.

Model *Problem-Based Learning* (PBL)

A model is a series of activities that combine rules, work procedures, and systematic thinking patterns to achieve objectives (Syamsuddin, 2021). Learning models serve as a reference for educators in designing learning activities to achieve the expected objectives (Mirdad, 2020). Problem-Based Learning (PBL) is a learning model designed to develop students' reasoning and problem-solving through a real-life, situation-based approach (Muhartini *et al*., 2023). This model encourages students' active involvement in the learning process, fostering independent knowledge acquisition and increasing their motivation to learn (Kusumaputra, 2024). In addition, PBL strengthens critical thinking, collaboration, and conceptual understanding through exploration of problems in everyday life (Chen, 2024). However, this model has

shortcomings, including students' lack of preparedness to solve problems independently and the incompatibility of the material with the PBL approach (Ramdhani, 2022).

Digital Comics

Learning media stimulate learners' minds, emotions, and attention through the systematic delivery of messages from the sender to the receiver (Nurrahman *et al*., 2022; Yusup *et al*., 2023). The presence of media that aligns with learners' interests and abilities can increase attention and motivation to learn (Magdalena *et al*., 2021). One popular medium is comics, which are illustrated stories with educational purposes that encourage curiosity, facilitate understanding of concepts, and foster creativity in learners (Angresia *et al*., 2022). Comics are classified into two types: print and digital. Digital comics are presented through electronic devices and have the advantage of fostering reading interest, improving literacy skills, and helping students understand complex material (Syahmi *et al*., 2022; Taira *et al*., 2024; Willya *et al*., 2023). In addition, digital comics are adaptable to various learning contexts (Pratama *et al*., 2023; Rahayu *et al*., 2022).

IPAS Learning in Elementary Schools

The current elementary school curriculum integrates the natural and social sciences into a single subject, Natural and Social Sciences (IPAS) (Naelendra *et al*., 2024). This integration aims to develop students' knowledge through observation of phenomena, data collection, and reflective presentation of results. In addition, IPAS contributes to strengthening multicultural education and understanding of the social, cultural, and historical conditions of Indonesia and the world (Zakarina *et al*., 2024).

Through IPAS learning, students are encouraged to understand the interrelationships between natural and social aspects in real-life contexts. This encourages them not only to understand concepts theoretically but also to apply them to solving everyday problems. IPAS learning enables students to engage with science through everyday life and cultivate curiosity about the phenomena around them (Benu & Supriatna, 2024; Ramadhani & Supriyadi, 2024). Through its thematic and contextual approach, IPAS fosters environmental awareness, critical thinking skills, and a holistic understanding of interdisciplinary issues. Therefore, the success of IPAS learning is greatly influenced by the teacher's ability to select methods and media that are aligned with the material's characteristics and students' needs.

METHODS

This study used a quantitative approach with a quasi-experimental design, specifically a Posttest-Only Nonequivalent Control Group Design involving two groups of students, namely the experimental class and the control class. The experimental group received treatment using a PBL learning model supported by digital comics, whereas the control group did not receive the same treatment. This research was conducted at an elementary school in Jakarta. The research activities took place from November 2024 to June 2025, encompassing proposal preparation, treatment implementation, data collection, and analysis of results. The subjects in this study were all 62 Grade V students at a public elementary school in East Jakarta, comprising two classes: VA and VB. Given that the population was less than 100, saturated sampling was used, in which the entire population served as the sample. In this case, class VA was designated as the experimental class and class VB as the control class. The independent variable in this study was the PBL learning model supported by digital comics, whereas the dependent variable was students' motivation in IPAS subjects.

