



Development of Classpoint Assisted Food Chain Learning Media to Improve Student Learning Outcomes in Elementary Schools

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Abstract

This study aims to develop interactive learning media using the Classpoint application to improve the learning outcomes of fifth-graders in science lessons in elementary schools. The study employed a research and development (R&D) method with a 4D model. The resulting product is a media that can be used by both teachers and students, which contains various features, ranging from material to quizzes to train students' knowledge abilities. This media is run by teachers using laptops/computers and students can use it using their mobile phones without the need to download an application. The research design used is a non-experimental one-group pretest-posttest design by comparing learning outcomes before (pretest) and after using the Classpoint-assisted interactive learning media (posttest). The Classpoint-assisted interactive learning media has been validated by media experts with a percentage of 87.5%, material experts with 97.2%, and language experts with 95%, with an overall average of 91.5% and a category of "very feasible". From the results of the N-Gain calculation, a significant increase was obtained with an average N-Gain of 0.67 which is in the "moderate" category. Thus, it can be concluded that the Classpoint-assisted interactive learning media is effective in improving learning outcomes, especially for the Food Chain material for fifth-graders in elementary schools.

Keywords: *interactive learning media, classpoint, science learning, elementary school, learning outcomes.*

INTRODUCTION

Education has a very important role in shaping quality human beings. Education can help develop intelligence, critical mindset, positive attitudes, and skills needed for life. According to (Hidayat & Nasution, 2016), education has a very important role in improving the quality of human life. Education can help humans become better, both intellectually, emotionally, and spiritually. According to Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 concerning the National Education System, education is an effort that is carried out consciously and planned to create a learning atmosphere that allows students to actively develop their potential, so that they have spiritual intelligence, self-control, personality, noble character, and skills needed for themselves, society, nation, and state. Therefore, education can provide benefits for human life, one of which is through learning activities.

The learning process demanded in the 21st century today is a student-centered learning process with four skill concepts or 4C concepts consisting of critical thinking, creativity, collaboration, and communication (Erdoğan Vacide, 2019). Today's 21st century learning focuses on a student-centered approach, which means centered on student development. It emphasizes student engagement, collaboration, and responsibility, aiming to create a learning environment that is supportive, challenging, and aligned with students' needs and goals. In his research, (Khoury, 2022) argues that this approach has a positive impact on student motivation, active engagement, and improved learning outcomes.

The food chain is one of the Natural Science subjects taught in grade V of elementary school that explains the process of eating and eating a part of living things. In the food chain process, there are living components involved, namely, consumers, producers, and decomposers. This material is taught in grade V of elementary school where children are usually between the ages of 10 and 11. According to Piaget in (Basri, 2018), children aged 7-11 years enter the concrete operational stage. At this stage, they are already able to think logically, but their ability is still limited to real objects and cannot think abstractly. Therefore, effective learning media for children at this stage is concrete or tangible media.

The results of my observations were found at one of the elementary schools in South Jakarta, namely SDN Kebon Baru 09 when carrying out the Kampus Mengajar Angkatan 5. The author found that teachers have not maximized the use of learning media as a means that can support the learning process that takes place in the classroom, even though the school in question is located in a big city and the availability of power sources, computers/laptops, and infocus is sufficient. The author also found situations that occurred during the learning process, including: (1) students had difficulty understanding the content delivered by the teacher, (2) most students learned passively while other students were busy with activities such as chatting, (3) students were unable to communicate the ideas they had in mind when the teacher asked questions, (4) few students were willing to ask questions when the teacher gave the child time to ask and answer, (5) lack of student interest in the continuous learning process. Researchers found in schools that the learning method was dominated by lectures and assignments, with limited media to thematic books with minimal pictures. This is feared to make it difficult for students who enter the concrete operational stage to understand the material. Therefore, a concrete medium is needed in the learning of Natural Sciences (IPA) to help students describe and practice food chain materials more effectively and improve their understanding.

