

THE IMPACT OF INQUIRY-BASED LEARNING WITH COMIC MEDIA ON THE FOURTH-GRADE STUDENTS' LEARNING INTERESTS IN ELEMENTARY SCHOOL

DAMPAK PEMBELAJARAN BERBASIS INKUIRI DENGAN MEDIA KOMIK TERHADAP MINAT BELAJAR SISWA KELAS IV SD

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Abstract

Low interest often leads students to become easily bored, making it difficult for them to understand the material being taught or studied. This study aimed to examine the impact of implementing an inquiry-based learning model, assisted by comic media, on enhancing students' learning interests. The research employed a quasi-experimental design and was conducted at SDN 030 Tapango. The population and sample consisted of fourth-grade students (Class IVA and IVB), with 23 students in each class. Observation sheets, questionnaires, and documentation were used as research instruments. Data analysis techniques included descriptive statistics and inferential statistics, such as normality tests, homogeneity tests, and hypothesis testing. The findings revealed that the implementation of the inquiry learning model, supported by comic media, had a positive effect on increasing students' interest in learning social and natural studies.

Keywords: *Inquiry Model, Comic Media, Interest in Learning*

Abstrak

Minat yang rendah sering mengakibatkan siswa menjadi mudah bosan, sehingga sulit memahami materi yang diajarkan atau dipelajari. Penelitian ini bertujuan untuk mengkaji pengaruh penerapan model pembelajaran inkuiri berbantuan media komik terhadap peningkatan minat belajar siswa. Penelitian ini menggunakan desain quasi eksperimen dan dilaksanakan di SDN 030 Tapango. Populasi dan sampel penelitian adalah siswa kelas IV (IVA dan IVB) yang berjumlah 23 siswa pada setiap kelas. Instrumen penelitian yang digunakan adalah lembar observasi, angket, dan dokumentasi. Teknik analisis data yang digunakan adalah statistik deskriptif dan statistik inferensial, seperti uji normalitas, uji homogenitas, dan uji hipotesis. Hasil penelitian menunjukkan bahwa penerapan model pembelajaran inkuiri berbantuan media komik berpengaruh positif terhadap peningkatan minat belajar siswa pada mata pelajaran IPAS.

Kata Kunci: *Model Inkuiri, Media Komik, Minat Belajar*

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1. Introduction

The natural sciences, primarily environmental or known as natural and social sciences (also referred to as IPAS), is a combination of two fields of science in the independent learning curriculum in Indonesia. The broad scope of natural and social

science learning encompasses natural life and social conditions that can raise various questions about what happens in the surrounding nature and social environment. The objectives of natural and social sciences include developing students' interests, curiosity, and activity, as well as knowledge and skills related to understanding natural and social sciences (Sahabuddin, Liskawati, & Syamsiah, 2023).

Science content is an integral part of science learning, encompassing the scope of nature and its contents. Science is a collection of knowledge that contains numerous facts, concepts, principles, and discovery processes (Sahabuddin, 2024). The scope of science content is extensive and significant to understand. The goal is to equip students to deepen their insights, cultivate curiosity, develop process skills, and understand the environment as God's creation. However, students often perceive science lessons as boring and difficult to understand due to a lack of interest in the learning process. According to Utami, Kawuryan, Astuti, and Sugara (2024), students often become bored and struggle to learn science content, resulting in decreased academic outcomes. The cause of this is due to a lack of interest in learning among students. To increase and change students' interest in learning and their understanding of science content in natural and social sciences, instruction must be planned as effectively as possible to be engaging, easy to understand, and aligned with students' characteristics.

Interest is one of the key motivators that drive a person to pursue their goals. Interest is described as the state in which a person pays attention to certain things, accompanied by a willingness to deepen insight. Rafit, Bakar, Daud, Muqoyyanah, and Mohamat (2024) argue that students will pay more attention and deepen their understanding of what they are learning, making it easier for them to apply it in their daily lives. However, it is often difficult to grow or increase interest, one of which is increasing interest in learning. The role of teachers is crucial in planning learning that is creative, interesting, and engaging, making students more active in the learning process. Roebianto (2020) argued that the efforts teachers can plan for learning include models that are fun, interesting, effective, and relevant to the characteristics of students.