Researchers used two main instruments, namely a learning motivation questionnaire and an observation sheet, to obtain the required data. The questionnaire was developed based on six indicators of learning motivation, as outlined by Uno (2023) in his book "Theory of motivation and its measurement: Analysis in the field of education," using a Likert scale with four response categories. This questionnaire comprises 19 statements addressing factors such as the desire to succeed, learning needs, future expectations, rewards, engaging activities, and a conducive learning environment. Before use, the questionnaire underwent validity and reliability tests to ensure measurement accuracy. The material used in the learning process was Chapter 8 of the Grade V IPAS textbook, titled "My Beloved Earth, My Poor Earth," which covers topics such as natural disasters, environmental change, and waste management. Learning in the experimental class was guided by the PBL model, which included orienting students to the problem, organizing learning, independent and group investigations, and compiling and presenting results. Digital comics were used as a teaching aid and were specifically designed to visualize the concepts in the material, thereby attracting attention and increasing student participation. After data collection, the next stage was data analysis to address the research questions and test the research hypotheses. The independent-samples t-test was used to compare learning motivation scores between the experimental and control groups. Before testing the hypotheses, the data were first analyzed through a normality test using Kolmogorov-Smirnov and a homogeneity test using Levene's Test. The analysis was conducted using statistical software to ensure the accuracy of data processing and the interpretation of results.

RESULTS AND DISCUSSION

Data Description

This study aims to determine the effect of the Problem-Based Learning (PBL) model, supported by digital comics, on the learning motivation of grade V elementary school students. Data were obtained using a learning motivation questionnaire with a 1-4 point Likert scale, consisting of 19 items and covering six indicators. Data collection was conducted once in the posttest session, with each experimental and control class consisting of 31 posttests. The initial descriptive results are presented in Figure 1, which depicts the distribution of students' average learning motivation scores.

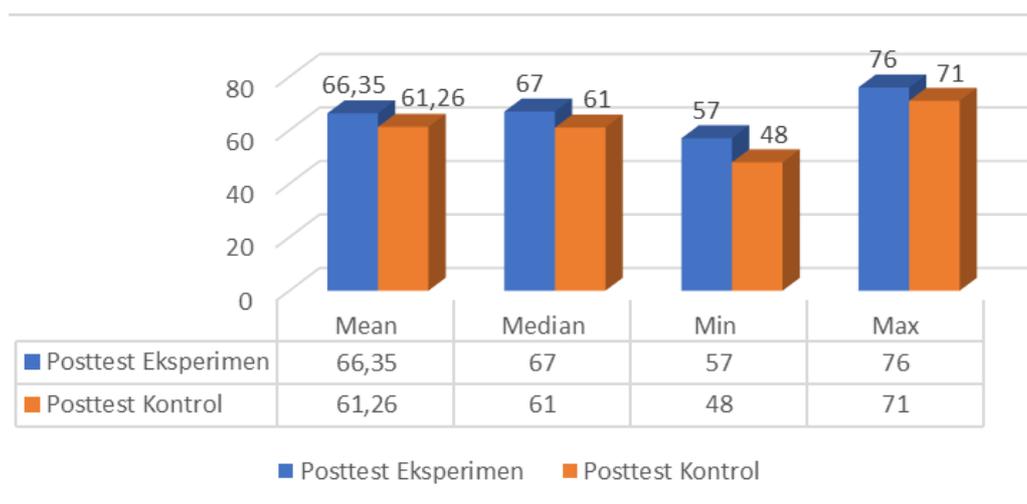|	Mean	Median	Min	Max
Posttest Eksperimen	66,35	67	57	76
Posttest Kontrol	61,26	61	48	71

Figure 1. Bar Chart Description of Learning Motivation Data
Source: Research 2025