The results of previous research on students' difficulties in science material about the food chain carried out (M. I. Tarigan, 2021) prove that (1). The learning results of grade IV students of SD Negeri 104253 Negara Brigin in explaining about the food chain in the rice field and forest ecosystem in the science subject showed that their ability was still low, namely with a score of 61.67 which was classified as underprivileged. (2). The ability of grade IV students of SD Negeri 104253 Negara Brigin in understanding food chain materials in rice field and forest ecosystems in science subjects is still low, due to several factors, namely the learning carried out by teachers is not optimal, students lack understanding of the concept of food chain, students are less interested in science subjects, and students do not repeat science lessons at home.

The results of the initial observations that the researcher found showed that the learning conditions that occurred did not reflect 21st century learning. In the learning process at school, teachers generally hope that their students can achieve optimal learning outcomes. However, these expectations are often not achieved. Lack of innovation in learning support media can hinder the learning process. This is because teachers often only rely on books as teaching materials without developing more innovative and interactive learning media (Harsiwi & Arini, 2020; D. Tarigan & Siagian, 2015; Yanto Doni Tri Putra, 2019). This statement is in line with the opinion (Hanifah & Syaiba, 2020) that education has an important role in responding to the era of society 5.0. This era is marked by disruptions that emerge from the era of the industrial revolution 4.0. To balance this disruption, education must prioritize innovation through learning that uses interactive media. Interactive learning can be interpreted as a teaching method that encourages students to be actively involved in the learning process. Active learning creates meaningful learning experiences for students and encourages them to think critically and creatively. Learning media is everything that can be used to channel messages from teachers to students so that they can stimulate students' thoughts, feelings, attention, and interest in the teaching and learning process. Teachers are required to have an understanding and ICT skills in order to create various interesting and interactive learning media. ICT skills can make it easier for teachers to create learning media, such as: making learning videos from Kinemaster, Filmora, and so on. And also make interactive learning media from Microsoft PowerPoint integrated with Classpoint (Ritonga et al., 2023).

One of the learning media that can be used to support learning innovation is the Inkoe Classpoint application or commonly called Classpoint. Classpoint can make teaching and learning activities more interactive and fun. One of the supporting factors for learning activities is students' enthusiasm in understanding the material (Ali et al., 2022). With Classpoint teachers can ask questions on presentation slides with various types of answers. Interestingly, student answers can be saved in the application. Not only can questions about the subject matter be conveyed, but reflections and ice breaking can also be done on the application (Wuri Elawati, 2022). Based on several previous studies conducted by (Tampubolon, 2022), the use of Classpoint learning media can improve student learning outcomes in science subject theme 9 in class IV SDN 060852 Madong Lubis. The research results showed that the average value of student learning outcomes in the experimental group that used Classpoint learning media was higher than the control group that did not use Classpoint learning media. Then research conducted by (Kurniawan & Ika Yatri, 2022) related to the use of Interactive Quizzes Using the Classpoint Application on Indahnya Keragaman di Negeriku for Class IV Elementary School Students which proves that interactive quizzes are suitable for use by teachers and students as a learning evaluation medium.

Based on the background that has been explained above, the researcher did not find a study on the use of Classpoint-assisted learning media in class V food chain materials, for that the researcher is interested in conducting research on the development of Classpoint-assisted media to test the application to be used in the process of teaching and learning activities. Because currently the Classpoint application is being promoted in trainings for school teachers. Classpoint is the right solution for teachers in Indonesia who want to create effective and fun learning. By using Classpoint, teachers can improve the quality of learning in the classroom and help students reach their full potential. Therefore, the title of this study is " Development of Classpoint Assisted Food Chain Learning Media to Improve Student Learning Outcomes in Elementary Schools".

RESEARCH METHODOLOGY

In this study, the researcher uses a mixed research method, namely qualitative and quantitative, using a research and development (R&D) approach. The researcher used a Pre-Experimental design in the form of One-Group Pretest-Posttest Design. The design in this study was carried out by measuring one group of participants before and after being given certain treatment (Sugiyono, 2016:75). The following is an overview of the design in this study:

Table 1. One Group Pretest-posttest Design

<i>One Group</i>	O_1	X	O_2
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Information:

O_1 = Pretest before using Classpoint-Assisted Interactive Learning Media

X = Treat using Classpoint-Assisted Interactive Learning Media

O_2 = Posttest before using Classpoint Assisted Interactive Learning Media

Meanwhile, the research model used in this study refers to the 4D development model adapted by Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974 (dalam Aulia et al., 2021). This 4D model consists of 4 stages, namely Define, Design, Develop, and Disseminate.