Based on previous research, several relevant problems exist in natural and social science learning, including monotonous and unengaging instruction and low student interest in the subject. As explained by Lampropoulos, Keramopoulos, Diamantaras, and Evangelidis (2023), the learning experience is perceived as saturated, boring, and lacking student engagement. Widyaningrum, Maryani, and Vehachart (2022) explained that the learning carried out was not engaging, so students were disinterested in learning, and the learning media used seemed monotonous. From those problems, teachers must make learning plans that are relevant to learning objectives and student needs to produce effective learning.

The problems were also experienced by fourth-grade students at SDN 030 Tapango, based on initial observations that fourth-grade students had low interest in IPAS learning. This fact was discovered after the researcher conducted an initial observation in the class, which used a conventional learning model and image-based media. The initial observation results revealed several factors contributing to the low interest in learning, including unengaging teaching methods due to limited student involvement in the learning process (teacher-centered), students focusing more on memorizing material rather than understanding its meaning, and students perceiving IPAS as one of the most challenging subjects to comprehend. The proposed solution to this problem is to implement a learning model that utilizes learning media to facilitate the delivery and comprehension of the material. The model will make students more interested and

actively involved, thereby improving learning to be more effective and creative (Triyanti, Murtono, & Utaminingsih, 2021).

A learning model is a series of learning material presentations deliberately designed as a guideline for teachers. The learning model that can be applied in classrooms for science content, including natural and social science, is the inquiry-based learning model. Inquiry is a learning model designed to involve students to the maximum, with learning carried out independently by students under the supervision of teachers. The Inquiry-based learning model can be implemented at every level of education, where teachers guide students to have a more engaging, meaningful learning experience, thereby making students active participants in the learning process.

Additionally, incorporating media into the inquiry learning model will benefit students. Media is defined as a tool for channeling information or messages. Learning media plays a crucial role in the learning process. Hence, they need to be prepared and presented in a way that is both informative and engaging to stimulate students' interest in learning, making the material they learn easier to understand. The public has long known comic media itself as a medium for conveying information (Utami, Kawuryan, Astuti, & Sugara, 2024). Comics are a type of visual media that contains sequential illustrations complemented by text and storylines, providing both entertainment and education. The presentation of the story in comics must be designed, used, and adjusted to appeal to the target audience who will enjoy the content of the story (Khotimah & Hidayat, 2022). Comics themselves play a role in the creative thinking process, so the learning activities carried out will help students open the door to their creativity (Murti, Gunarhadi, & Winarno, 2020). The goal is to have a positive impact on the development of its readers, such as learning comics that incorporate social science content with goals tailored to students' grade levels (Rahman & Anas, 2024).

Based on the literature review, research combining inquiry-based learning with comic media to enhance interest in natural and social sciences at the elementary level remains limited. Inquiry-based learning assisted by comic media represents a solution for overcoming the previously mentioned problems. Students will be involved in the learning process (Sastrawan, Margunayasa, & Bayu, 2021). Thus, students are given the freedom to explore the subject matter and support in-depth understanding through illustrations and educational stories presented in the comics. Furthermore, students will be invited to explore and discover a range of diverse concepts through captivating and engaging illustrations and narratives (Reid & Moses, 2020). Based on the above explanation, researchers are interested in investigating the impact of inquiry-based learning with comic media on the learning interest of fourth-grade elementary students, specifically in natural and social sciences subjects, at SDN 030 Tapango.

