IMPROVING STUDENT LEARNING OUTCOMES WITH THE INQUIRY LEARNING MODEL *USED BY GOOGLE FORM* MEDIA ON IMPULSE AND MOMENTUM MATERIAL IN GRADE X OF SMA ASUHAN DAYA MEDAN

By:
Juita
Universitas Pelita Nusantara
Email:
emailpenulis@gmail.com

INTRODUCTION

Education is a concrete manifestation of a changing culture and is characterized by current progress. Therefore, learning advancements should be intertwined and aligned with changing times, especially in keeping up with modern technological advancements. Changes in the purpose of correcting learning at all levels must be continuously implemented to anticipate future needs. To anticipate future needs, changes that improve education at all levels must be implemented routinely. Education that can foster future growth develops students in such a way that they are prepared to face and overcome life's challenges when they arise.

Because education is a process aimed at developing intelligent, moral, and skilled individuals, it holds a crucial responsibility in ensuring the development and sustainability of the nation, according to the National Education Law. However, because teachers continue to deliver content in a boring manner, teaching and learning activities currently do not foster student creativity. Although not all students are interested in and talented in physics, without a learning model that suits them, learning activities will feel monotonous and then boring because only the teacher is in control and the students simply sit quietly and take notes.

Physics is a part of science that is closely related to nature , and is a science that is understood and made from means of perception, problem definition, readiness of speculation, testing of speculation through trial and error, making determinations, and finding hypotheses and ideas. The substance of physics is an experience that focuses on specificity through developments known as logical cycles that are based on logical dispositions and the results are recognized as logical items made from three most important parts as ideas, generally relevant standards. and hypotheses.

Educational goals: If the learning process is successful, physics will be achieved. In reality, what happens in the field still does not align with the expected goals and functions. According to Brockhaus (Parta Ibeng, 2021: 5), "physics is the study of natural phenomena or events that can enable experiments (experiments), research, measurement of what is obtained, based on general rules, and systematic presentation." technology and knowledge. At the secondary school level, physics is seen as an important topic that should be taught separately from other science subjects.

According to Gagne in Purwanto (2011 :42) "Learning outcomes are the formation of concepts, especially categories that we assign to environmental stimuli, which provide an organized scheme for the assimilation of new stimuli and determine relationships within and between categories." Based on data

collected from interviews with physics instructors at Asuhan Daya Medan High School and National Examination scores, learning outcomes can also be observed in the following table .

Table 1Physics Learning Outcomes of High School Students Under Daya Medan's Care

No	Year	Average value	Subjects
1	2018 / 2019	53.47	Physics
2	2019 / 2020	5 5 .76	Physics
3	20 20 /20 21	5 4.23	Physics

Source: Physics Learning Outcomes Data for Daya Medan Senior High School

average indicates that students' physics learning activities and outcomes are still low. Document findings and interviews with students at Asuhan Daya Medan High School indicate that while classroom learning has been enjoyable, some subjects have not been fully mastered, including physics. In addition to formulas, physics material is also computational, and these students admitted that it takes a lot of time to fully understand the physics material taught in class. Ningsih Nurhayato et al. (2012 :45) "stated that low student learning outcomes are also caused by teacher-centered learning." Students' disinterest in learning physics stems from their perception of the subject as intimidating or challenging, as well as a lack of teacher innovation in presenting lessons to the class. As a result, many students dislike and feel bored during physics lessons. Furthermore, the lack of diverse teaching styles and the teacher's dominant position make the instructor the class leader. This situation leads to students' low ability to develop critical thinking skills and their low level of independent learning.

The low ability of Indonesian students' science learning outcomes and the low quality of education are also evident in the Program for International Student Assessment (PISA) study report. To assess the reading, mathematics and science abilities of Indonesian students who have completed/almost completed primary education. An estimated 4,439,086 15-year-old children in Indonesia were taken when the 2018 PISA test was conducted. Of these, 85% or 3,768,508 children were included in the PISA population. The results of the 2018 PISA survey placed Indonesia at 74th out of 80 countries, or sixth from the bottom. Indonesian students ranked 74th in reading with a score of 371, 73rd in mathematics with a score of 379, and 71st in science with a score of 396. From PISA 2000 to PISA 2018, most Indonesian students aged 15 were in grades 9 and 10. OR 3 Junior High School/Equivalent and 1 Senior High School/Equivalent.