The object of this research was carried out at SDN Kebon Baru 09 South Jakarta. The selection of these participants is based on the subject matter used in the research. The following are the participants and data sources used in this study.

Table 2. Research Data Sources

Research Methodology	Participants		
	Expert	Teacher	Student
Data Collection Techniques	Questionnaire	Questionnaire	Questionnaire and assessment of learning outcomes
Data Analysis Techniques	Descriptive Statistics	Descriptive Statistics	Uji T-test
	3 people	1 people	29 people

This study uses a questionnaire or questionnaire that is used to get validation from material experts, linguists and media experts, as well as to collect responses from teachers and 5th grade elementary school students regarding the learning media that has been tested. By conducting assessments by media experts, material experts, and linguists to get feedback in the form of suggestions and inputs for the improvement of the developed learning media, it is then revised according to expert advice. Expert assessments are expected to make learning media more precise, effective, tested, and have high techniques.

RESULTS AND DISCUSSION

Result

Define Stage

Concept analysis is carried out to determine the material to be used in the learning media. The concept taken is the science and technology phase c material, Chapter 2: Harmony in the Ecosystem Topic A: Eating and eating, food chain material.

Design Stage

In the process of designing media, especially the media that the researcher develops, the Canva application is needed to realize the storyboard that has previously been created, add some interesting visualizations, and add material that has been analyzed in the previous stage. At this stage, you will get pages on the media with elements that have been selected in the Canva application, namely several components such as text, images, interactive icons, sounds, videos, quizzes, animations and others.

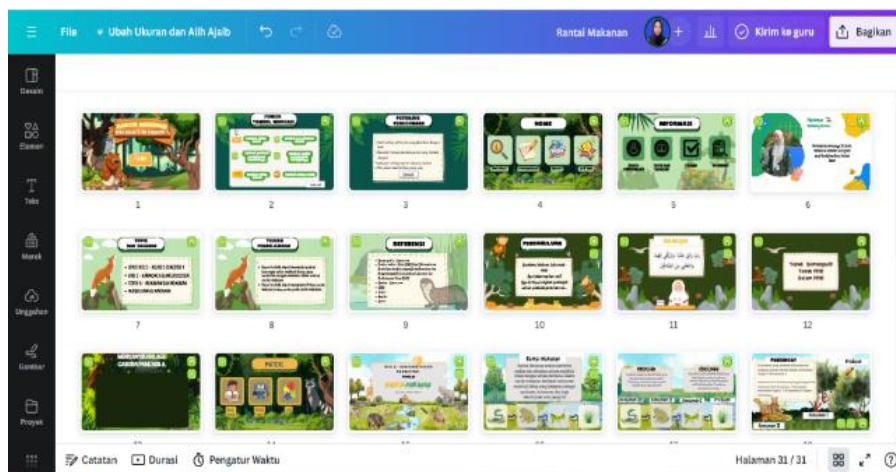


Figure 1. Interactive Learning Media Design in Canva

The next stage is to use Microsoft Powerpoint to add actions from each component of the elements that were previously created so that the media created becomes interactive and to run the Classpoint Add-ins as the final stage of designing interactive learning media assisted by classpoint. Furthermore, the media design that has been created using Canva is based on a previously designed storyboard which is then run using Microsoft Powerpoint.

Features of Classpoint Add-ins Microsoft Powerpoint

The last stage of designing classpoint-assisted interactive learning media is to run the classpoint application which is a class response system that can be embedded in Microsoft PowerPoint, allowing users to turn existing slides into interactive presentations and can create quiz questions in PowerPoint without the hassle of switching to other applications during teaching.

The first step that teachers need to take is: (1) download the classpoint application on their respective laptops or PCs, (2) install the classpoint application and it will automatically connect with the powerpoint on the laptop/PC. As for students, there is no need to download this application. Students can join classpoint through a browser by typing classpoint.app/join on the livelihood. The following are the features contained in the classpoint application:

1. Class Code

The first feature that can be used, especially by teachers, as a learning medium is the classroom feature that allows teachers to manage classes online and improve interaction with students. Teachers can easily create class lists and add students, and students can join classes using unique class codes.