2. Research Method

This study employs a quantitative approach, utilizing a quasi-experimental design to investigate the impact of implementing a comic-assisted inquiry learning model on increasing student interest in learning. The variables used are the independent variable (X), which is the comic-assisted inquiry learning model, and the dependent variable (Y), which is student interest in learning (Taherdoost, 2016). The research design is a non-equivalent control group design, which involves two classes (groups): a control class (comparison group) and an experimental class (Khaillasiwi, Purwanto, & Meiliasari, 2020). The control class implements a conventional learning model supported by visual

media, while the experimental class employs an inquiry-based learning model supported by comic media. The research sample comprises the entire population of fourth-grade students, which includes two classes at SDN 030 Tapango, totaling 46 students. Each class (A and B) has the same number of students, which is 23 students.

The instruments used in this study include observation sheets, questionnaires, and documentation. The data collected during the implementation of science learning in the classroom using the Inquiry learning model, assisted by comic media, will be recorded using an observation sheet. The research steps used include: (1) learning begins by dividing students into four groups, (2) each group gets one comic as learning media, (3) the teacher gives a triggering question about muscle force and friction force, (4) some students come to the front of the class to read the comic story, (5) students give responses in the form of questions based on the comic story, (6) students make initial hypotheses with teacher guidance, (7) students analyze and collect the necessary data (in the student worksheet group), (8) each group conducts trial/practice of muscle force and friction force, and (9) each group makes a conclusion and presents it in front of the class.

Additionally, a questionnaire is used as an instrument at the beginning and end of learning or treatment in the Inquiry learning model assisted by comic media (pre-questionnaire and post-questionnaire). The questionnaire presented contains 15 closed statements, which means that students, as respondents, must choose one of the four criteria (answers) given by providing a check. The indicators include, among others, feelings of pleasure, student interest, student attention, and involvement. The documentation is an instrument that aims to collect data during research conducted in two classes.

Furthermore, the collected data were statistically analyzed using the System Statistical Package for Social Sciences (SPSS) 22.0. The statistical analysis conducted was descriptive, utilizing statistics to describe the Y variable, specifically the students' learning interest before and after the treatment in the experimental class and the control class, which did not receive the treatment. The data were collected through questionnaires, specifically the pre-questionnaire and post-questionnaire. Then, inferential statistics were carried out, which included normality tests, homogeneity tests, and hypothesis tests. Inferential statistics are carried out, which include normality tests to determine whether the data is normally distributed, homogeneity tests to determine whether the two datasets are homogeneous, and hypothesis testing to determine whether there is an influence on the data being studied.

Table 1. Categories of Interest

No.	Interval	Category
1	$85 < x \leq 100$	Very interested
2	$70 < x \leq 85$	Interested
3	$55 < x \leq 70$	Quite Interested
4	$40 < x \leq 55$	Less interested

Source: Arikonto (Akib, Maulana, & Aghil, 2021)

Table 1 presents the interval and category of student learning interests, which serve as a benchmark in determining the score of the learning interest questionnaire obtained by students.

3. Results and Discussion

3.1 Results

3.1.1 Overview of Inquiry Learning Model Assisted by Comic Media

The results of the observation of science and social learning implementation are presented in Table 2.

Table 2. Implementation of the Inquiry Learning Model Assisted by Comic Media

No.	Aspects observed	Valuation	
		Meeting 1	Meeting 2
1	Orientation	3	3
2	Formulating the problem	1	2
3	Propose a hypothesis	2	2
4	Collect data	1	3
5	Testing hypotheses	2	3
6	Formulating conclusions	1	2
	Entire	10	15
	Total Percentage	52%	83%
	Category	Quite Good	Good

Source: Observation sheet

In Table 2, data from the first meeting indicated that the learning was categorized as quite good, with a total percentage of 52%. Meanwhile, in the second meeting, the implementation of learning was carried out better than in the first meeting, falling into the good category, and the total percentage obtained was 83%. This finding showed that the learning carried out at meeting 2 is gradually increasing.

