

Analysis Of Reading Errors And Conceptual Understanding In Straight Angle Questions Using Newman's Error Analysis

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ABSTRACT

This study aims to examine various types of mistakes made by class X students when solve math problems about corner straightener by utilizing Newman Error Analysis (NEA) approach. The method used in this study is qualitative descriptive, involving 11 students as subject. Data obtained through pretest and posttest, then analyzed based on five categories NEA errors : reading, comprehension, transformation, process skills, and writing answer end. Findings show that the majority of students do error at stage understanding draft and in reading questions. Of the 11 students, only one student was able to answered the questions on the posttest correctly, while 9 other students experience error in understanding concept, and one student does error at stage reading the questions. Causes main this error is lack of understanding concept, low accuracy, and lack of adequate practice questions. The results of this study emphasize importance strengthening to basic concepts, good presentation of questions visually, and its diversity practice questions so that students can be more understand and apply draft mathematics effectively.

Keywords: Newman's Error Analysis (NEA), Understanding Concept, Angle Straightener



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INTRODUCTION

Mathematics is the main science in learning in the world of education. Subjects This involving Lots mutually related concepts related. Concepts This are abstract ideas that help We grouping something to in categories certain, both in it there is example draft the or no (Hariyani & Aldita, 2020). Because the concept mathematics each other related, then student need understand draft base moreover formerly before learn draft next more complicated (Ahmada, 2020). This is important Because draft beginning often become base understanding material next (Sopiany & Rahayu, 2019). Likewise when build A home, if the foundation No strong so House will easy collapse. Knowledge mathematics must based on knowledge a strong foundation for the concept furthermore student can follow guidelines taught (Latifah & Rahmawati, 2019).

According to Sophiany and Rahayu (Maptuhah & Juhji, 2021) understanding draft hold a very important role in learning mathematics (Hamid & Qayyimah, 2014). Students who have understanding good concept will more easy in finish question mathematics with right (Rokan & Putri, 2023). Meanwhile that, visualization in presentation the question also becomes factor important in help student understand question mathematics (Hidayat et al., 2022).

Unfortunately, students frequently requested For memorize draft mathematics without directed For understand or connect draft mathematics with life everyday, understanding base where does the concept come

from ? the originating from (Putra et al., 2018). Remembering success in Study can seen from changes that can be observed, such as improvement knowledge, attitudes and skills (Ayunengdyah et al., 2020). For example students who initially No understand become understand, or previously No used to Work The same become Can Work same (Rusyda et al., 2022). Besides the ability focus students, mathematics also requires group discussion For finish problem mathematics (Pohan, 2018). Students can each other share ideas and understanding so that more easy understand draft the mathematics he studied (Damayanti & Senjayawati, 2023).

In context analysis error, Newman's Error Analysis (NEA) has Lots used in various study For study in a way systematic types mistakes made student in finish question mathematics. Putri and Murtiyasa (2024) stated that effective NEA approach in identify location error student in detail, well from aspect understanding and the resolution process

METHOD

Study This is study qualitative descriptive with approach studies case. Subject study is student class X as many as 11 people were given question about material corner straightener (Nasution et al., 2025). Data collection techniques were carried out with give subject pretest and posttest research For done (Putri & Murtiyasa, 2024). The purpose of the pretest is For identify ability beginning student to material corner straightener and posttest given after researchers give explanation repeat as form strengthening draft For know level development knowledge student (Schwarz et al., 2020).

The questions given in the form of form choice multiple that have been validated and compiled with consider element clarity and level difficulty question (Adistha, 2020). Data analysis was carried out with use approach Newman's Error Analysis (NEA), which includes five types of error (Wiranti, 2023), namely : error reading, comprehension, transformation, process skills, and writing answer end (encoding) (Fitria, 2020).

In analyzing test results, researchers also consider human error factor, errors that arise consequence error individual in a way No on purpose in the process of working (Nurlaili & Juliana, 2021). This human error Can in the form of inaccuracy read question, less focus moment do, or error writing number or symbol, although Actually student the has understand the concept in question (Widodo & Sujadi, 2017).

RESULTS AND DISCUSSION

Researchers make question *pretest* and *posttest* as step study. On the results evaluation *pretest* and *posttest* will compared to significant increase among both tests. Based on the results of the data obtained can known various mistakes made student in progress question Corner Straightener (Purba, 2022). Questions and data will be analyzed use classification *Newmann's Error Analysis* (NEA) as an error indicator. According to Rushda (in Clements, 1980) in *Newmann's Error Analysis* (NEA) has 5 stages error, namely *reading*, *comprehension*, *transformation*, *process skills*, and *concluding*. Results obtained by 11 students Correct in answer pretest questions, researchers give question beginning as an initial test For know potential Shiva in material corner straightener (Ramdhani Putri & Bondan Widjanti, 2019).

