

Interest, Self-Efficacy and Attitudes Tendencies Towards Economic Learning Based on Demographic Factors: A Differential Item Functioning Analysis

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Abstract

The sagacity of an individual's economic proficiency influences the economic literacy of society. An acquaintance of economic literacy empowers individuals to decide rationally in the face of economic issues that impact the lives of communities and nations in a dynamic atmosphere. The Ministry of Education Malaysia realizes its gravity and upgrades economic education at the post-secondary level through Malaysia Education Blueprint (2012-2025). Although the analysis of economic performance indicates an increase every year, this percentage is still not encouraging. This study examined interest, self-efficacy, and attitudes tendencies based on demographic factors. This survey study used a questionnaire involving 528 Form Six economics students. Respondents were selected by random cluster sampling from 11 Form Six schools. Descriptive and inferential statistics using Differential Item Functioning (DIF) analysis were conducted to identify item propensity based on student demographic factors. Conclusions from the DIF analysis confirmed an interesting tendency based on gender, race, and place of residence. The data validated self-efficacy tendencies based on gender and race. Furthermore, the conclusion confirmed economic students attitudes tendency based on gender, race, and family income. The results offer valuable insight for policy researchers and educational institutions regarding how to involve economics to foster economic behaviour among students.

Keywords: Attitude, Economic Education, Interests, Self-Efficacy, Differential Item Functioning, Students

Introduction

Economic education is essential to an individual's daily life regardless of background. Understanding fundamental economic wisdom or economic literacy to society typically helps individuals become reliable and acquainted citizens (Di Girolamo et al., 2015; Specian, 2015).

Pühringer and Bäuerle (2019) stated that economic education plays a part in career, academics, and mind growth. A good understanding of economic knowledge helps students continue their studies and is wise in economic management in the future (Lyn & Sahid, 2021). Siegfried (2018) claimed that the number of economics students at the study centre decreased significantly since 2018. Roza Hazli et al. (2016) and Nurul Fazira et al. (2020) found that Malaysians had a low degree of economic literacy awareness. The evidence indicates that the quality of economic student work is still lacking, and improvements are still necessary.

Hence, the role of formal economic education is germane and deserves pertinent recognition at the school level (Grohmann et al., 2015; Oberrauch & Kaiser, 2019; Opletalova, 2015). High-quality education can contribute to professional knowledge and skills to yield competitive energy resources and sweeten monetary growth (Khan & Naru, 2006). In line with recent developments, the rebranding of Form Six and modifications to the existing curriculum was enacted through the Malaysia Education Blueprint 2013–2025. A different analysis by Ramlee and Khoo (2020) unearthed those new transformations in the Form Six curriculum positively influenced teaching preparation, implementation of teaching and learning, school management, lessening teacher workload, and enhancing student performance. The Form Six economics curriculum was transformed with a value-added component of manipulative and soft skills (Malaysian Examinations Council, 2012). A study period of two years to provide students with knowledge and understanding.

Literature Review

In addition to cognitive aspects, several non-cognitive aspects, such as interest Jack & Lin (2018); Schnell & Loerwald (2019), self-efficacy (Happ et al., 2018; Kader, 2016) and attitude Ananthan (2016); Anusia (2015); Norshahida (2015) were identified impact student economic achievement. This latent factor is an internal part of the individual that is impossible to measure directly but can predict the subsequent action. Low interest pushes students to lose focus while teachers teach primarily economic topics that involve high intrinsic loads, such as skills in interpreting graphs and data and the formation of economic curves (Davis, 2019). This low-interest facet relates to the formation of negative self-efficacy (Grigg et al., 2018). Laging and Vobkamp (2016) noted that self-efficacy factors link to attitudes and responsibilities for learning to understand and complete designated tasks. Students with negative perceptions exhibit a lack of enthusiasm, mindlessly answer tests, ignore revisions, disregarding initial preparation, and doing other tasks (Lopes et al., 2015; Skagerlunda et al., 2018).

