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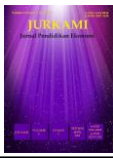
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UTILIZING RASCH ANALYSIS TO ANALYZE AND IDENTIFY STUDENTS' ATTITUDE TOWARD ECONOMICS

Ida Komala¹, Fini Alfionita Umar[✉], Jajang Kunaedi³

SMAN 1 Patokbeusi, Indonesia¹³

Universitas Pendidikan Indonesia, Indonesia²

✉Corresponding Author Email: finialfionita@upi.edu

Author Email: idakomala@guru.sma.belajar.id¹; jajangkunaedi74@guru.sma.belajar.id³

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Abstract:

Economics is one of the subjects studied in class 10th grade of high school. Demand, supply, and the balance of market prices are material that contains many mathematical symbols, curves, and graphs that are learned in grade 10. One that influences the enthusiasm of students in learning economics is their attitude towards economics. This study aims to identify students' attitudes towards economic learning after the COVID-19 period by utilizing Rasch analysis approach. The sample of this study was 81 high school students in Subang consisting of 61 female students and 20 male students. This research method uses a quantitative method with a survey design, especially using a cross-sectional design. Students' attitudes towards the economy were identified using an instrument of 15 statements in the form of a Likert scale. The results of the analysis show that 77% of students have a positive attitude and 23% of students have a negative attitude towards the economy. So it can be concluded that the attitude of students towards the economy, especially in terms of demand, supply, and market equilibrium tends to be positive.

Abstrak:

Ekonomi merupakan salah satu mata pelajaran yang dipelajari di kelas 10 SMA. Permintaan, penawaran, dan keseimbangan harga pasar merupakan materi yang mengandung banyak simbol matematik, kurva, dan grafik yang dipelajari di kelas 10. Salah satu yang memengaruhi antusiasme peserta didik dalam belajar ekonomi adalah sikap terhadap ekonomi. Penelitian ini bertujuan untuk mengidentifikasi sikap peserta didik terhadap pembelajaran ekonomi setelah periode COVID-19. Sampel dari penelitian ini berjumlah 81 peserta didik SMA di Subang yang terdiri atas 61 siswa perempuan dan 20 siswa laki-laki. Metode penelitian ini menggunakan metode kuantitatif dengan desain survei, khususnya menggunakan desain cross-sectional. Teknik analisis data menggunakan Rasch model. Sikap peserta didik terhadap ekonomi diidentifikasi menggunakan instrumen sejumlah 15 pernyataan dalam bentuk skala likert. Hasil analisis menunjukkan bahwa 77% peserta didik memiliki sikap positif dan 23% peserta didik memiliki sikap negatif terhadap ekonomi. Sehingga dapat disimpulkan bahwa sikap peserta didik terhadap ekonomi khususnya pada materi permintaan, penawaran, dan keseimbangan pasar cenderung positif.

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INTRODUCTION

Economics is an academically recognized subject commonly integrated into the curriculum of high schools, particularly within the realm of social sciences. Economics constitutes a fundamental discipline of inquiry, grounded in scientific methodology, that centers on the exploration and analysis of diverse forms of human endeavor aimed at attaining sustenance and continuity. The field of Economics entails intricate and multifaceted material that imparts significant pertinence in daily existence (Amir, 2016; Setiaji et al. 2022).

The material that is taught as a part of economics grade 10th pertains to demand, supply, and market equilibrium. One of the challenging materials is the determination

of the equilibrium price in the market, which involves the analysis of demand and supply. The difficulty in comprehending this material is due not only to the need for understanding formulas and conducting precise calculations to achieve desired outcomes but also to factors such as students' ability to learn The concepts and accurately calculate supply. and demand to determine The equilibrium. price in The market (Putra and Dewi 2020).

The market equilibrium price occurs when both the buyer and seller ,being the consumer and producer respectively, agree on a price (Alam 2016). In order to achieve market equilibrium, Q_d must equal Q_s or P_d must equal P_s . Consider the following examples:



Picture 1

The Example of Supply, Demand, and Market Equilibrium Materials.