Low student learning outcomes, particularly in physics, are caused by physics being presented in a less engaging manner , and students find it difficult to apply what they have learned. Furthermore, this reduces student enthusiasm for physics-related courses. Because many teachers still use direct teaching methods in class, students are less engaged in class activities. In fact, many students still have fun while they are learning. This problem must be resolved by using a

more efficient learning model that can increase student passion, engagement, problem-solving skills, and enjoyment, while also being predicted to improve learning outcomes. The *Google Form-Assisted Inquiry learning model* is one learning method that needs to be changed , and it is hoped that there will be changes in student learning outcomes through activities that engage students' entire imaginations so they can be confident and formulate their own solutions.

LITERATURE REVIEW

1. Definition of Learning Outcomes

The learning outcomes achieved by a student can be identified by measuring the level of use of the learning module. Therefore, student learning outcomes are the student's ability to learn by understanding the lessons they have taken. Gagne (in Purwanto, 2019: 42) states that: "Learning outcomes are the emergence of a plan, a type we share with existing stimuli, which provides a systematic design for assimilating new stimuli and establishing relationships within and between categories." Purwanto (2019: 54) describes learning outcomes as behavioral changes that occur after following a guided learning method that aligns with learning objectives. People have the ability to modify and improve their psychological attitudes and behaviors, which encompass the cognitive, affective, and psychomotor domains.

2. *Inquiry* Model

a. Definition *of Inquiry*

One learning strategy that can fully utilize students' skills is the inquiry learning model . The inquiry learning model is a set of educational activities that, as Gultom S (Syamsidah 2020:1) put it, " involves all students' talents to explore and examine methodically, critically, rationally, and analytically so they can confidently develop their own discoveries." The Inquiry Learning Approach is a teaching method that structures the situation in such a way that students can conduct their own experiments, ask questions, and research the solutions they create. However, Sanjaya (Syamidah, 2020: 4) states that "inquiry learning requires students to search and discover for themselves."

b. *Google Form*

Google is one of the most frequently used search engines on the web. Google offers various service products, including Google Forms, also known as Google Forms. This is a useful tool to help users plan activities, send surveys, give tests to others, or collect data easily and efficiently. Forms can also be linked to spreadsheets. A spreadsheet is a document that stores information in a grid of horizontal rows and columns. If a spreadsheet is linked to a form, responses will automatically be sent to the spreadsheet. If not, users can view the "General Assumptions" page, accessible from the Assumptions menu.

Google Forms also integrates with Google Drive for secure file and information storage. Users must be logged into their Gmail account to use the app. The app allows users to submit questions with text responses. Additionally, users can submit multiple-choice questions, question notes, ratio questions, and more.

c. Implementation of *Inquiry Learning Assisted by Google Form* Media in Physics Learning

Inquiry Learning in physics learning is to improve the ability of students' physics activities and learning outcomes in finding creative ideas in the subject matter. Students have the ability to measure the thickness of an object, height, mass , volume and quantities in physics. *Inquiry Learning* in physics learning aims to build the abilities possessed by students, stimulate students' abilities, give students the freedom to be able to search and find ideas and concepts from problems that have been created by the students themselves. So that students can have knowledge of learning activities and effective and efficient learning outcomes from the lessons that have been delivered by the teacher. *The Google Form* Assisted *Inquiry Learning* Model makes it easy for students to find their learning outcomes easily, practically and without using more costs.

RESEARCH METHODS

:

The research was conducted at Asuhan Daya Medan High School on grade X students of semester II of the 2022/2023 academic year . Located at Jl. Kayu Putih No. 33/12A, Tj. Mulia Hilir, Medan Deli District, Medan City , North Sumatra and this research was conducted on July 3, 2023 – July 22 , 2023 .

This type of research is known as classroom action research (CAR). Classroom action research will be conducted in three cycles: pre-cycle, cycle I, and cycle II. The research concept used is the one interpreted by Arikunto (2020: 137), which consists of two cycles: programming, implementation, observation, and reflection.