Abitew (2019); Indrahadi and Wardana (2021) research further confirmed that socio-demographic factors impact student achievement. This situation occurs among economics students in several countries, including Germany, the United States and Japan (Brückner et al., 2015). Furthermore, previous studies have found that there is an imbalance of distribution among economics students based on demographic factors Bayer & Wilcox (2019) such as gender Brückner et al (2015); Happ et al (2016); Zhang et al (2016), race Bayer & Wilcox (2019), family background (Mensah et al., 2021; Suratno et al., 2021). This situation will have an impact on policymaking environments in the future. A diverse environment should be achieved so that every perspective is represented. However, past studies have paid less attention to the tendency of economics students based on demographic factors. Accordingly, this study aspired to examine the tendencies of economics students with similar characteristics towards interests, self-efficacy and attitudes based on student demographic factors. Hence, we formulated the following hypotheses: Ho: there is no trend in items

measuring interest, self-efficacy, and attitude based on demographic factors among Form Six economics students.

Method and Study Area

In this section, the researcher discussed the study population and sampling, study instruments, data collection procedures, and data analysis. This survey study was conducted using a quantitative approach. The data was then analyzed using Rasch measurement model, which is Differential Item Functioning (DIF) analysis. This approach was introduced as an alternative to psychometric measurement methods that can measure latent variables scientifically (Berrío et al., 2020). This model uses the logit value on a mathematical measurement where the probability of an individual supporting or answering an item correctly depends on the individual's ability and the difficulty level of the item (Bond & Fox, 2015). This measurement is holistic because it considers the ability and difficulty of the item simultaneously. Item bias can occur when items only work or attract the attention of only a part of the group (Rudnor, 1980). For example, the content of items about men's sports is more attractive to men than to women. The DIF value is vital to guarantee the fairness of a test so that it is not biased toward any group (Martinková et al., 2017). The research findings obtained in this study can detect categories of students inclined towards a particular aspect.

The population of this study refers to economics students who were studying in Form Six. The sample of this study involved 528 Form Six economics students done by cluster random sampling from 11 schools in Malacca, Malaysia. The selection of schools was based on the heterogeneous sample with characteristics like the population. Each selected school had the same characteristics: Form Six students enrolled in the Form Six economics stream using the same economics syllabus, and the students involved were eligible to be registered as school candidates.

The researcher has constructed this instrument, and the items constructed are based on the findings of previous studies. The instrument of this study went through a pilot stage to evaluate its validity and reliability. Forty Form Six economics students were selected from three schools. According to Azarilah et al. (2013), the Rasch measurement model can prove the validity of an instrument and the item quality. Hence, the Rasch measurement model was used to evaluate the instrument reliability by item-respondent reliability, item-respondent separation index and Cronbach's alpha values. The item reliability instrument respondents were also high, with values of 0.82 and 0.91 (Linacre, 2012; Taber, 2017). A good index separation value is better than two (Fisher, 2007). The value of the item separation index was 2.10, which indicated two distinct levels of item difficulty, while the value of the respondent separation index was 3.26, which signified those three levels of ability of the sample evaluated were identified. The summary in Table 1 proves this study instrument has good validity and reliability values and is relevant for actual studies.

Table 1
Reliability Analysis

Index	Reliability	Separation	Alpha Cronbach (α)
Respondent	0.91	3.26	0.92
Item	0.82	2.10	

The questionnaire instrument was divided into several parts, namely part A which demonstrates the demographics and contains items of gender, race, location of residence and estimated family income per month using various answer options. Section B represents an interesting construct (13 items) measuring emotions and actions that drive earnestness and effort made by students while learning and performing economic tasks. Section C represents a self-efficacy construct (six items) measuring students confidence in their ability and self-efficacy to perform learning and complete economic assignments assigned by teachers successfully to obtain good grades. Next, section D represents students attitudes (eight items), measuring students evaluation of economics subjects, whether positive or negative, on economics learning. The level of agreement of the five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was used to facilitate respondents to answer the questions provided.