Figure 1 shows that the average posttest score in the experimental class was 66.35, while that in the control class was 61.26. The median score for the experimental class was 67, and for the control class

was 61. The minimum and maximum scores in the experimental class were 57 and 76, respectively, while the control class had a minimum score of 48 and a maximum score of 71. These results show a difference in learning motivation between the two groups. A comparison based on learning motivation indicators is shown in **Figure 2** below.
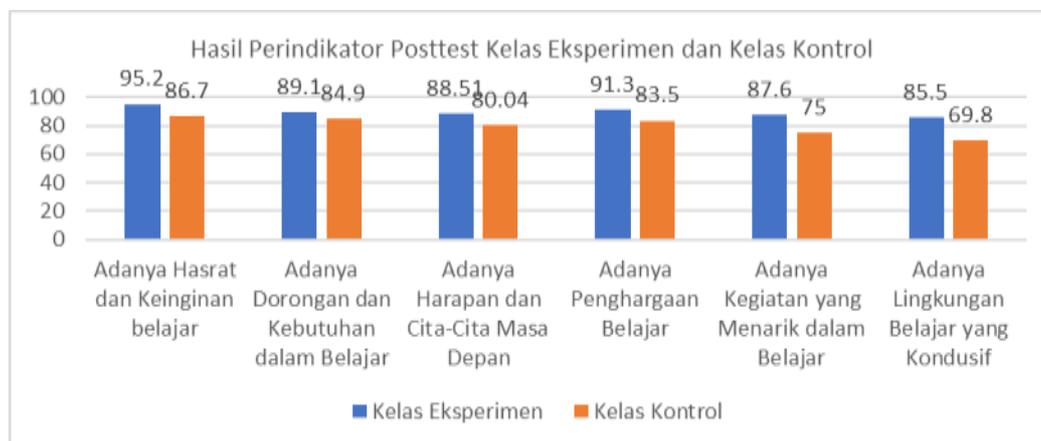

Figure 2. Bar Chart Comparing Learning Motivation in the Experimental Class and Control Class
Source: Research 2025

As shown in Figure 2, students' learning motivation in the experimental class was consistently higher than that of the control class across all indicators. The first indicator, namely motivation to learn, achieved 95.2% in the experimental class and 86.7% in the control class, making it the highest-scoring indicator in both groups. On the second indicator, namely the motivation to learn, the experimental class scored 89.1%, while the control class scored 84.9%, with a relatively small difference. Meanwhile, the third indicator, which reflects expectations for the future, achieved 88.5% in the experimental class and 80.0% in the control class. A more striking difference was observed in the fourth indicator, namely the giving of rewards, with the experimental class achieving 91.3% and the control class 83.5%. The gap widened further in the fifth indicator, namely a pleasant learning environment, with the experimental class achieving 87.6% and the control class achieving 75%. The final indicator, conducive learning environment, showed the largest difference, with 85.5% in the experimental class and 69.8% in the control class. Overall, the data in **Figure 2** show that all learning motivation indicators increased in the experimental class that received the PBL model treatment assisted by digital comics, compared with the control class that did not receive this treatment.

Normality Test

The normality test assesses whether the data are normally distributed. The Kolmogorov-Smirnov test was performed using SPSS version 26. The test results are presented in **Table 1**.

Table 1. Results of Normality Test Using Kolmogorov-Smirnov

Class	Statistics	df	Sig.
Posttest Experiment	.139	31	.131
Posttest Control	.156	31	.053

Source: Research 2025

The data in **Table 1** shows that the significance value for the experimental class is 0.131 and for the control class is 0.053. Since both values are > 0.05, the posttest data from both classes are declared to be normally distributed.

Homogeneity Test

Homogeneity of variance was tested to determine whether the variances between the experimental and control groups were equal. The testing process was conducted using SPSS version 26, employing Levene's test. The decision criteria in this test were based on the significance value (sig). If the sig value was greater than 0.05, the variance of the two groups was considered homogeneous. Conversely, if the sig value is less than 0.05, the variance is considered non-homogeneous. The results of the homogeneity test on the IPAS learning motivation data of grade V students are shown in **Table 2.**

Table 2. Homogeneity Test Results Using Levene's Test

		Levene Statistic	df1	df2	Sig.
	Test of Homogeneity of Variance				
Score	*Based on Mean*	2.519	1	60	.118
	Based on Median	2.374	1	60	.129
	Based on Median and with adjusted df	2.374	1	57.992	.129
	Based on the trimmed mean	2.484	1	60	.120

Source: Research 2025

As shown in **Table 2**, the significance value based on the mean is 0.118, whereas the median approach yields 0.129. All significance values are greater than 0.05, indicating that the variance between the two groups is not significantly different. Thus, the posttest data on learning motivation are declared homogeneous based on the results of Levene's Test.