In accordance with this type of research, namely classroom action research, it has cyclical stages. The research method consists of two cycles. Each cycle is implemented according to the desired change. According to Arikunto (2020: 137), the form of the action cycle and a description of each step are as follows:

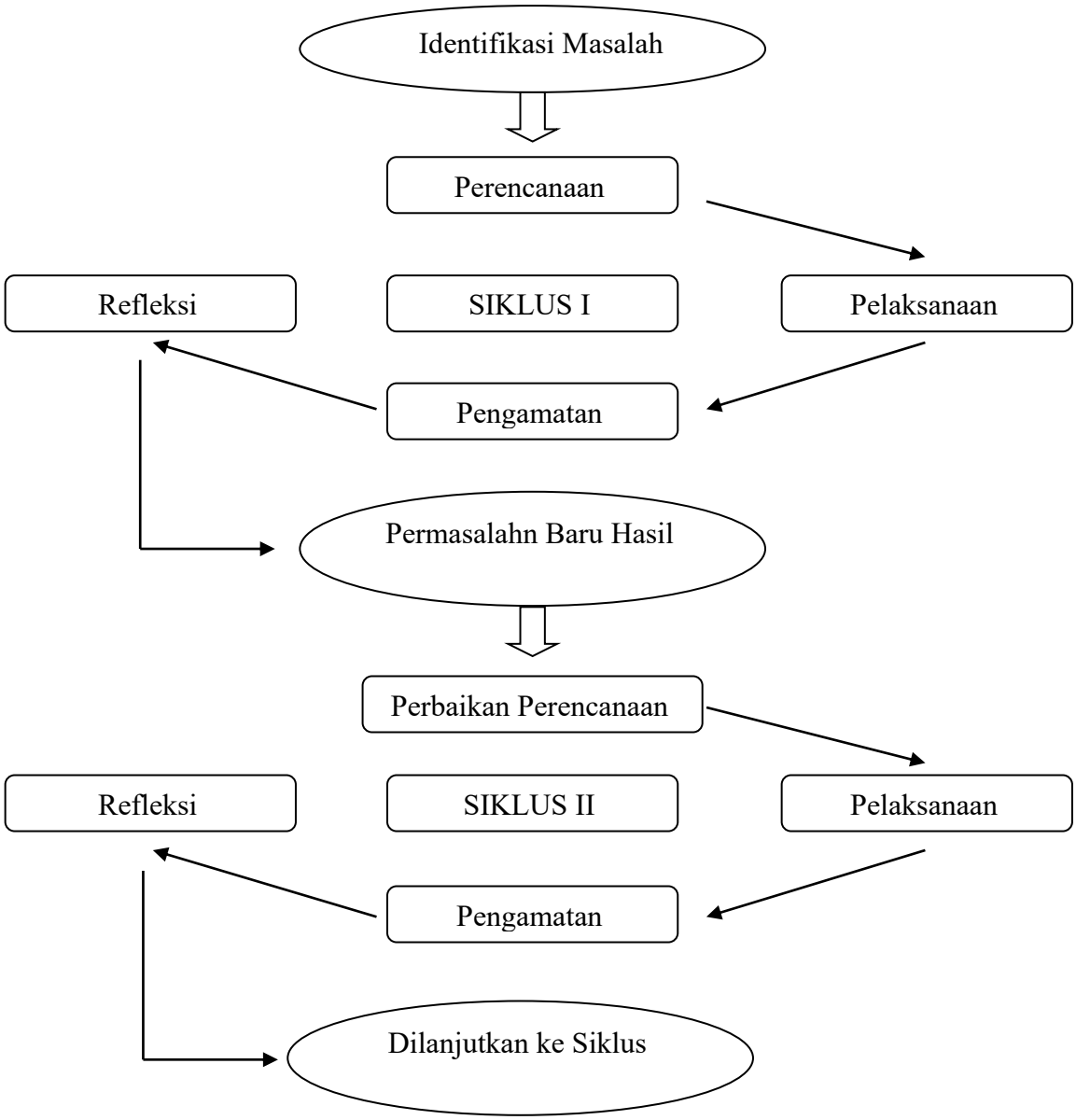

Figure 1 Action Research Cycle Scheme

RESULTS AND DISCUSSION

A. Description of Research Results

1. Student Initial Abilities (Pre-cycle)

Before the first cycle of activities was attempted, a pre-cycle was first administered. This was intended to determine the level of completion of the training results and the difficulties experienced by students in completing the questions in the main module, "Thrust and Momentum." The students' completion of the pre-cycle training results can also be seen in Table 4.1 below.