Before the questionnaires were distributed, the researcher applied for permission applications from individual parties. Firstly, the researcher applied for a student declaration letter and permission from the Institution of Graduate Studies, Sultan Idris University of Education, Education Policy Planning and Research Division. Secondly, the researcher applied for permission from the Ministry of Education Malaysia through the Education Policy Planning and Research Division. Thirdly, the researcher applied for permission from the Malacca State Education Department and finally to the school principal before the questionnaire was distributed. Permission from the appropriate parties was critical for the researcher to enter government premises, specifically schools and meet research ethics requirements. Following the descriptive analysis, Differential Item Functioning (DIF) analysis was conducted to assess the tendency of respondents who had similar characteristics and abilities towards an item through Winsteps software (version 3.72.3).

Results and Discussion

The distribution of the demographic profiles of the study participants is shown in Figure 1, consisting of gender, race, location of residence and estimated family income. The distribution of respondents indicated that the number of female students (67%) was more than male students (33%). While as for the distribution by race, Chinese students recorded 50%, followed by Malay students (41%), Indians (9%) and others (1%). The distribution of students by location of residence established that most students were from urban (59%) and rural (41%). Besides, students from the low-income family group (B40) (53%) and the middle-income family group (M40) (40%) were almost proportional and followed by the high-income family group (T20) (6.8%).

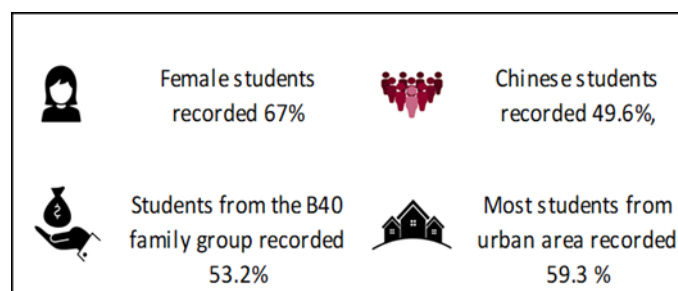


Fig. 1 - Respondent Profile

Items of Interest, Self-Efficacy and 'Students' Attitudes Tendencies' Towards Economic Learning Based on Demographic Factors

Next, Differential Item Functioning (DIF) analysis was performed to assess the tendency of respondents with similar characteristics and abilities to an item. Measurements of DIF that recorded values exceeding controlled values (DIF => 0.5 logits, t> +/- 2.0, or p <0.5) indicated that there was a differentiated item function (Bond & Fox, 2015; Boone et al., 2013). Based on the analysis performed, several items showed different item functions based on demographics such as gender, race, family income and location of residence of students, as shown in Table 2.

Table 2

DIF Analysis Summary of Interest, Self-Efficacy and Attitude Based on Demographics

Item	Gender	Race	Family Income	Residence Location
Interest				
B2		x		
B3	x	x		
B4		x		
B5	x	x		x
B7	x			
B8	x			x
B10	x			
B12		x		x
B13		x		
Self-efficacy				
C1	x	x		
C2	x	x		
C3		x		
Attitude				
D1	x	x		
D2	x	x		

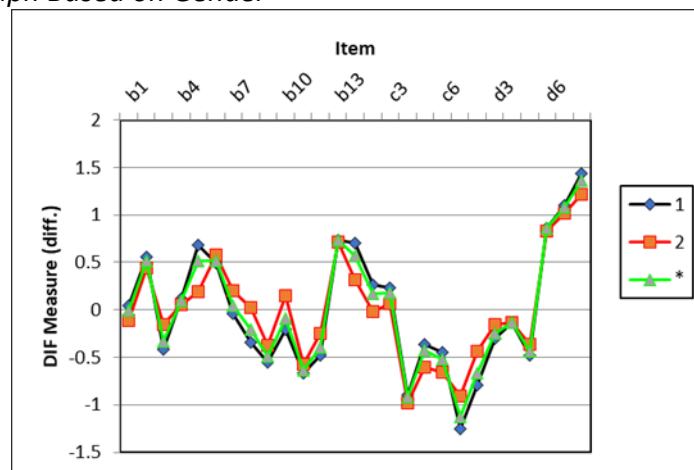
D4	I revise economic topics taught by teachers at home	x
D7	I love getting involved in economic programs	x