Hypothesis Testing

After fulfilling the assumptions of normality and homogeneity, hypothesis testing was conducted using the Independent Samples t-test. This test was intended to determine whether there was a significant difference between the average learning motivation scores in the experimental class and the control class. The results of the analysis are presented in **Table 3.**

Table 3. T-Test Results Using Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	2.519	.118	-3.919	60	.000	-5.097	1.301	-7.698	-2.495
	Equal variances not assumed.			-3.919	59.215	.000	-5.097	1.301	-7.699	-2.495

Source: Research 2025

As shown in **Table 3**, the significance value (Sig. 2-tailed) of 0.000 is below the significance threshold of 0.05. This indicates a statistically significant difference between the experimental and control groups in learning motivation. The average score in the experimental class was higher than that in the control class by 5.10 points. Thus, these results provide evidence that the comic-assisted PBL model positively affects the learning motivation of grade V students.

Discussion

The study results indicate that the use of the Problem-Based Learning (PBL) model, supported by digital comics, significantly increases grade V students' learning motivation in IPAS subjects. This is reflected in the average posttest score for learning motivation in the experimental class, which is higher than that of the control class: 66.35 versus 61.26, a difference of 5.10 points. All indicators of learning motivation based on Uno's theory in his book *"Theory of Motivation and Its Measurement: Analysis in the Field of Education,"* ranging from the desire to succeed, learning drive, future expectations, rewards, interesting activities, to a conducive learning environment, showed higher achievements in the experimental class. The indicator with the highest difference was a conducive learning environment (sixth indicator), which reached 85.5% in the experimental class and only 69.8% in the control class. These findings indicate that a problem-based learning approach combined with digital comics successfully created a learning environment that was both internally and externally motivating (Elvira *et al*., 2022; Filgona *et al*., 2020).

Various previous studies reinforce the consistency of these findings. The PBL model has been shown to increase motivation and learning outcomes significantly (Joyoleksono *et al*., 2022). Support for the effectiveness of digital comics is also obtained from studies showing that Pixton-based digital comics are feasible and effective in increasing student motivation (Rusdiana & Febrianto, 2024). Several studies show that Pixton-assisted digital comics are effective in increasing student motivation and learning outcomes. The use of e-comics in learning has also been shown to significantly increase learning motivation (Santoso & Syafrida, 2023). These findings indicate that digital comics are not only visually appealing but also capable of encouraging active engagement and critical thinking among students. This research reinforces the study's findings that visual and interactive digital comic media can be an effective tool for improving students' learning motivation.

1552

These findings are also relevant to learning motivation theory, which posits that learning motivation is influenced by internal and external factors (Djalia, 2022; Simanjuntak *et al*., 2024). The application of the digital comic-based PBL model indirectly combines these two types of motivation. On the one hand, students are intrinsically motivated by the challenge of solving contextual and interesting problems. On the other hand, they also receive extrinsic stimuli in the form of visualizations from digital comics that make the material easier to understand and more enjoyable (Gulo *et al*., 2024). This aligns with the view that media that suit learners' interests and abilities can increase attention and learning motivation (Magdalena *et al*., 2021). Digital comics also have the advantage of stimulating curiosity, clarifying concepts, and improving visual literacy (Hadiapurwa *et al*., 2021; Syahmi *et al*., 2022; Pratama *et al*., 2023).