Source: Alam (2016)

Based on Picture 1, it is evident that knowledge about supply, demand, and

market equilibrium encompasses more than just theoretical concepts that can be

conveyed through the verbal form. This subject matter also entails a strong correlation with mathematical symbols and advanced instruction on visual displays, mainly related to the graphics and curves

Education is when teachers help students learn and grow as people (Agustin and Rafsanjani 2022). When students learn economics and teachers teach it, there are challenges and difficulties that can't be separated from the process. Some students have trouble learning because they don't know the basics of what they're studying. Many students struggle to understand how to analyze, calculate, and record transaction data. They are also not very interested in learning about supply, demand, and market equilibrium. This could be because they have trouble paying attention in class or the teaching methods aren't engaging enough. Teachers also tend to give out a lot of assignments instead of finding other ways to teach. There are also problems with incomplete learning materials such as not having enough accounting textbooks or not having the right equipment to view lessons (Inayati et al. 2018).

The inability of students to attain optimal learning outcomes is commonly attributed to various underlying elements. One of the primary factors affecting student learning is rooted in the individual learner, specifically, the perception of insurmountable complexity associated with material related to concepts of supply, demand, and market equilibrium. This perception may lead to a decrease in learning interest and engagement among students. The second variable pertains to external factors impacting the student's learning process, specifically the efficiency of lecture and recitation approaches employed in economics courses, as deemed satisfactory albeit not the most ideal. It is

noticeable that a significant number of students continue to encounter challenges in comprehending the concepts of supply, demand, and market equilibrium. According to Putri and Panca (2018). The challenges faced by students in the process of learning have a notable impact not only on their cognitive abilities but also on their attitude towards the subject matter of economics.

Schau (2003a) said that Attitudes are important in social psychology different people has different ideas about what Attitudes are and there is no agreed-upon definition. Experts who study Attitudes all agree that the most important thing about an attitude is whether it is positive or negative. Ajzen defines attitude as how someone feels about something in their world, and Schau (2003a) agrees that this definition works for students' Attitudes toward Statistics. "An attitude is an individual's disposition to respond favorably or unfavorably to ... any ... discriminable aspect of the individual's world". In the context of this research, the "world" is anything associated with economics subject, especially in supply, demand, and market equilibrium concepts. Attitudes are defined as "affective reactions that include positive or negative feelings of direct intensity and reasonable stability". Ashaari et al (Cladera 2021) report that from the mental point of view, attitude is seen as a mental condition that exists in an individual, formed through experience which will impact a person's response towards an object or phenomenon.

The attitude comprises various sub-constructs, including emotions, motivation, self-related values, perceived challenge, satisfaction, and other influential factors (Mbonyirivuze, Yadav, and Amadalo 2021); (Hannula et al. 2016). Motivation in



students is like a strong push that makes them want to learn. It needs to keep going from the start of learning to be effective. This helps students understand what they should achieve in their studies. It is important to help students become aware of how they are feeling when they are tired during their activities. This can motivate them to keep learning (Subektri and Kurniawan 2022). Motivation is related to attitude. When engaging in learning exercises, the attitude has been highlighted as an important factor to consider (Jufrida et al. 2019). According to scholarly research, students who exhibit a positive attitude display a heightened degree of attentiveness in their academic pursuits and attain satisfactory outcomes. Conversely, students with an unfavorable orientation (negative attitude) demonstrate a diminished level of diligence in their learning experiences and subsequently report unsatisfactory achievements (Kurniawan et al. 2019). The attitudes of certain students are postulated to play a crucial role in the process of acquiring knowledge and differentiating individuals in terms of their proficiency levels, particularly between beginners and experienced practitioners in a given domain (Mbonyiryivuze, Yadav, and Amadalo 2021).

The significance of economics education goes distant beyond the goal of moving forward with an understanding of the essential principles of supply, demand, and market equilibrium (Wyk and Wyk 2017). Students create perceptions of their economic world at an early age, primarily when in senior high school it develops in grade 10th, which, as they progress through the educational process, develop into attitudes and conclusions about the subject of economics. Planning or not, teachers

influence the course of attitude improvement. By finding ways to teach students more about economics, teachers are contributing to moved forward attitudes toward the subject (Laurie et al. 2016; Wyk 2012; Gay 2018). Teachers are not telling students what to think about money, they are giving them information especially about basic economic concepts so they can make better choices about important economic things. If students know more about economics, they will enjoy and appreciate it more, and learn more about economic problems. If students don't learn economics, they might never care (interest) about economics or how it affects their life. (Wyk and Wyk 2017).