Note: X = Different Item Function

a. Items of Interest, Self-Efficacy and Students Attitudes Tendencies' Towards Economic Learning Based on Gender

Table 3 shows the results of the DIF analysis on students perceptions of elements of interest, self-efficacy and attitudes towards economic learning based on gender. Respondent group 1 represented females, and group 2 represented males. Eight items in the study were identified to be chosen as answers between males and females because the DIF score value was less than 0.5 ($p < 0.05$). Female students exhibited tendencies to items B3 (*I realise economics is useful in my daily life*), B5 (*I give my opinion even if the opinion is contrary to that of others*), B7 (*While in class, I am willing to share general knowledge with other friends*), B8 (*I engage in group work assignment discussions*) and B10 (*I get additional economic reading material in addition to the notes given by the teacher*) from the aspect of interest. In comparison, male students exhibited tendencies of item C1 (*I confidently answer economic questions during the test*) and item C2 (*I am confident of getting better economic marks*) from self-efficacy. Based on the attitude aspect, females exhibited tendencies towards item D1 (*I try to complete the assignment within the allotted time*) and item D2 (*I feel a loss if I do not attend the economy class*) compared to males.

Table 3
DIF Person Plot Graph Based on Gender



Note: 1 = Female; 2 = Male; *= mean

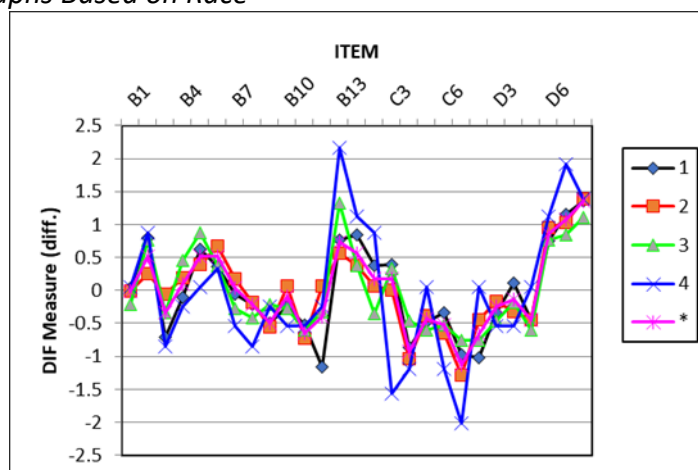
Following the first finding, female students displayed a more susceptible tendency toward items of interest and attitudes toward economic learning than males. The data of the DIF analysis of this study found that female students tended to be actively involved by giving views in class and trying to complete assignments on time. It confirmed that female students were more active in the class than male students. Zhang et al (2014) supported the statement that the economic achievement of female students is better because female students work harder than male students. Nonetheless, this finding was contrary to Forster and Happ (2019), who mentioned that male 'students' interest is better than female students. Meanwhile, from

the aspect of self-efficacy, male students displayed confidence to face the test and confidence to obtain good marks compared to female students. It signified that male students desired to learn economics and deliver better confidence. Okpala et al. (2000) viewed academic effectiveness and student habits as influential in explaining all students academic achievement in macroeconomics classes. On the contrary, previous readings discussion of economic achievement based on gender factors presented inconsistent findings. Butters et al (2012); Brückner et al (2015) proposed differences in economic achievement based on gender, while Williams et al (1992); Lawson (1994) maintained otherwise.