In the initial phase, the teacher divided the students into 4 groups, and each group got one comic book related to muscle force and friction force. At the beginning of the lesson, the teacher introduced the concepts of muscle force and friction force to the students using comic books related to the material. Some students read the comic story aloud in front of the class, while others listen attentively.

In the second phase, the teacher encouraged students to ask questions based on the comics they had read in class. The teacher assisted the students in formulating the questions. In the third phase, other students answered the questions posed by their friends, according to their understanding, and were accompanied by the teacher. In the fourth phase, the teacher gave each group a worksheet with statements and questions that would lead to the next phases. During this phase, students answered questions on the student worksheet, analyzing the provided images. The fifth phase involved students answering the questions in the table. In the sixth phase, students answered conclusion questions to assess their understanding of the material. After all groups had finished working on the student worksheet, the students presented their conclusions to the class. In the implementation of this learning, students gain important insights from the material studied, as each phase provides opportunities for them to be actively involved in learning activities.

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-questionnaire of the experimental class	23	40.00	67.00	55.39	8.195
Control class pre-questionnaire	23	40.00	67.00	53.09	7.615
Post-questionnaire of the experimental class	23	60.00	87.00	74.52	7.965
Post-questionnaire control class	23	47.00	80.00	63.00	8.000
Valid N (listwise)	23				

Source: IBM SPSS Statistics 22

Descriptive statistical data showed differences in results between pre-test and post-test questionnaires in the two classes studied. On July 29 and 31, pre-test questionnaires were administered in both classes. Meanwhile, On July 30 and August 1, post-test questionnaires were administered again in both classes.

The results of the pre-test questionnaires obtained show that the data in both classes were not significantly different based on the standard deviation values obtained, which are 8.195 and 7.615, where the actual values are far from zero (0). The experimental class obtained a minimum score of 40.00, a maximum score of 67.00, and an average (mean) score of 55.39. In the control class, the minimum and maximum scores were the same as in the experimental class, while the average score was 53.09. This finding meant that the pre-test questionnaire results of the two classes had very little difference.

The post-test questionnaire results showed that the data for both classes did not vary significantly based on the standard deviation values obtained, which were 7.965 and 8.000, respectively, both of which were far from zero (0). The experimental class showed a minimum score of 60.00, a maximum score of 87.00, and an average score of 74.52. In the control class, the minimum score was 47.00, the maximum score was 80.00, and the average score was 63.00. From this data, it was concluded that the post-test questionnaire results obtained from both classes after the intervention showed a difference.

3.1.2 Overview of Students' Learning Interests

Giving questionnaires before and after the learning process obtained some data. The data from the experimental class pre-questionnaire results showed that the moderately interested category had 11 students, and the less interested category had 12 students. Meanwhile, the data from the control class pre-questionnaire results showed that the moderately interested category had 8 students, and the less interested category had 15 students. The pre-test questionnaire results from the experimental class and the control class are presented in a bar chart in Figure 1.