In the context of IPAS learning, this approach is highly relevant because IPAS integrates natural and social sciences with a contextual orientation and everyday life phenomena (Naelendra *et al*., 2024). The PBL model facilitates students' development of critical and reflective thinking skills regarding these phenomena. At the same time, digital comics present the material in an engaging and communicative manner, which aligns with the characteristics of elementary school students (Zakarina *et al*., 2024). Thus, integrating the two is not only effective in increasing learning motivation but also relevant. Although these findings are promising, the study has limitations in its experimental design: it uses only a posttest, providing no information on the development of learning motivation from pre- to post-treatment. Additionally, the study's scope was limited to a single elementary school in East Jakarta, thereby limiting the generalizability of the results. The instruments used were quantitative only, with no qualitative data obtained through interviews or direct observation of student learning behavior.

These findings have important implications for teachers and learning designers, particularly in science education. The combination of the PBL model with digital comics has been proven to stimulate student motivation to learn, cognitively, affectively, and conatively. Educators are expected to develop or use visual media appropriate to students' characteristics and the subject matter, and to apply active learning models that emphasize problem-solving. Further research is recommended to examine the long-term impact of this approach and to evaluate its effectiveness across other subjects and at different levels of education.

CONCLUSION

Based on the results of the study, it can be concluded that the application of the Problem-Based Learning (PBL) model assisted by digital comics has a positive effect on student motivation in IPAS learning in grade V elementary school. Classes that received treatment in the form of problem-based learning supported by digital comics showed a more significant increase in learning motivation indicators compared to classes that used a conventional approach. This improvement was seen in various aspects, such as the drive to achieve, expectations for the future, and active involvement in the learning process. Thus, the alternative hypothesis in this study was accepted, while the null hypothesis was rejected. This means that the digital comic-assisted PBL model has been proven to increase student learning motivation.

This finding also addresses the initial problem of low student participation and motivation in science learning, which was previously characterized by passive attitudes, lack of response to instructions, and difficulty in understanding abstract scientific concepts. Contextual learning strategies through PBL and visual media support, such as digital comics, have been proven to overcome these obstacles by creating a more engaging learning environment and encouraging students to think actively, engage personally, and understand the material more concretely. These results also show that an approach that is in line with the characteristics and interests of students is key to improving the effectiveness of the learning process, especially at the elementary education level.

This study opens up opportunities for further research on a broader scope. Therefore, further research is recommended to test the effectiveness of the comic-assisted PBL model not only in science subjects but

also in other subjects with different learning characteristics, to determine the extent to which this approach can improve learning motivation, critical thinking skills, and overall learning outcomes. In addition, research needs to be conducted at higher and lower levels of education to examine the adaptability and effectiveness of the digital comic-assisted PBL model in the context of cognitive development and the learning needs of students at various stages of education.

AUTHOR'S NOTE

The author declares that there are no conflicts of interest related to the publication of this article. The author confirms that the data and content of the article are free from plagiarism.

REFERENCES

Aliah, N. (2023). Penerapan model PBL untuk meningkatkan motivasi belajar IPA siswa kelas VB SDN 53 Makkaraeng Kabupaten Maros. *Jurnal Inovasi Pedagogik dan Teknologi*, *1*(1), 86-95.

Amfotis, E. Y. (2022). Peningkatan motivasi dan hasil belajar siswa dalam pembelajaran fisika materi manfaat gelombang elektromagnetik melalui penerapan metode problem solving pada siswa kelas XII IPA 1 SMA Negeri 1 Kefamenanu Tahun Pelajaran 2019/2020. *Journal of Innovation Research and Knowledge*, *2*(1), 185-198.

Amri, H., Rifaldi, R., & Malik, A. (2025). Model problem based learning dalam pembelajaran tematik terpadu di sekolah dasar. *Jurnal Saraweta*, *3*(1), 61-75.

Angresia, Y., Sesmiarni, Z., Charles, C., & Melani, M. (2022). Komik digital: Media pembelajaran pemrograman dasar di SMK Negeri 1 Ampek Nagari. *Intellect: Indonesian Journal of Learning and Technological Innovation*, *1*(2), 219-235.