b. Items of Interest, Self-Efficacy and Students Attitudes Tendencies Towards Economic Learning Based on Race

Table 4 shows the results of the DIF analysis on the perceptions of the elements of interest, self-efficacy and attitudes towards economic learning based on race. Respondent group 1 represented a group of Malay students, group 2 represented Chinese students, group 3 represented Indian students, and group 4 represented other students. There were 12 items in the study identified to be chosen as answers among Malay, Chinese, Indian and other students based on a DIF score value less than 0.5. It indicated that Malay students had a more susceptible tendency towards B12 (*I learn interesting new knowledge about the country's economy*) and D2 (*I feel a loss if I do not attend the economy class*). Chinese students exhibited tendencies to B2 (*Economics is one of my favourite subjects*), B13 (*I will choose an economics-related career in the future*), and C1 (*I am confident answering questions during the economics test*). At the same time, Indian students tended C2 (*I confidently answered economic questions during the test*). While students of other races are more susceptible to items B3 (*I realise economics is useful in my daily life*), B4 (*I can make better decisions based on the economic concepts I learned*), B5 (*I give my opinion even if the opinion is contrary to that of others*), C3 (*I revise economic topics without being instructed by a teacher*), D1 (*I try to complete the assignment within the allotted time*), D4 (*I revise economic topics taught by teachers at home*).

Table 4
DIF Person Plot Graphs Based on Race



Note: 1 = Malay; 2 = Chinese; 3 = Indian; 4 = Other; *= mean.

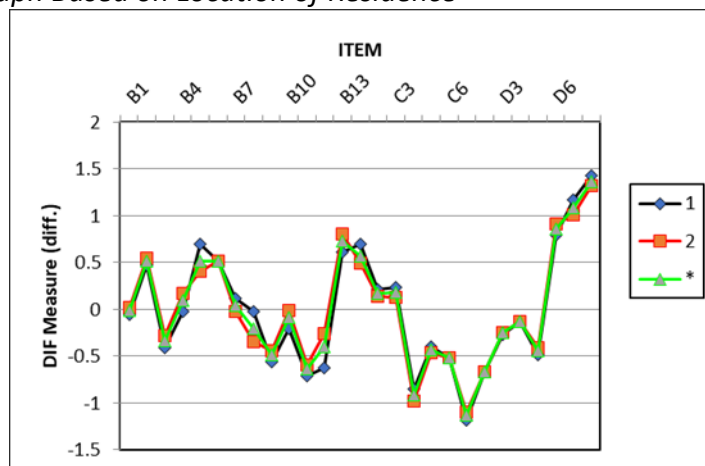
The results of the study's DIF analysis also revealed a tendency for Chinese students to be more interested in economics subjects, have confidence in answering test questions and choose a career in related fields. Lawson (1994) research also reported differences in students

attitudes towards economic learning based on race. Attitude factors, in turn, lead to the formation of a culture in a place (Henchoz et al., 2019). It is in line with the economic dominance of the Chinese in Malaysia, which is more significant than other races (Wan Hazwani & Asmadi, 2015). Form Six economics students in Malaysia consist of multi-racial students. Nevertheless, this study indicated that Chinese students were more dominant than other races, 49.6%. An imbalance in the distribution of students by race also occurred in United States institutions of higher learning (Bayer & Wilcox, 2019). However, Da Wan and Cheo (2012) added that differences in achievement based on race only occurred in Malaysia compared to Singapore.

c. Items of Interest, Self-Efficacy and Students Attitudes Tendencies Towards Economic Learning Based on Location of Residences

Table 5 shows the results of the DIF analysis on the perceptions of the elements of interest, self-efficacy and attitudes towards economic learning based on the location of students residences. Respondent group 1 represented students from rural areas, while group 2 represented students from urban areas. Three items (B5, B8 and B12) in the study were identified to be chosen as answers between rural and urban students towards the aspect of interest because the DIF score value was less than 0.5. Students from urban areas preferred items B5 (*I give my opinion even if the opinion is contrary to others*) and B8 (*I engage in group work assignment discussions*). In contrast, rural students preferred items of interest B12 (*I learn interesting new knowledge about the country's economy*). In comparison, no different item functions on self-efficacy and attitude items were recorded based on the location of residence.