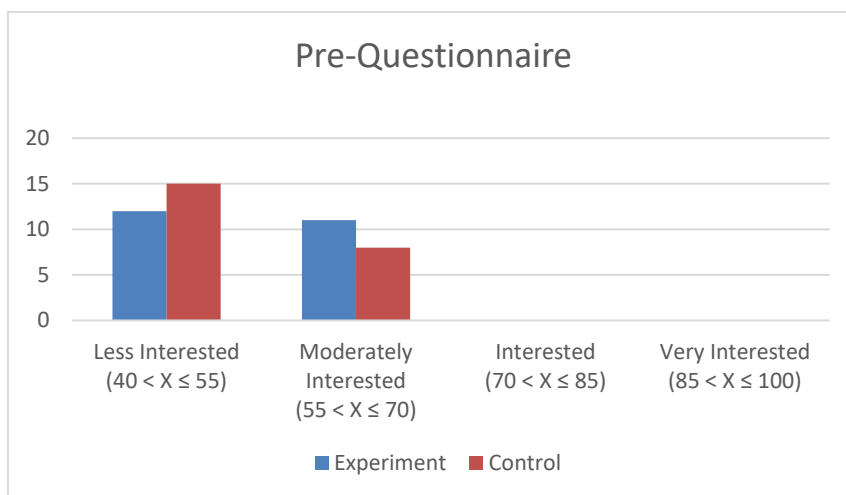


Figure 1. Pre-Questionnaire Results

Figure 1 shows pre-questionnaire results. The data from the experimental class post-questionnaire results showed that the "very interested" category had 7 students, the "interested" category had 13 students, and the "moderately interested" category had 3 students. Meanwhile, the data from the post-questionnaire results of the control class, including the interest category, consisted of 3 students in the "interested" category, 16 students in the "moderately interested" category, and 4 students in the "less interested" category. The post-test questionnaire results from the experimental class and the control class are presented in a bar chart in Figure 2.

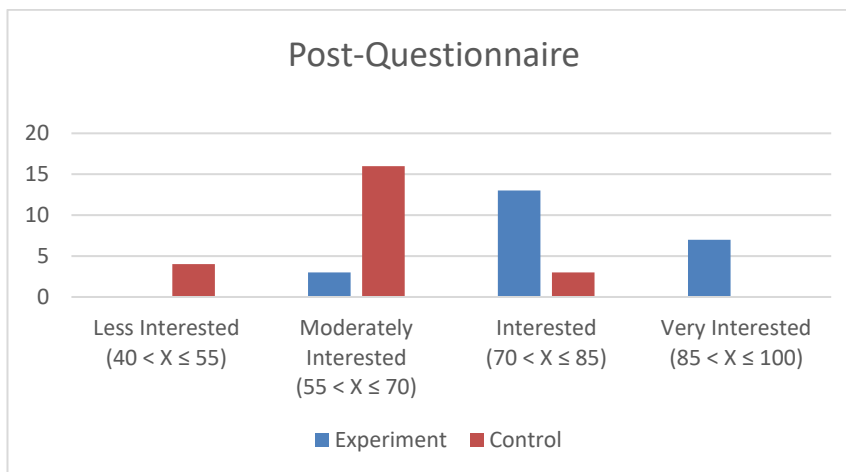


Figure 2. Post-Questionnaire Results

The following are the results of the average scores obtained by the experimental and control classes in the form of bar charts.

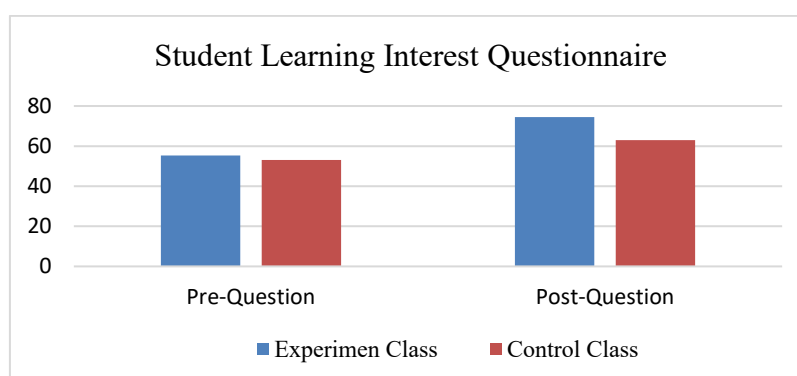


Figure 3. Results of the Student Learning Interest Questionnaire

The data in Figure 3 were obtained using IBM SPSS Statistics 22. Results of the pre-questionnaire on student learning interests showed that the average value for the experimental class was higher than that for the control class ($55.39 > 53.08$). The post-questionnaire results show an average value of 76.82, which is higher than the average value of the control class (57.69). It was concluded that there was a difference in the interest data obtained from the experimental and control classes.