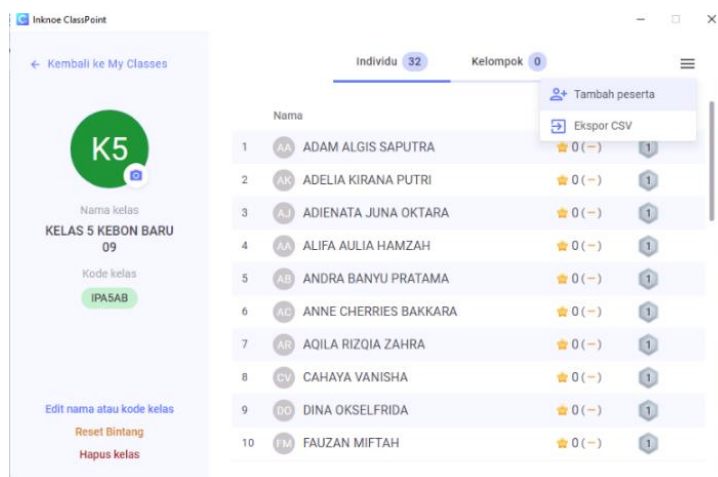


Figure 2. Classpoint Code Features

2. Annotation Feature

The annotation feature is a basic feature found in the bottom toolbar when running powerpoint in presentation mode. These annotation features consist of laser pointers, digital pens, highlighters, erases, and whiteboards.

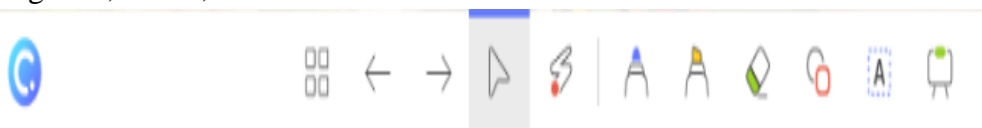


Figure 3. Class Annotation Feature on Classpoint

3. Whiteboard

The digital whiteboard feature is one of the features that is often used because there is no need to use other additional media when you want to provide further explanations related to the material. This digital whiteboard can be adjusted to the user's wishes as shown below.

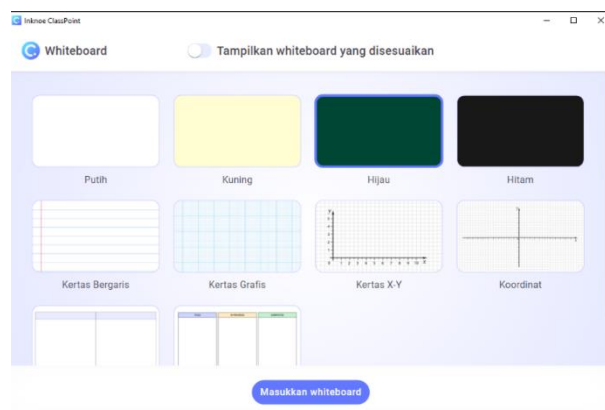


Figure 4. Digital Writing / Whiteboard Features of Classpoint

4. Polling Feature

The polling feature can create an interactive discussion atmosphere by getting a question-and-answer session and live poll. This feature is usually used to measure student understanding or collect student opinions.