Table 5
DIF Person Plot Graph Based on Location of Residence



Note: 1 = Rural; 2 = Urban; *= mean.

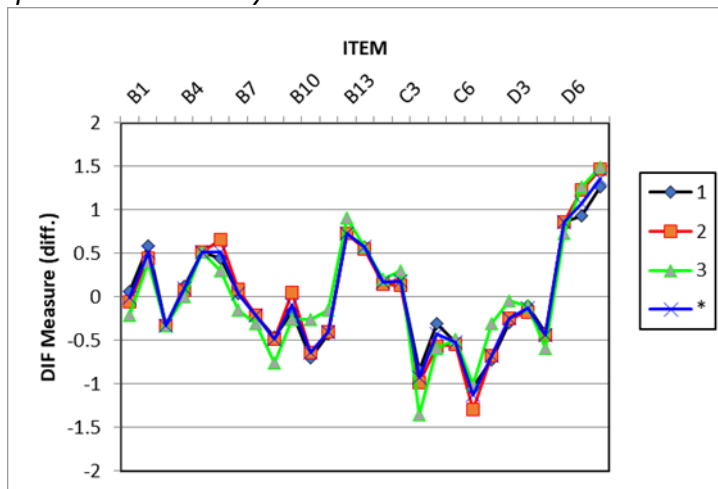
DIF analysis based on urban and rural student residence factors did not show a tendency toward self-efficacy and attitudes. However, there was a tendency of items of interest for students in the city to group learning and autonomous learning. Butters et al (2013), too located differences in economic literacy between urban and rural students. Students' diverse family backgrounds create a broader interaction network, leading to social skills, including economic learning. Thus, students in urban areas tend to study in groups. In addition, a good line of communication services in urban areas makes it easier for discussions outside of school

hours (Muthuprasad et al., 2021). This facility authorises each student to communicate freely and gain better access to information. In contrast, rural students are more likely to discuss current issues with teachers during teaching and learning sessions in the classroom. Butters et al (2013) suggested that rural economics students require trained graduate teachers in this field.

d. Items of Interest, Self-Efficacy and Students Attitudes Tendencies Towards Economic Learning Based on Family Income

Table 6 shows the results of the DIF analysis on the perceptions of the elements of interest, self-efficacy and attitudes towards economic learning based on family income. Respondent group 1 represented B40 students, group 2 represented students from M40, and group 3 represented T20 families. Only one (D7) item in the study was identified to be chosen as answer among students of B40, M40 and T20 families towards the attitude aspect because the DIF score value was less than 0.5. Students from the B40 family easily preferred the D7 attitude item (*I love getting involved in economic programs*). In comparison, the DIF analysis recorded no tendency towards 'students' items of interest and self-efficacy based on family income.

Table 6
DIF Person Plot Graph Based on Family Income



Note: 1 = B40; 2 = M40; 3 = T20; *= mean.

The results of the DIF analysis based on family income demographic factors established that students from groups B40, M40 and T20 did not show the tendency of interest and self-efficacy aspects. Nevertheless, there was a tendency of attitude items towards students from B40 families. According to Amagir et al (2020); Shahjahan et al. (2021), students from low socio-economic families were identified to tend to achieve lower achievement than students of other groups. It is because a family's socio-economic problems will affect students' motivation and emotions (Mahzan et al., 2021). B40 students only rely on teacher teaching resources and activity programs planned by the school. Family support predicts student learning retention (Annisa et al., 2021; Juttler, 2020). Meanwhile, the study of Qi and Wu (2020) in China proved that parental education dramatically influences children's education. According to Rahmawati et al (2019), family background factors positively link to financial literacy. More affluent families tend to make educational investments such as extra class expenses, reference materials, and personal tutor services (Das et al., 2014). Accordingly,