Student learning interest includes 4 indicators: (1) feelings of pleasure, namely enjoying learning a material, which includes 4 statements (positive and negative); (2) student interest, namely being interested in the subject matter, which includes 4 statements (positive and negative); (3) student attention, namely activities to focus and observe material, which includes 4 statements (positive and negative); and (4) involvement, namely participating in learning activities which include 3 statements (positive and negative). The questionnaire on students' interest in learning consists of four statements of choice, namely 'less interested', 'moderately interested', 'interested', and 'very interested'. Students select the option that best reflects their current situation.

3.1.3 Normality Test and Homogeneity Test

The need for normality testing arises from the necessity of determining whether or not the data distribution is normal. The significance level used in inferential statistical testing is typically 5% or 0.05. The results obtained using the Shapiro-Wilk test with SPSS are presented in Table 4.

Table 4. Normality Test

Data	Probability Value	Information
Experimental Class Pre-questionnaire	0.061	$0.061 > 0.05 = \text{Normal}$
Post-questionnaire Experimental Class	0.078	$0.078 > 0.05 = \text{Normal}$
Control Class Pre-questionnaire	0.071	$0.071 > 0.05 = \text{Normal}$
Post-questionnaire Control Class	0.068	$0.068 > 0.05 = \text{Normal}$

Source: IBM SPSS Statistics 22

Paying attention to the data in Table 4, the normality test indicates that the data are distributed normally. The results of the data homogeneity test, conducted using IBM SPSS Statistics 22, are as follows.

Table 5. Homogeneity Test

Data	Probability Value	Information
Pre-questionnaire of experimental class and control class	0.530	$0.530 > 0.05$ = homogeneous
Post-questionnaire of experimental class and control class	0.855	$0.855 > 0.05$ = homogeneous

Source: IBM SPSS Statistics 22

In this study, a homogeneity test was conducted to determine whether the data collected from the two classes were homogeneous. The test concluded that the data from both classes showed homogeneity.

3.1.4 Hypothesis Test

The next step to determine whether there was a difference in learning interest between the experimental class and the control class before and after the treatment was to test the hypothesis using an independent t-test. The test results are presented in Table 6 as follows.

Table 6. Hypothesis Test

Data	T	Df	Sig (2-tail)	Information
Pre-questionnaire of experimental class and control class	0.988	44	0.329	$0.329 > 0.05$ = There is no difference in the increase in students' interest in learning
Post-questionnaire of experimental class and control class	4.895	44	0.000	$0.000 < 0.05$ = There is a difference in the increase in students' interest in learning

Source: IBM SPSS Statistics 22

Based on the data in Table 6, it can be seen that the significance value (Sig. 2-tailed) of 0.329 in the pre-questionnaire results between the experimental and control classes is greater than 0.05. This result indicates that there is no significant difference in students' interest in learning before the treatment. In other words, both classes started with a relatively equal level of interest in learning. However, the post-questionnaire results show a significance value of 0.000, which is less than 0.05. This result indicates a significant difference between the experimental and control classes after treatment. Therefore, it can be concluded that H_1 is accepted, meaning that the Inquiry learning model, assisted by comic media, influences an increase in students' interest in learning science in grade IV at SDN 030 Tapango.

3.2 Discussion

Natural sciences learning, particularly environmental education, encompasses various aspects aimed at developing students' understanding of the natural world and social life. As demonstrated by Andari, Kusumaningtyas, and Rumgayatri (2023), environmental science education is primarily implemented to enhance understanding of the world and surrounding environment, providing practical applications for daily activities. The learning activities focused on science content to help students understand the benefits of friction and muscular force in everyday life. The natural sciences, particularly environmental learning activities, encompass a wide range of aspects and aim to develop students' understanding of the natural world and human social life. One of them is understanding the surrounding environment, where students can provide examples, solve problems, and comprehend the benefits of friction and muscle force, as well as their relationship in daily activities. When students successfully understand what they are learning, the learning process is considered effective (Ulandari & Sujana, 2022).