Ardiawan, I. K. N. (2024). Pengembangan komik audio visual pendidikan Pancasila berorientasi kearifan lokal. *Cetta: Jurnal Ilmu Pendidikan*, *7*(4), 181-194.

Arum, D. S., & Hanif, M. M. (2025). Strategi pembelajaran dalam penguatan motivasi untuk meningkatkan prestasi akademik siswa. *JPGENUS: Jurnal Pendidikan Generasi Nusantara*, *3*(1), 37-47.

Benu, A. Y., & Supriatna, N. (2024). Akselarasi pendidikan karakter melalui integrasi kearifan lokal dalam pembelajaran IPAS. *Journal Education Innovation (JEI)*, *2*(3), 328-333.

Chen, R. (2024). Exploring the effectiveness of problem-based learning as a constructivist approach in enhancing critical thinking skills in high school classes. *Research and Advances in Education*, *3*(4), 26-32.

Djalia, S. L., (2022). Analisis faktor-faktor yang mempengaruhi rendahnya motivasi belajar siswa sekolah dasar. *Taksonomi: Jurnal Penelitian Pendidikan Dasar*, *2*(2), 129-135.

Elvira, N., Neviyarni, N., & Nirwana, H. (2022). Studi literatur: Motivasi belajar siswa dalam pembelajaran. *Eductum: Jurnal Literasi Pendidikan*, *1*(2), 350–350.

Ernita, Y. Y., Hetilaniar, H., & Nindiati, D. S. D. S. (2024). Faktor-faktor penyebab rendahnya motivasi belajar siswa dalam proses pembelajaran IPA kelas V di SD Negeri 3 Rantau Bayur. *EduTech: Jurnal Ilmu Pendidikan dan Ilmu Sosial*, *10*(2), 466-473.

Ferdiyansyah, A., Aufa, N. M., Rizqi, M., & Ramadhayanti, A. (2025). Bumi pedia sebagai media pembelajaran IPAS kelas 5 (studi kasus di SD Islam Sabilal Muhtadin Banjarmasin). *Jurnal Strategi Pembelajaran*, *2*(1), 1-10.

Fernando, Y., Andriani, P., & Syam, H. (2024). Pentingnya motivasi belajar dalam meningkatkan hasil belajar siswa. *Alfihris: Jurnal Inspirasi Pendidikan*, *2*(3), 61-68.

Filgona, J., Sakiyo, J., Gwany, D. M., & Okoronka, A. U. (2020). Motivation in learning. *Asian Journal of Education and Social Studies*, *10*(4), 16–37.

Gulo, D. J., Telaumbanua, W. A., Laoli, E. S., & Lase, A. (2024). Pengaruh kondisi ekonomi keluarga terhadap motivasi belajar mahasiswa program studi pendidikan Ekonomi FKIP Universitas Nias. *Akademik: Jurnal Mahasiswa Humanis*, *4*(3), 1092-1102.

1554

Hadiapurwa, A., Listiana, A., & Efendi, E. E. (2021). Digital flipbook as a learning media to improve visual literacy for 4th grade students at SDN Abdi Negara. *Jurnal Ilmu Informasi Perpustakaan dan Kearsipan, 10*(1), 8-13.

Hamdani, A. R., Dahlan, T., Indriani, R., & Karimah, A. A. (2021). Analisis pengaruh penggunaan model problem based learning terhadap motivasi belajar peserta didik di sekolah dasar. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang, 7*(2), 751-763.

Intaniasari, Y., & Utami, R. D. (2022). Menumbuhkan antusiasme belajar siswa sekolah dasar melalui media audio-visual dalam pembelajaran. *Buletin Literasi Budaya Sekolah*, *4*(1), 25-36.