students in the higher socio-economic families' groups had sufficient resources to study compared to low socio-economic families (Okioga, 2013). In summary, this study established that attitudes toward B40 families could be improved by involving them in external programs related to economic literacy, such as academic visit programs. Educated families can encourage children who are economically literate and interested in entrepreneurship. Parental guidance and life experience are essential predictors of financial knowledge (Mensah et al., 2021; Suratno et al., 2021). Parents also play a role in building a cheerful outlook of students in supporting their child's economic learning. Meanwhile, the study findings show that students from low-income households tend to get involved in school activities. So, the school needs to prepare and plan to help students from low-income families by running appropriate external support programs.

Conclusion

On the whole, the results prove a tendency for interest, self-efficacy, and attitude items of economics students based on demographic factors. Data from the DIF analysis validated an interest tendency based on gender, race, and place of residence. This finding helps teachers to choose appropriate learning methods, approaches, and strategies to attract students' interest in learning economics. Among the steps that can be implemented by teachers to improve the understanding of economic concepts is by giving assignments and economic discussions in accordance with the student's surrounding context. Teachers could select topics that are relevant and relate to daily experience in managing economic concepts such as inflation, unemployment, and options.

Besides, the results of the analysis showed tendencies of self-efficacy based on gender and race. Therefore, teachers can provide moral support that builds and guides students from various demographic backgrounds. This can enhance students' confidence in their ability to understand and use economic concepts. Teachers can encourage students to be active in economic learning. For example, allowing students to speak, answer questions, and lead class activities. Teachers can act as role models by showing confidence and patience in facing challenges throughout economic learning. This can encourage students to have the same confidence in their own abilities.

Meanwhile, attitudes tendencies were also based on gender, race, and family income. Teachers can help students who may have difficulty understanding economics, especially for students who come from low-income family backgrounds. This could lead to more coaching sessions, additional learning resources, and individual help. Teachers can accept and appreciate the diversity of students including the demographic background of their students. This can be achieved by relating discussions that reflect the diverse cultural, ethnic, or socioeconomic backgrounds of students involved in economic learning. Activities such as problem-solving, collaborative projects, and group discussions can enhance students' understanding of economics. Teachers have the ability to create a supportive learning environment. Various demographic groups of students are actively engaged in discussions of jobs, income, cost of living, and expenses. This can expand students' economic awareness and positive attitude, further encouraging students to master the topics of economic learning.

Nevertheless, there were some limitations to this study. Firstly, the study respondents were only concerned with Form Six economics students in Malacca, Malaysia. The researcher proposes added studies concerning students from other states and matriculation students. Secondly, the findings of this study involved only quantitative data. One may add value to the subsequent study by getting perspectives using qualitative data through interviews and

administering experimental studies to identify the effectiveness of learning methods on students' interests, self-efficacy, and attitudes.

This study could guide school administrators, economics teachers, and students. The school administrators should work with the Form Six-unit officers to schedule programs to improve the quality of teachers and students in an integrated manner at the district and state levels. Teachers should specify students' needs based on students' demographic factors by considering the needs and tendencies of students according to demographic factors. Teachers should, too, diversify active learning strategies by enhancing student engagement to promote learning outside the classroom. Thus, high-quality learning helps economics students perform better to prepare themselves to pursue higher education in the future. This study also contributes to the current literature regarding Rasch model measurement of items, especially in the context of economic education. Findings and discussions from this study are expected to help build a fair and good assessment instrument in the future. In addition, a balanced distribution of economics students based on demographic factors ensures that policymaking environments in the future can represent the voice of everyone from a diverse background. A diverse environment can increase creativity and the involvement of experts from different backgrounds and further ensure that the gap or economic inequality is minimized.

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