Economic educators have developed an interest in decoding the enigma of non-cognitive conduct in the field of economics, specifically pertaining to 'Economic attitudes', as highlighted by Soper and Wilstad in 1983 (Musso et al. 2020; Wyk 2012). According to the authors previously mentioned, the impact could be just as crucial as cognitive abilities in shaping human conduct. Academic concern about the subject is deemed justifiable based on this factor alone, as per their belief. Despite comprehending the ramifications of economic actions and policies, people can still exhibit 'illogical' economic behaviors, potentially stemming from their economic attitude conflicting with their cognitive comprehension. Various definitions of attitudes have been proposed in psychology throughout history. Triandis and Walstad (Wyk 2012) present an overview that encompasses the fundamental concepts employed by attitude researchers "An attitude is a concept that carries An emotional charge, shaping the actions of individuals in response to certain social situations".



A multitude of scholarly investigations have been carried out concerning the perspectives of pupils regarding a specific discipline. Diversified subjects are taught at the senior secondary level, which are encompassed by this practice. Numerous investigations have delved into the topic of measuring and analyzing students' attitudes towards particular subjects, such as research about students attitude towards geography that conducted by Opoku, Serbeh, and Amoah (2021). Research conducted by e.g Kurniawan, Perdana, and Kurniasari (2018); Kaur and Zhao (2017); Reid and Skryabina (2002) regarding the development of instruments for students' attitudes towards physics, identification, and measurement of students' attitudes towards physics. In the discipline of statistics, there is a noticeable body of literature on investigations into the attitudes of students. This area of inquiry has been explored by various scholars, notably Vanhoof and colleagues in the year 2011; Nolan, Beran, and Hecker in 2012. This research has aim to identifying students attitude towards economics, mainly after study the supply, demand, and market equilibrium concept, mainly by utilized Rasch Analysis.

METHOD

This research utilized a quantitative approach, with a survey design especially using a cross sectional survey design. . A survey research design could be a procedure in quantitative research in which the researcher regulates a survey to a test or to an entire population of individuals to depict attitudes, opinions, behaviors, or characteristics of the population (Sovacool et al., 2018; Almeida et al., 2017; Creswell, 2012). A cross-sectional survey design is

the researcher collects information at one point in time (Spectore, 2019; Creswell, 2012).

The sample of this research is tenth grade students in social science program of senior high school in West Java. Previously they had an economics course especially learn about supply, demand, and market equilibrium materials. The sample are 81 students, consist of 60 female students and 21 male students with the average 15-17 years old.

The instrument that utilized in this study is Likert Scale that consists of five aspect and 15 numbers statement. Google form was used in this study to gather the data. A self-administered attitude scale was designed by, including in adjusting the attitude scale contained within the SATS and the attitude scale of students majoring in economics towards econometrics courses. SATS is an instrument for evaluating states of mind towards statistics (Cladera, 2021)

The instrument consists of 14 statement items to assess the following dimensions (aspects): affect, value, difficulty, interest, and effort. These items were rated using a four-point Likert Scale ranging from 1 (strongly disagree) to 4 (strongly agree). Data collection was carried out using the Google form and distributed to class X students who had studied the material on demand and supply. Data collection was carried out after the COVID-19 pandemic subsided and learning was carried out offline.



Picture 2

The Example of the Attitude Toward Economic Scale

Source: Personal documentation. 2023

Picture 2 is an example of a statement on the attitude scale of students majoring in social science towards economics. Data was collected using via google form, then analyzed using the Rasch Model with the

help of the Winstep application. The data obtained is then interpreted and analyzed.

We looked at the data using the Rasch measurement model to see how good the tool was and how people answered. Rasch analysis measures how hard items are, checks if the items fit, and finds any bias in the items (Bond and Fox 2015).

RESULT AND DISCUSSION

The instrument of students' attitudes toward the economy comprises five viewpoints with 15 statements. Each comprises positive statements and negative statements. Table 1 below is the division between aspects found on the scale of attitudes towards the economics.