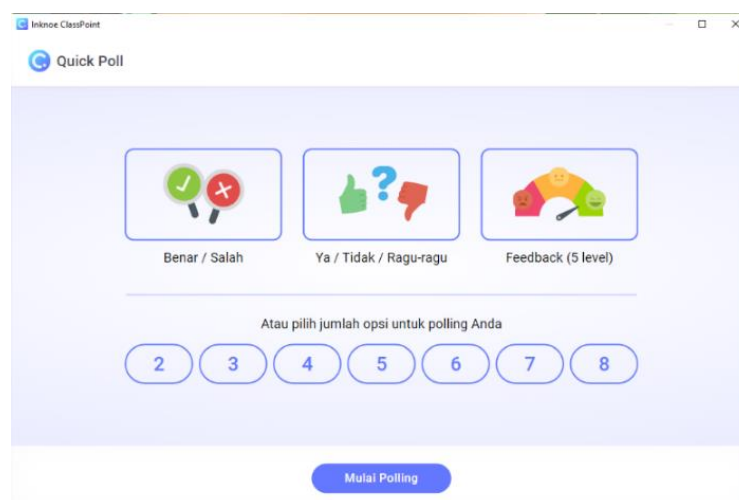


Figure 5. Class Poll Feature on Classpoint

5. Pick a Name

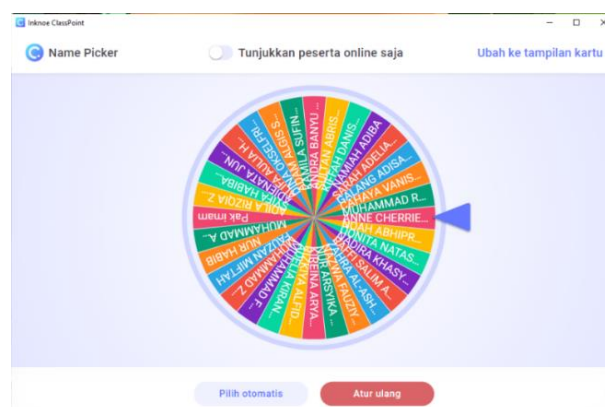


Figure 6. Classpoint Class Quiz Feature

In the *quiz* feature, there are various options that can be used by teachers to make the learning assessment and evaluation process more interesting and interactive. Create

comprehensive *quizzes* with various formats such as multiple choice, short answers, word clouds, drawing on slides, uploading images and videos, uploading audio recordings and other *quiz* ideas.

6. Quiz Features

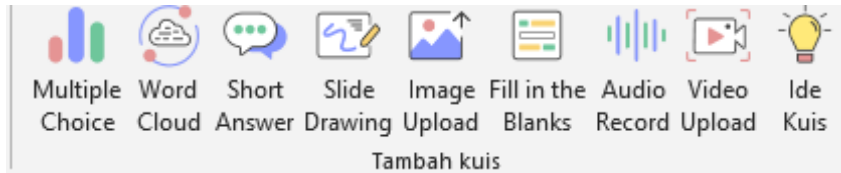


Figure 7. Classpoint Class Quiz Feature

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Then after doing the quiz, a display of answers that have been collected, both answers from multiple-choice questions, short answers, fill in the blank, and others. The following is the display that will come out after the question is answered.



Figure 8. Multiple Choice Answer Response Display

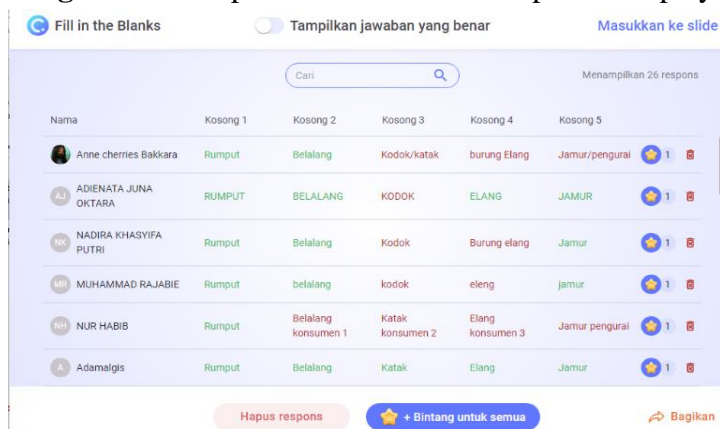


Figure 9. Fill in the Blank Answer Response Display

7. AI Quiz Generator

The screenshot shows a user interface for an AI Quiz Generator. At the top, there is a header 'Pilihan'. Below it, under 'Jenis pertanyaan', there are three selectable options: 'Multiple Choice', 'Fill in the Blanks', and 'Short Answer', each with a checkmark icon. Under 'Tingkat Taksonomi Bloom', there are six selectable options: 'Remember', 'Understand', 'Apply', 'Analyze', 'Evaluate', and 'Create', each with a checkmark icon. At the bottom, there is a 'Bahasa Pertanyaan' dropdown menu currently set to 'Bahasa Indonesia'.