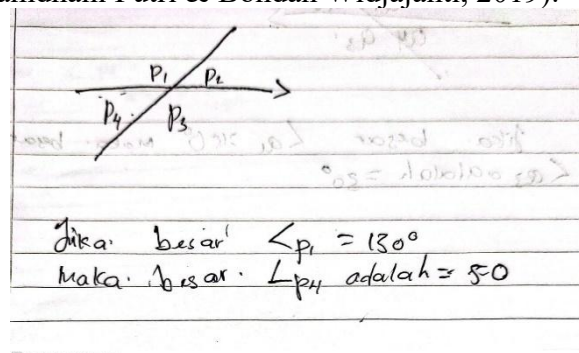


Figure 1. Pretest Question Answer Results

Figure 1 is example results correct answer. Students capable do question with understanding good concept in the initial test. There are factors that make student capable finish question with Correct.

a) Knowledge Good Conceptual (Seng, 2020).

Sophiany and Rahayu (Nainggolan, 2018) stated that, " Understanding the concept plays a very important role important in learning mathematics in school ". Based on data analysis, students understand draft base corner straight, where big corner straight is 180° . The researcher also conducted interactions before giving the questions, and received answers from students that they had previously studied correct angles at the junior high school level (BERUTU, 2022).

b) Good picture (visualization) of the question.

Nurhaliza et. Al, (2025) explains that visualization own influence important on student in finish problem mathematically, namely understand problem with method apply visual elements one each other and simplify method settlement problem mathematical. Researchers give question in good visualization so that capable analyzed student with easy. The questions given also have low level, thing This become supporters from results Work student.

c) Knowledge Previously.

Student Study with remember knowledge previously, based on theory Study matter This grouped as theory Study constructivism. According to Masgumelar and Mustafa (Wijayanti, 2017) explain that student must active in a way mental for form structure knowledge based on readiness cognitive previously.

After pretest results obtained researchers explain or repeat return material about corner straightener as strengthening potential as step For to be continued give question end (*posttests*). In progress question found a number of errors (White, 2009). The following researchers serve analysis error answer student in form table.

Table 1. Question results *posttest*

No	Example Error	Amount (student)
1	Error in understanding draft Error	9
2	Error in read question.	1
3	Answer right. Not doing error.	1
NUMBER OF STUDENTS CORRECT		1
NUMBER OF STUDENTS		11

Based on table 1, it was found error error student in answer question, namely error in understanding concepts and errors read question. Obtained as many as 11 students do error concept. The following is example answer students who are wrong in draft (Suryani, 2024).

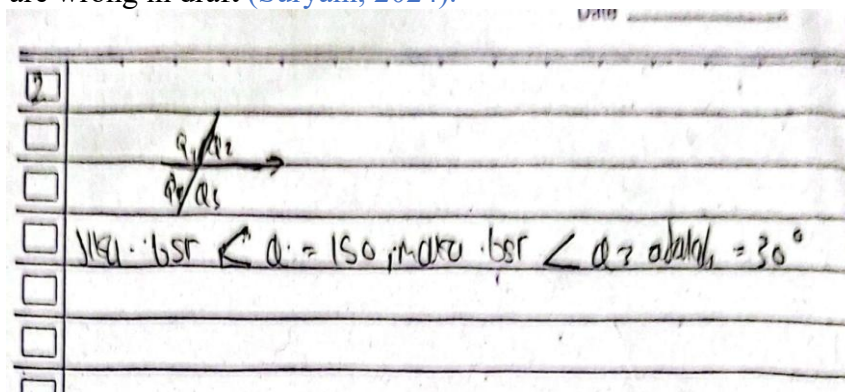


Figure 2. Posttest Question Answer Results

In figure 2, it is found that student not enough in understanding opposite angles size same. Students finish problem with method operate that $180^\circ - 150^\circ = 30^\circ$ Students assumed the steps for solving the

posttest and pretest questions were the same. Lack of reasoning and thoroughness are also serious errors in solving math problems (Azkiana et al., 2025). Students should not only understand but also apply the concept of equal opposite angles (Atika et al., 2023).

Furthermore errors found is error in read question, This happened to 1 student, the result was students are wrong in accept information so that results wrong answer. Here is results sheet students who are wrong in read question.