Table 1. Aspect of Attitude toward Economic and its Distribution

Aspect	Explanation	Item Number
Affect	Describes the emotional state of students during their engagement with economics classes.	1,2,3,4
Cognitive	Expressing the state of comprehension of an individual regarding economic concept.	5,6
Value	Represents how the economics affects in daily life and becomes part of the future selection of students	7,8
Difficulty	This depicts the feelings of students while learning economics, specifically, the challenges and easiness encountered in the process.	9,10,11
Interest	Students' level of engagement and interest in studying economics.	12
Effort	Efforts made to attain maximum efficiency in the study of economics topics.	13, 14

Source: Processed data (2023)

To give a score, use these values: 4 means you strongly agree, 3 means you agree, 2 means you disagree, and 1 means you strongly disagree. The statements are given a score and then separated into positive and negative statements. Positive statements keep their score, but negative statements have their score changed so that they can be processed equally. The scoring process involves awarding numerical

values to indicate the degree of agreement or disagreement on a given measure. Specifically, a score of 4 represents a strong agreement, while a score of 3 signifies agreement. Conversely, a score of 2 implies disagreement, while a score of 1 denotes a strong disagreement. Once a score has been assigned to every statement, they are subsequently divided into two categories: positive and negative. Positive statements

retain their initial score, whereas negative statements undergo a score modification to ensure their comparability during the data processing stage.

We checked the research tool by using the Winstep program with Rasch Analysis. First, we check if the information is reliable. When using Rasch analysis, we can measure how reliable an instrument and a person is by using logit units, which show

the probability of their response. Logit is logarithm odd unit, we used a logit to change survey data into numbers called logits (Sumintono, Bambang; Widhiarso 2012). We used the logarithm function to change raw ordinal data (Likert-type data) data into a measure called logit. It helps us see how well the tool works for everyone (Adams et al. 2022); Bond & Fox, 2015; Linacre, 2013).

Table 2. The Result of Instrument Analysis

Type	Logit Mean (SD)	Separation	Reliability	Alpha Cronbach
Item	0.00 (0.59)	3.04	0.90	0.62
Person	0.39 (0.64)	1.25	0.61	

Source: Processed Data (2023)

Table 2 shows that the attitude toward economic tools (instruments) is very reliable with a value of 0.90. This means that a test with 14 questions can tell how much someone agrees or disagrees with economics, and can tell the difference between people who feel differently about it (Sumintono, Bambang; Widhiarso, 2012; (Setiawan, Panduwangi, and Sumintono, 2018)

Meanwhile, personal reliability is a measure that refers to how well a test can discriminate between individuals who have different tendencies towards the economy. Based on Table 2, it can be seen that the value of person reliability is 0.60. This shows that students are still not consistent in choosing a scale for the statements contained in the attitude toward economic scale.

The grouping of students can be grouped by referring to the value of the person separation index (Sumintono, Bambang; Widhiarso, 2012. This is done by using the following equation:

$$H = \frac{[(4 \times \text{separation}) + 1]}{3}$$

Based on Table 2, it can be seen that the value of the person separation index is 1.25. So obtained:

$$H = \frac{[(4 \times 1.25) + 1]}{3} = \frac{5 + 1}{3} = 2$$

Based on the equations and calculations above, the grouping that refers to students' attitudes towards the economy can be divided into 2 groups.

Students Attitude toward Economic. The tendency of students' attitudes towards the economy can be grouped into two groups, namely students who have a positive attitude towards the economics and students who have a negative attitude. This is done by measuring the logit value of students after students choose the scale on the statement in the attitude towards the economics instrument. When the logit value contained in the JMLE Measure column is > 0.00, the student attitude toward economic type can be categorized as a positive type, whereas when the logit value is <0.00, the attitude

towards economic students type is categorized as a negative attitude type. These tables and graphs below show how

students' attitudes toward economics. Boys are labeled as M and girls are labeled as F.