Figure 10. Features of AI Quiz Generator on Classpoint

The latest feature provided by classpoint is the AI quiz generator feature which is useful for making the quiz making process more efficient and effective with the help of artificial intelligence (AI). This feature can help teachers save time and effort in compiling quality questions because they are designed and adjusted to the Bloom Taxonomy. Bloom's taxonomy is a framework that groups learning objectives into various levels, such as knowledge, understanding, application, analysis, synthesis, and evaluation. With variations in question levels, teachers can measure students' understanding more thoroughly

Develop Stage

At this stage, assessments are carried out by media experts, material and language experts and to get constructive suggestions and inputs related to the learning media developed to know its feasibility. The following are the results of calculations obtained from validation by media experts, material experts and linguists:

Table 3. Validation Results by Experts

No.	Expert	Feasibility	Criterion
1.	Media	87,5%	Highly Worthy
2.	Materials	92,2%	Highly Worthy
3.	Language	95%	Highly Worthy
Suggestions and feedback		Input for <i>fonts</i> on the media to be replaced to make them more readable by elementary school students. The rest is good.	

This interactive learning media assisted by classpoint is implemented in classroom learning after being declared feasible by media, material and language experts. The design used is Pre-Experimental One Group Pretest-Posttest. In this study, there is a pretest before being given treatment and then a posttest after being treated. Before carrying out the pretest, learning was carried out without using interactive learning media assisted by classpoint but only using teaching materials for student handbooks.

Table 4. Results of N-Gain Calculation on SPSS

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_Skor	29	.27	1.00	.6873	.18993
Ngain_persen	29	27.27	100.00	68.7261	18.99317
Valid N (listwise)	29				

Above is the result of calculating the N-Gain score using the SPSS 29 application which shows that the average N-Gain score obtained is 0.6873 which means it is in the "medium" category. Thus, it can be concluded that the increase in learning outcomes after the use of Classpoint-assisted interactive learning media is included in the moderate category.

Table 5. Normality Test at SPSS

Types of Analysis Tests	Yield (sig)	Information
Uji Normalitas (<i>Kolmogorov Smirnov</i>)	0.200	Normal
Uji Homogenitas	0.296	Homogen
Uji T (<i>Paired Sample Test</i>)	0.001	Significant

The first stage of data analysis was to test the normality of the data using SPSS 29. Based on the results obtained, it showed that Asymp. Sig. (2-tailed) has a value of 0.2, which means it can be concluded that the residual data value has normally distributed data. Then the results of the homogeneity test analysis of the pre-test and post-test data in the one-group pretest-posttest design, with mean values that are not much different and a significance value (sig) of 0.296. Furthermore, from the test results in the Paired Sample Test table, a very small significance value (sig) was obtained, namely 0.001. This value is much smaller than the alpha (α) value which is generally used (0.05), thus H_0 is rejected and H_1 is accepted as a hypothesis which shows that the possibility of unintentional (random) differences is very small.

Discussion

Learning media can be said to be effective if learning is carried out using learning media that is successful in improving student learning outcomes. In line with the opinion expressed (in Setyosari, 2014), through Kyriacou's thoughts that learning can be said to be effective if learning is successful in bringing students to achieve learning goals as expected by all educators, and one solution that can be done to achieve effective learning is through the use of instructional media.

To prove the above statement, researchers conducted a test to measure learning outcomes for 29 students using interactive learning media assisted by class point which was implemented at SDN Kebon Baru 09. In its implementation, the researcher needed the cooperation of the homeroom teacher so that it ran smoothly, the process took around 2 days. with the homeroom teacher.

The research lasted for 2 days with several stages, namely on the first day learning was carried out using only student handbooks in providing material without using interactive learning media assisted by class points on food chain material, then after learning was

completed, a pre-test was carried out to measure students' understanding abilities without treatment (use of interactive learning media assisted by class point).