Table 1Pre-cycle Learning Outcomes Completion

PRE-CLASS LEARNING OUTCOMES			
Mark	**Frequency**	**Presentation**	**Category**
≥75%	2	7%	Completed
<75%	23	79%	Not Completed

Total	25	86%	
Average grade of students	36.36		

Source: Excel Data Processing

Based on the results of the table above, it can be concluded that 2 students are in the completed category and 23 students are in the incomplete category with a score of 36.36 .

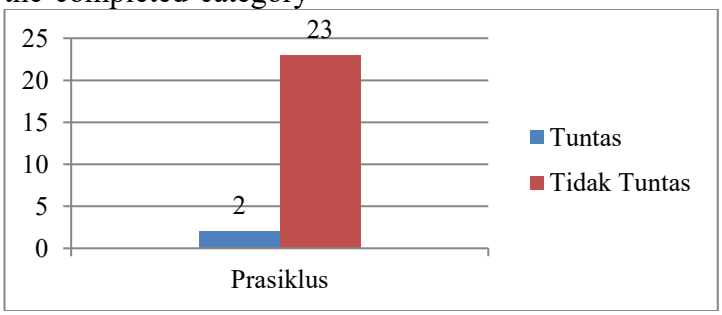

Figure 1Bar Chart of Pre-cycle Learning Outcomes

2. Description of cycle I

The results obtained from the completion of learning outcomes in cycle I can be seen in table 4.2 below.

Table 4.2 2of Learning Outcomes in Cycle I

CYCLE I LEARNING OUTCOMES			
Mark	**Frequency**	**Presentation**	**Category**
≥75%	8	28%	Completed
<75%	17	59%	Not Completed
Total	25	86%	
Average grade of students	68.91		

Source: Excel Data Processing

Based on the results of the table above, there are 8 students who are included in the completed category and 17 students who are included in the incomplete category, and the mean value is 68.91.

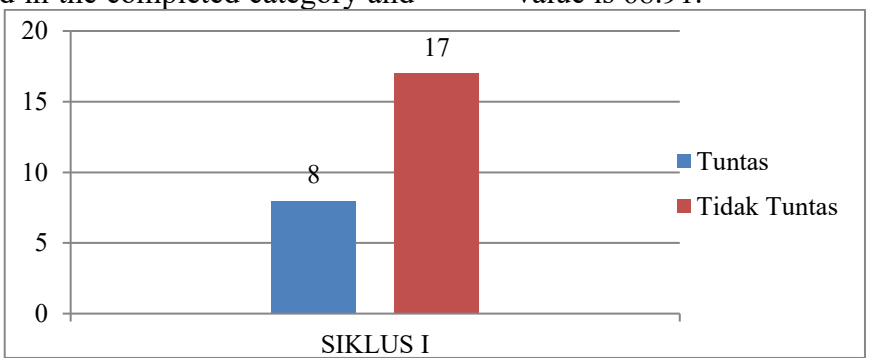

Figure 4.2 2I Learning Outcomes Bar

The results of increasing student learning activity in cycle I can be seen in table 4.3 below.

Table 4.3 3Student Learning Activity in Cycle I

Learning Activity Cycle 1			
Mark	Frequency	Presentation	Category
>75	0	0%	Very good
≤ 75	3	12%	Good
≤ 50	22	88%	Enough
≤ 25	0	0%	Not enough

Source: Excel Data Processing

Based on the table above, the student learning activity scores in Cycle I were 3 students in the Good group and 22 students in the Fair group. This is evident from the decrease in student participation in learning activities.

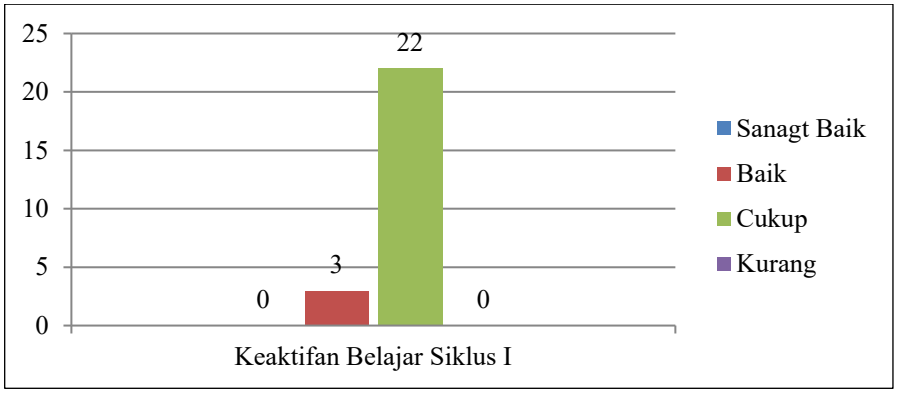

Figure 3Diagram of Learning Activity in Cycle I

Based on the results obtained, it was concluded that student learning outcomes in the pre-cycle obtained an average of 36.36 and in the first cycle obtained an average of 68.91 with N-Gain and an average of 0.44. I was still low in that cycle. See Appendix 28.