Isnaeni, N., & Hildayah, D. (2020). Media pembelajaran dalam pembentukan interaksi belajar siswa. *Jurnal Syntax Transformation*, *1*(5), 148-156.

Jayanti, A., & Hasanah, D. (2024). Upaya meningkatkan motivasi belajar IPA melalui penerapan model PBL berbantuan live worksheet materi tata surya. *Prosiding Seminar Nasional Pendidikan Profesi Guru*, *3*(1), 2163-2174.

Joyoleksono, S. K., Raharjo, T. J., & Suratinah, S. (2022). Pengaruh model problem based learning dalam meningkatkan motivasi dan hasil belajar peserta didik kelas IV pada pembelajaran Matematika. *Jurnal Profesi Keguruan*, *8*(1), 85-96.

Kurniawati, R. T., Wardani, K., & Setiawan, I. C. (2023). Upaya meningkatkan motivasi belajar IPA dengan menggunakan model PBL berbantuan make a match pada kelas V SD Negeri Ngabean Yogyakarta. *Prosiding Seminar Nasional Pendidikan Profesi Guru*, *2*(1), 77-84.

Kusumaputra, A. (2024). Pengaruh model Problem Based Learning (PBL) terhadap motivasi belajar siswa pada pelajaran PAI kelas VII Sekolah Menengah Pertama Negeri 1 Mapat Tunggul. *EduSpirit: Jurnal Pendidikan Kolaboratif*, *1*(4), 237-244.

Lindra, A. T., Budiningsih, C. A., & Ismaniati, C. (2025). Development of Google Sites-based learning media to enhance student motivation. *Inovasi Kurikulum*, *22*(2), 933-950.

Magdalena, I., Nadya, R., Prahastiwi, W., Sutriyani, S., & Khoirunnisa, K. (2021). Analisis penggunaan jenis-jenis media pembelajaran untuk meningkatkan hasil belajar siswa di SD Negeri Bunder III. *Bintang*: *Jurnal Pendidikan dan Sains*, *3*(2), 377-386.

Mariati, S. L. (2024). The influence of interactive learning media on students' learning interest in Biology subjects in junior high schools. *International Journal of Curriculum Development, Teaching and Learning Innovation*, *2*(3), 127-135.

Mirdad, J. (2020). Model-model pembelajaran (empat rumpun model pembelajaran). *Jurnal Sakinah*, *2*(1), 14-23.

Muhartini, M., Mansur, A., & Bakar, A. (2023). Pembelajaran kontekstual dan pembelajaran problem based learning. *Lencana: Jurnal Inovasi Ilmu Pendidikan*, *1*(1), 66-77.

Naelendra, F. G., & Azizah, S. (2024). Upaya meningkatkan hasil belajar peserta didik menggunakan model problem based learning metode eksperimen IPAS SD. *Pengertian: Jurnal Pendidikan Indonesia (PJPI)*, *2*(3), 459-470.

Nurrahman, M. N., Meisyaroh, S., Sagala, V. S., & Marini, A. (2022). Keefektifan media pembelajaran dalam bentuk permainan papan pada pembelajaran IPA di sekolah dasar. *Jurnal Pendidikan Dasar dan Sosial Humaniora*, *2*(2), 437-446.

Pratama, M. I., Ratricia, P., Fitri, A., & Ikhwan, A. (2023). Pengembangan media pembelajaran berbasis implementasi user interface pada multimedia interaktif e-komik. *Jurnal Pendidikan, Sains dan Teknologi*, *1*(4), 353-356.

Rahayu, N. W. G. W., Suparta, I. N., & Parwati, N. N. (2022). Pengembangan media pembelajaran e-komik berorientasi problem based learning untuk meningkatkan pemahaman konsep aritmatika sosial. *Jurnal Teknologi Pembelajaran Indonesia*, *12*(1), 68-78.