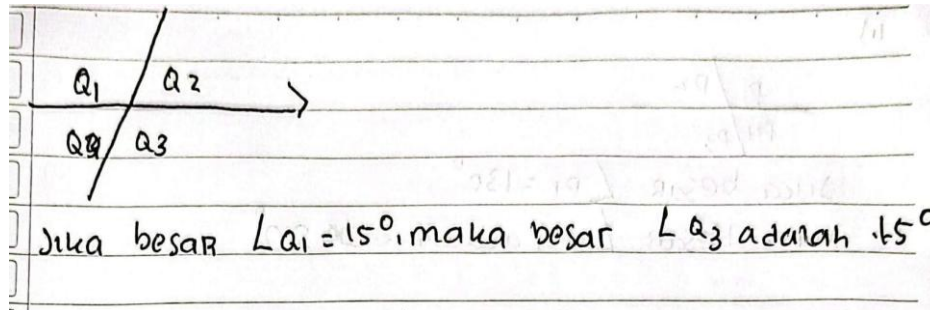


Figure 3. Results of Answers 2 Posttest

Based on Figure 3, can concluded students are wrong in read information, but student understand will draft opposite angles The same large. In *Newmann's Error Analysis* (NEA) error This categorized as *reading*. Errors in matter This can influence results end. Accuracy is very necessary in settlement question mathematics. Lack of exercise questions can also be become trigger error This happen (Singh et al., 2010).

Then, 1 student was found who answered question with correct and appropriate with draft opposite corner. Accuracy make student capable with Good finish problem mathematics. Here is sheet answer correct student.

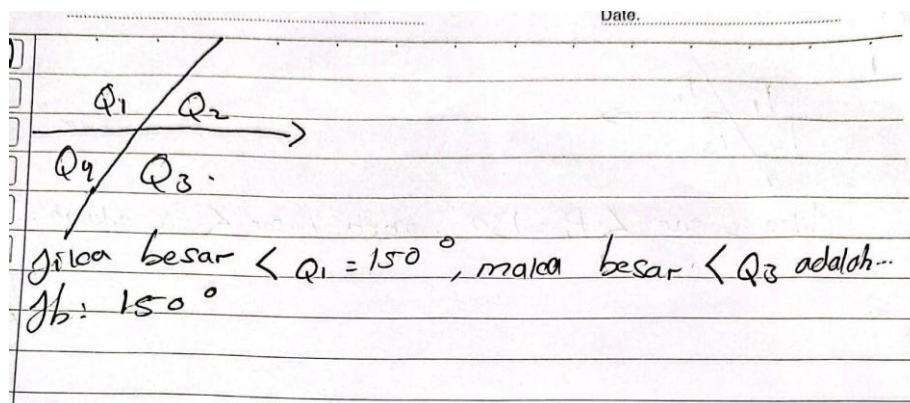


Figure 4. Answer Correct Posttest

For overall from results study this, found various mistakes made student in finish problem mathematics based on *Newmann's Error Analysis* (NEA), is as following (Fantus & Newman, 2021).

- 1) Error Read. Error This is very consequential mistake in finish problem mathematics. Students must capable analyze question with Good before carry on to in settlement question.
- 2) Error Understanding Draf. Student can understand question with Good but No can apply draft with good. According to Putri & Murtyasa (Newman, 2020) stated that error student can happen Because student No interpret question with Good.

CONCLUSION

Based on research that applies Newman Error Analysis (NEA) approach, concluded that class X students still often do mistakes when working on math problems about corner straightener, especially in terms of understanding concept and reading of questions. Of the 11 students tested, only one student succeeded give answer right on the posttest, while nine other students experience difficulty in understanding concept and one student experienced error in reading the question.

The most common mistake is error in understanding concept, where students cannot apply understanding opposite angles are equal, even though they are understand the basics of angles straight. In addition, there are also errors in reading questions that cause students to misunderstand the information, even though they actually Already understand current concept discussed. Factors such as lack of logic, accuracy, and quantity practice questions also contribute to error the.

This study underlines importance understanding deep concepts, the ability to visualize problems well, and the need for enough practice questions to reduce errors in learning mathematics. Therefore, teachers should give support for concepts and variations practice questions so that students can be more good at understanding and applying draft mathematics.

This study confirms importance understanding deep concepts, good visualization of questions, and the need enough practice questions to minimize errors in learning mathematics. Thus, teachers need to give strengthening various concepts and practice questions so that students can understand and apply them draft mathematics with more Good.

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