Table 3. The Distribution of Students Based on Attitudes Towards the Economics

Type of Attitude	Gender	Sum	Students
Positive Attitude Toward Economic	Male	14	17M, 12M, 08M, 03M, 15M, 11M, 13M, 16M, 01M, 04M, 05M, 18M, 19M, 07M
	Female	49	48F, 06F, 04F, 08F, 26F, 12F, 10F, 15F, 54F, 59F, 13F, 17F, 23F, 07F, 16F, 21F, 24F, 32F, 35F, 40F, 61F, 25F, 28F, 33F, 46F, 49F, 09F, 56F, 14F, 19F, 29F, 31F, 36F, 42F, 47F, 55F, 02F, 18F, 30F, 39F, 60F, 03F, 05F, 22F, 38F, 43F, 51F, 52F, 57F
Negative Attitude Toward Economic	Male	6	06M, 10M, 20M, 09M, 14M, 02M
	Female	12	01F, 20F, 27F, 37F, 45F, 50F, 53F, 58F, 44F, 34F, 11F, 41F
Total			81 students

Source: Processed Data (2023)

Based on Table 3 above, the percentage of students' attitude toward

economics can be represented in chart form as shown in Figure 4 below.

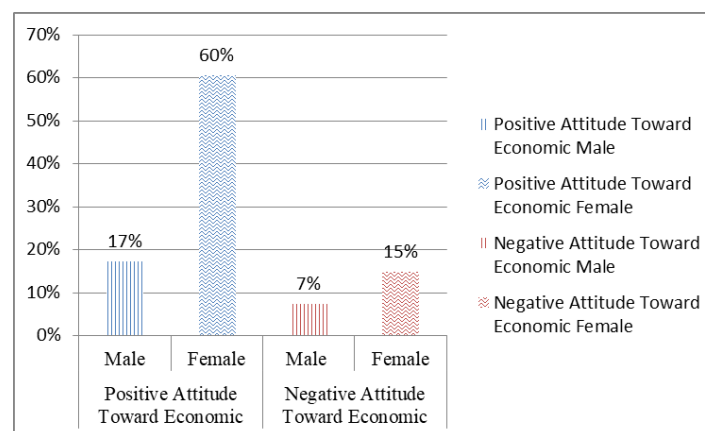


Figure 3

Percentage of Student Attitudes Toward the Economics

Source: Processed data (2023)

Past research has shown that it's important for teachers to encourage students to have a good attitude toward the subject they are teaching. This should be one of the goals in their classes. We need to ask the students what they think at the end of the course or when they finish all the materials to see if we did a good job (Cladera, 2021; Mboniyirivuze et al.,

2021). If we didn't, we need to make some changes to do better next time. This research found that a changed form of the SATS© and Econometrics scale can be utilized to achieve this goal. Every teacher can use a scale to see if their students have a good attitude toward the topic when the class is over. If not, the teacher should look

at how they teach and change it to make things better (Cladera 2021).

Based on the data in Table 3 and Figure 3, it is known that the majority of students, both male and female students, tend to have a positive attitude toward the economy. Students who have a good attitude do better in school because they pay attention and get good grades. But students who have a bad attitude don't do as well because they don't work as hard and get bad

grades (Cladera, 2021; Mboniyirivuze et al., 2021; Wyk, 2012).

Aspect of Attitude toward Economic. Apart from looking at how many students like economics, this study also examine what parts of economics they enjoy or dislike. This study uses Wright Maps with the help of Winstep software. Figure 4 shows the Wright Maps that were made.