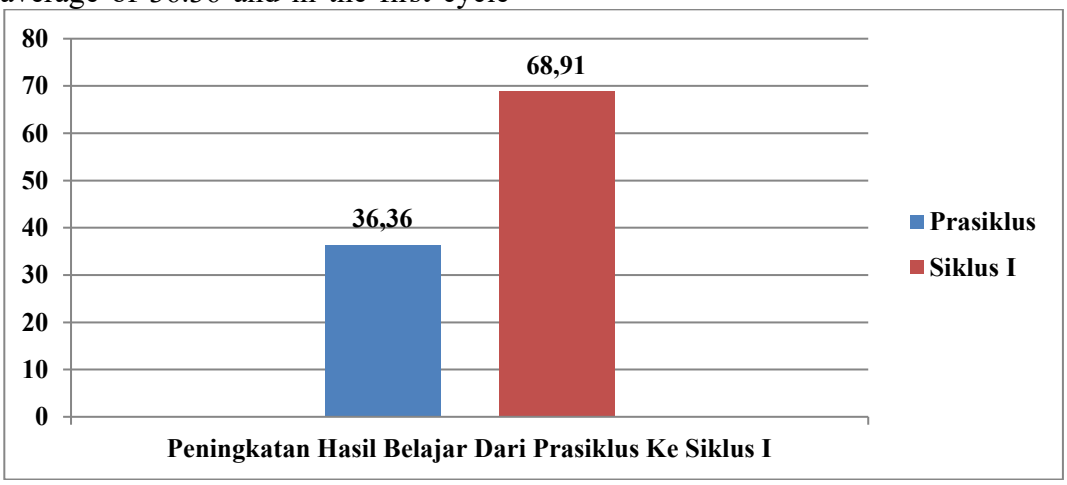

Figure 4Diagram of Improvement in Learning Outcomes from Pre-Cycle to Cycle I

3. Description of Cycle II

Table 4.4 4of Learning Outcomes in Cycle II

CYCLE II LEARNING OUTCOMES			
Mark	**Frequency**	**Presentation**	**Category**
≥75%	22	76%	Completed
<75%	3	10%	Not Completed

Total	25	86%	
Average grade of students	85.09		

Source: Excel Data Processing

Based on the results of the table above, it can be concluded that 22 students were included in the complete group and 3 students were included in the incomplete group, with a mean score of 85.09. According to the research, learning outcomes in cycle II increased. This indicates a high level of student learning completion during the learning activities.

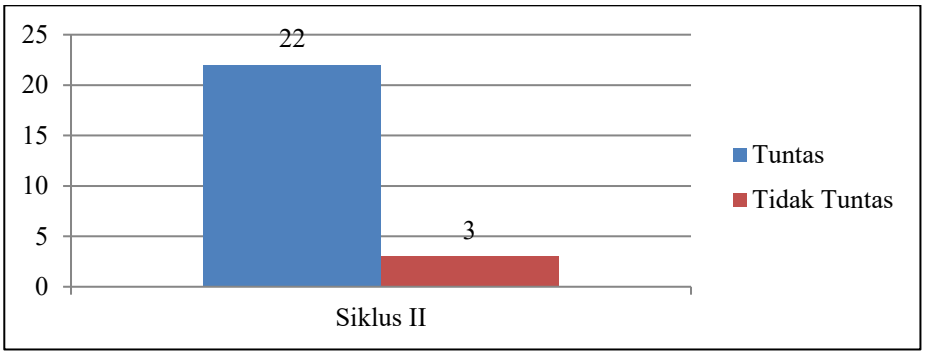

Figure 5 Diagram of Learning Outcomes Completion in Cycle II

Table 4.5 5in Learning Activity in Cycle II

Learning Activity Cycle 2			
Mark	Frequency	Presentation	Category
>75	16	64%	Very good
≤ 75	9	36%	Good
≤ 50	0	0%	Enough
≤ 25	0	0%	Not enough

Source: Excel Data Processing

Based on the table above, the learning performance scores for students in Cycle II were 16 in the excellent group and 9 in the good group. It can be concluded that student learning achievement has improved. Based on the findings, learning outcomes in Cycle II have improved. This indicates a high level of student completion of learning activities during the learning process.