Then on the following day learning was carried out using class point-assisted interactive learning media that the researchers developed, followed by the implementation of a post-test to measure learning outcomes after treatment (use of class point-assisted interactive learning media). Below are the results of student learning before and after using interactive learning media assisted by Class point.

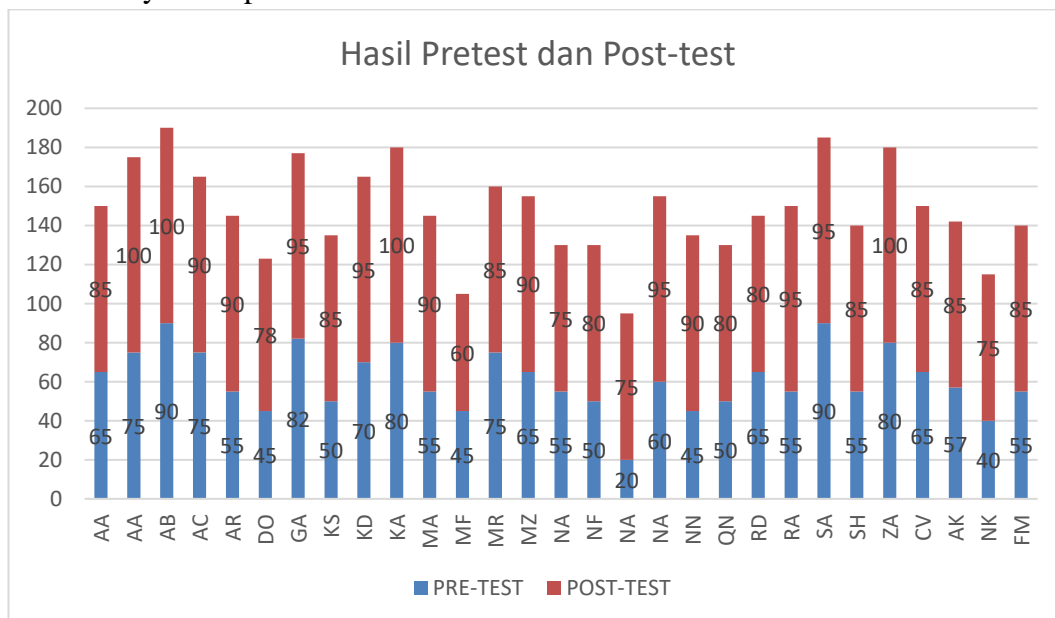


Figure 11. Pre-test and Post-test Assessment Results

Based on the assessment that has been carried out, the results of student learning completeness before learning using interactive learning media assisted by classpoint are 61%. Meanwhile, students' learning completion results after learning using interactive learning media assisted by classpoint were obtained at 87%. And based on the calculation results of the t-paired samples test in table 4.45, a significance value of $0.001 < 0.05$ was obtained, which means that there was a significant increase in learning outcomes before and after implementing learning using classpoint-assisted interactive learning media { H_0 was rejected and H_1 was accepted}. It can be concluded that the use of interactive learning media assisted by classpoint in science learning, especially food chain material at SDN Kebon Baru 09, is in the effective category of improving student learning outcomes.

The effectiveness of interactive learning media assisted by classpoint on student learning outcomes that have been carried out by researchers is in line with the results of research conducted (Zaenab, 2023) which states that the percentage of completeness obtained by students after carrying out learning with the interactive classpoint learning strategy is 71.4%.

CONCLUSION

Based on the results and discussion described above, the researcher concluded that the learning media developed was declared feasible by media, material and language experts through validation tests. The media developed by researchers is said to be effective if the learning outcomes obtained by students improve before and after using interactive learning media assisted by Classpoint. Thus, it can be seen that the percentage of students' learning

completeness after learning using interactive learning media assisted by Classpoint is 87%. The results of calculations carried out using SPSS 29 produced a significance value of $0.001 < 0.05$, which means there was a significant increase in learning outcomes before and after using interactive learning media assisted by Classpoint, so the researcher can conclude that the learning media that the researcher developed has proven to be effective.

There is a recommendation that needs to be given to research on the development of interactive learning media assisted by Classpoint, namely to carry out further research to increase effectiveness in the teaching and learning process.

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