Ramadhani, D. F., & Supriyadi, S. (2024). Menumbuhkan karakter rasa ingin tahu melalui model project based learning dalam pembelajaran ilmu pengetahuan alam dan sosial di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *9*(3), 399-413.

Ramdhani, N. P. (2022). The relationship of problem based learning with student learning motivation in mathematics subjects. *Social, Humanities, and Educational Studies (SHES): Conference Series*, *5*(5), 1-7.

Rusdiana, B., & Febrianto, A. (2024). Pengembangan media pembelajaran komik digital Wuza (Wujud Zat dan Perubahannya) berbasis pixton untuk meningkatkan motivasi belajar siswa kelas IV SD. *Journal of Education Research*, *5*(3), 3187-3198.

Santoso, M., & Syafrida, L. A. (2023). Pengembangan media pembelajaran e-comic dalam peningkatan literasi siswa SMP pada pembelajaran PPKn. *Jurnal Pendidikan: Riset dan Konseptual*, *7*(4), 664-670.

Sari, R. K., Chan, F., Hayati, D. K., Syaferi, A., & Sa'diah, H. (2020). Analisis faktor rendahnya motivasi belajar siswa dalam proses pembelajaran IPA di SD Negeri 80/I Rengas Condong Kecamatan Muara Bulian. *Al Jahiz: Journal of Biology Education Research*, *1*(2), 63-79.

Simanjuntak, A. M. S., Nasution, K., Angel, S. M., Sembiring, M. V. E. B., Ginting, A. D. B., Maharaja, S., ... & Rahayu, S. (2024). Analisis faktor-faktor penyebab rendahnya motivasi belajar siswa pada mata pelajaran bahasa Indonesia di Sekolah Dasar 106811 Bandar Setia. *Semantik: Jurnal Riset Ilmu Pendidikan, Bahasa dan Budaya*, *2*(3), 33-37.

Syahmi, F. A., Ulfa, S., & Susilaningsih, S. (2022). Pengembangan media pembelajaran komik digital berbasis smartphone untuk siswa sekolah dasar. *Jurnal Kajian Teknologi Pendidikan*, *5*(1), 81-90.

Syamsuddin, N. (2021). Model-model pengembangan media dan teknologi pembelajaran bahasa Arab. *Jurnal Pendidikan Refleksi*, *10*(3), 247-254.

Taira, H., Agustin, R. R., & Rochintaniawati, D. (2024). The development of digital comic as a learning media to enhance student's understanding and awareness on the topic of drugs. *Journal of Science Learning, 7*(2), 117-130.

Tomas, T., & Prasetyo, T. (2020). Pengaruh penggunaan model Problem Based Learning (PBL) terhadap motivasi belajar Matematika pada siswa kelas 4 SD. *Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar (JPPGuseda)*, *3*(1), 13-18.

Wati, S. C., & Putri, S. R. (2025). Media pembelajaran berbasis komik untuk meningkatkan motivasi belajar siswa. *Jurnal Ilmiah Penelitian Mahasiswa*, *3*(1), 310-316.

Willya, A. R., Luthfiyyah, A., Simbolon, P. C., & Marini, A. (2023). Peran media pembelajaran komik digital untuk menumbuhkan minat baca siswa di sekolah dasar. *Jurnal Pendidikan Dasar dan Sosial Humaniora*, *2*(3), 449-454.

Yusup, A. H., Azizah, A., Rejeki, E. S., Silviani, M., Mujahidin, E., & Hartono, R. (2023). Literature Review: Peran media pembelajaran berbasis augmented reality dalam media sosial. *Jurnal Pendidikan Indonesia: Teori, Penelitian, dan Inovasi*, *3*(5), 209-217.

Zakarina, U., Ramadya, A. D., Sudai, R., & Pattipeillohi, A. (2024). Integrasi mata pelajaran IPA dan IPS dalam kurikulum merdeka dalam upaya penguatan literasi sains dan sosial di sekolah dasar. *Damhil Education Journal*, *4*(1), 50-56.