This research employed the inquiry learning model, supplemented by comic media, in a Grade IV science class. The material discussed in Chapter III was muscle force and friction force, which were covered in four meetings held in both classes (Jafarov, Imrani, & Aliyev, 2023). The research implementation began on June 29 and concluded on August 1. During the first and second meetings in the experimental class, materials on muscular force and friction force were taught using the inquiry learning model, assisted by comic media. This class began with a pre-questionnaire, followed by treatment implementation, and concluded with a post-questionnaire. In the control class, serving as a comparison group, the third and fourth meetings covered similar material to the experimental class but employed different learning models and media. This class also began with a pre-questionnaire, received no special treatment, and ended with a post-questionnaire.

Comic media can be created manually or by utilizing technology appropriate for the current educational era. The rapid advancement of technology today enables the creation of more innovative, engaging comic media that enhances the learning experience. Furthermore, by leveraging continuously developing technology, material delivery becomes more engaging and innovative, potentially increasing students' interest in learning (Dewi, Ganing, & Kristiantari, 2022; Sahabuddin & Makkasau, 2024).



Figure 4. Comic Media

Figure 4 is an example of the comic and story media section about muscle and friction forces used during the learning process in the classroom. The comic tells the story of Dani, Tia, and Bu Ani through text and visuals after the school bell rings.



Figure 5. Students Learn to Use Comic Media

In Figure 5, it can be observed that the involvement and enthusiasm of students increased when using comic media. The comics presented the subject matter through engaging visuals, educational narratives, and contextual storytelling, all of which made it easier for students to absorb and understand the learning material. This media directly supports the idea that visual and narrative-based media can spark curiosity and sustain interest.

Interest in learning is a motivational force within students that drives them to engage in learning activities willingly, without external pressure. When students are genuinely interested, they become actively involved, autonomous, and enjoy the learning process. As highlighted by Haris, Akmaluddin, and Putra (2024), students who possess strong learning interests are more likely to persist, explore topics more deeply, and strive to improve their knowledge and skills. It enhances their self-confidence and has a positive impact on their academic performance. The students' learning interest includes indicators of feeling happy, which comprise 4 statements (positive and negative). Student interest consists of four statements (positive and negative), student attention includes four statements (positive and negative), and engagement includes three statements (positive and negative). The learning interest questionnaire consisted of 15 statements.

Moreover, science is often viewed as abstract and challenging, particularly at the elementary level. By incorporating comic media within the inquiry learning model, students are provided with a learning environment that is both visually stimulating and cognitively enriching. The comics used contain pictures, simple storylines, and, of course, material that follows muscle style and friction style, which can attract students' attention and create a desire to learn within them without coercion. This result is further supported by the post-questionnaire results, which show a significant increase in the experimental group's average scores and categorical improvement (more students falling into the "interested" and "very interested" categories). This study suggests that the synergy between the inquiry learning approach and comic media promotes not only conceptual understanding but also affective engagement, which is essential for long-term academic success.

Therefore, it can be concluded that integrating educational comics into inquiry-based science learning has a positive impact on both students' motivation and interest. This finding aligns with previous studies, which have found that the use of comics increases student motivation, enjoyment, and participation in science classes (Akbar, Satibi, & Hasanah, 2023; Nafala, 2022; Wulan, Hasibuan, Efendi, & Marta, 2024).

4. Conclusion

Based on the results and discussion, the researcher can conclude that the application of the Inquiry learning model, assisted by comic media, in the IPAS learning of the fourth-grade students at SDN 030 Tapango, Polewali Mandar Regency, is evident from the learning observation sheet, which shows the results in the 'good' category. The application of the Inquiry learning model, assisted by comic media, has a positive impact on student interest in learning, as evidenced by the increase in the average student interest level, which was originally categorized as 'less interested' and 'quite interested' to become 'interested' and 'very interested'. Furthermore, the application of the Inquiry learning model, assisted by comic media, has increased student interest in learning IPAS among fourth-grade students at SDN 030 Tapango.

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