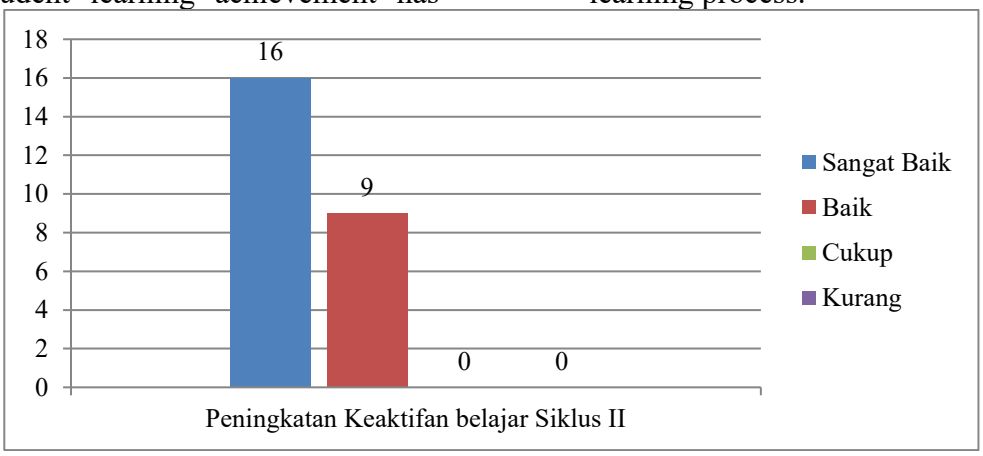

Figure 6Diagram of Increasing Learning Activity in Cycle II

From the results obtained, it was concluded that in Cycle I, the students' learning outcomes obtained an average of 68.91 and in Cycle II, the average value was 85.09 with N-Gain and from Cycle II to Cycle II, the students' learning outcomes obtained an average of 0.46 and took . The research was stopped until Cycle II because the improvement in learning outcomes was good in Cycle II.

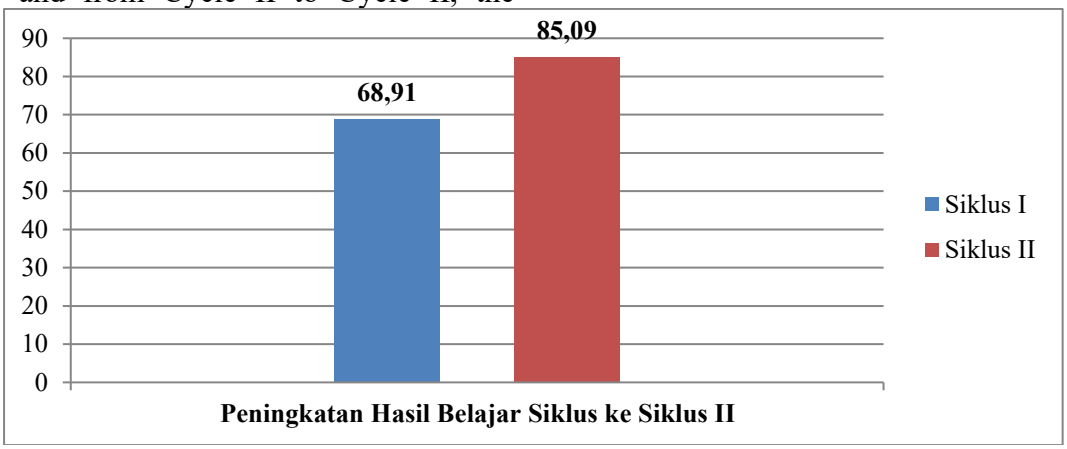

Figure 7Diagram of Improvement in Learning Outcomes from Cycle I to Cycle II

B. Discussion of Research Results

In Class XA Semester II SMA Asuhan Daya Medan TP 202 3 /202 4 , learning with *the Inquiry learning model* with the help of *Google Form* can improve activity and learning outcomes for the topic of Impulse and Momentum in Physics. This is seen when student participation and learning outcomes increase throughout the cycle.