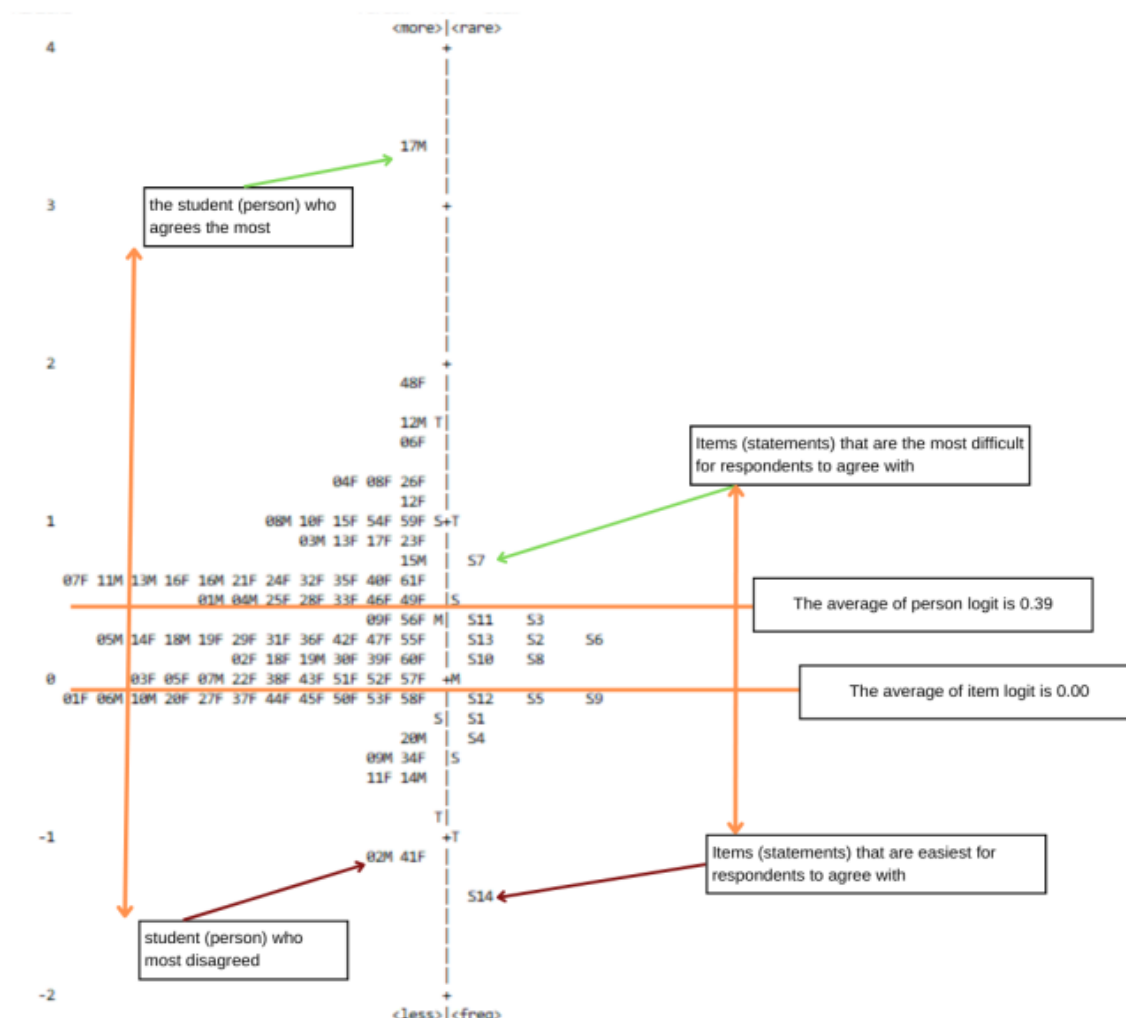


Figure 4
Wright Maps of the Data Analysis
Source: Processed data (2023)

Based on Figure 4 it can be seen that the statement that received the most positive responses was statement number 14 (S14). This statement includes the effort aspect in the context of the statement “I

always try to attend every economics class.” Students tend to always attend every economics class. This is in line with research (Cladera 2021) that one aspect that students tend to be positive about is the

value aspect. This should continue to be endeavored so that students continue to have a positive attitude.

While the statements that are the most difficult to agree with are statements 7 and 11 (S7 and S11), namely the value and affect aspects. Students tend to have a negative attitude towards values and difficult aspects. Statement number 7 states “I want to continue my studies (college) related to economics” while statement 11 is “Economics always involves difficult mathematical equations”. Some students do not want to continue their education by majoring in economics at the tertiary level, when asked why the majority of students want to continue in other majors such as majoring in accounting, law, and psychology, some of them want to choose work when they finish high school. Another reason is that majoring in economics has a lot to do with calculations. This is in line with statement number 11 (S11) which many students do not agree with, where economics lessons always involve difficult mathematical equations that are difficult to understand. This is in line with research (Cladera 2021). Teachers need to change their approach from just explaining economic concepts to talking about the specific features of these social phenomena and showing how mathematics equations (numeric data) can be used to study and explain them (Cladera, 2021; Carter et al., 2017). This is to help students who usually have a bad attitude about economics to become more positive and excited about learning it.

CONCLUSION

The conclusion from this study is that the majority of students tend to have a positive attitude towards economics learning, which is equal to 77%. However,

teachers need to improve several aspects of economics learning so that students are more likely to have a positive attitude towards economics learning, especially economic material related to mathematical equations, curves and graphs.

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