Students will not experience boredom during physics learning activities because of the implementation of this learning approach. Students will benefit from using the *Google Form- Assisted Inquiry Learning model* , including training active learners who are able to solve problems with the help of modern technological advances, conveying thoughts or suggestions to help children become more enthusiastic about learning .

Every human being is engaged in a constant learning process. One formal learning environment, school, remains a crucial necessity for survival. We already know that the teaching and learning process in schools consists of various disciplines, including memorization (non-exact) subjects and mathematics. One science that uses mathematics is physics, which plays an equally important role compared to other topics that also use mathematics. Although physics is a fascinating branch of mathematics, many people, especially students, believe that physics is a branch of science that cannot be learned simply. This belief persists despite the fact that physics is a branch of mathematics that requires specific ideas to be presented. The goal of this learning concept is to organize it into stages or learning models used to transmit physics content fundamentally, concisely, clearly, and easily without eliminating any part of the physics subject itself.

CONCLUSION

Based on this research review, several conclusions can be drawn, namely:

1. There is an increase in students' physics learning achievement through the Google Form-assisted

inquiry learning model on the topic of impulse and momentum by 0.72 (very high category) in Class X II of SMA Asuhan Daya Medan in the 2023/2024 academic year.)

2. There was an increase in students' physics learning outcomes through the Google Forms-assisted inquiry learning model on the topic of Impulse and Momentum by 76% for Class X II of SMA Asuhan Daya Medan for the 2023/2024 academic year (Upper Category).
3. Significant increase in activity and learning outcomes with the help of Google forms due to the use of models through reference models on the main material of Impulse and Momentum for Class X Semester II SMA Asuhan Daya Medan Academic Year 2023/2024.

BIBLIOGRAPHY

Arikunto. (2017). *Basics of Educational Evaluation.* Jakarta: Bumi Aksara.

Budi Wahyono, (2021) *National Education System.* Scientific Journal of Educational Definitions . Vol. 6 (6) pp. 9-15.

DIDIKA Journal (2017) *Scientific Forum for Elementary Education* . Vol.2 (4) p-ISSN:
2477-4855, e-ISSN: 2549-9149. Warmi, 2017: 73

Aryanti Nurhidayati Journal (2013) *Improving Affective Domain Learning Outcomes Through Motivational Learning Models.* JIPTEK, Vol. VI No. 2.

John Dewey (2020) *Fundamentals of Educational Evaluation* . Bumi Aksara.

Kurnia & Damayani , (2019).

Lia Nurmayani, Aris Doyan and Ni Nyoman Sri Putu Verawati. (2018). *The Effect of Guided Inquiry Learning Model on Students' Physics Learning Outcomes* : JPPIPA, Vol. 4(2):163-172.

Ni Wayan Juniati, I Wayan Widiana. (2017). *Application of Inquiry Learning Model to Improve Science Learning Outcomes* . Elementary School Scientific Journal. Vol.1 (1) pp. 20-29 .

Nurhayati, R., Yulianto, A., & Wibowo, A. (2012) . *Effective Learning Strategies to Improve Learning Outcomes* . Bandung: PT Remaja Rosdakarya. \

Rusman, (2010). *Principles of Teaching and Learning.* Bandung: Cipta Makmur

Parta Ibeng , (2021) . *Basic Physics Learning System.* Journal of Education. Vol 2 (15) p. 5.

Purwanto. (2019). *Evaluation of Learning Outcomes. Learning* Library : East Celeban.

Syamsidah and Ratnawati. (2020). *Inquiry Learning Model Guide.* CV BUDI UTAMA Publishing Group.

Wagiran. (2013). *Innovative Learning Based on Problem Based Learning and Inquiry Learning* . Yogyakarta: CV. Andi Offset. War n i . (2017). *Evaluation of the Inquiry Model* . Middle School Scientific Journal. Vol. 1 No. 3.

Sudjana, Anas (2010) *Introduction to Educational Evaluation* , Jakarta: Raja Gravindo Persada .

Trianto. (2019). *Designing Innovative-Progressive Learning: Concepts, Foundations, and Implementation in the 2013 Curriculum* . Jakarta: Kencana Prenada Media Group.

Yohana Artha Uly (2019) *PISA 2018 Report: The Quality of Indonesian Education Remains at a Low Level.* PANCAR Journal Vol. 3 No. 1, e-ISSN: 2550-0619