

Conference Paper

An Investigation into the Critical Reading Skills of Engineering Students at 2 Private Universities in Malaysia and Vietnam

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This study compares the critical reading proficiency of engineering students from two private institutions in Malaysia and Vietnam. It examines the degree to which PISA-based critical reading test scores of first- and final-year students vary. 182 engineering students, including 86 Malaysian and 96 Vietnamese undergraduates, were involved in this project. Descriptive and quantitative analyses were performed on the data. According to the findings, most students at two universities exhibited moderate critical reading skills. Moreover, the study's outcomes revealed no substantial disparities between the critical reading levels of the final year Malaysian and Vietnamese students. By contrast, the performance of first-year students at two universities varied significantly on some test items. Some considerations regarding the selection of Western-based texts and the use of open-ended questions in the PISA reading test that might cause difficulties for Eastern students are also demonstrated in this study.

Keywords: critical reading, Pisa 2018 reading assessment, engineering students, higher education

1. INTRODUCTION

Reading critically has been recognized as a crucial skill for students in the 21st century due to the requirement for success in a fast-paced digital world that takes center stage. With the growth of technology, young adults are more immersed in a pool of information; thus, they must learn how to select, analyze, evaluate, and assess the knowledge they have encountered over their academic and professional lives [1]. Significantly, undergraduates should be prepared to read actively and critically, as opposed to passively, as in the traditional education system. As a result, the primary responsibility of higher education institutions in the twenty-first century should be to equip tertiary level students with the skills to collaborate, be self-directed, flexible, creative, analytical,

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self-assessed, and then make their own decisions to meet the demand of producing successful and skilled workers in the future labor market [2, 3].

Even in high- and middle-income nations, the PISA (Program for International Student Assessment) reading scores of adolescents have not increased in recent years [4]. Despite this, it is commonly believed that Asian students lack critical reading and critical thinking skills compared to their Western counterparts [5-8]. In addition, the reading component of the PISA 2018 test reveals an overall fall in reading interest. According to OECD research, more than 10 million PISA participants failed to complete even the most fundamental reading activities in 2018 [4]. In addition, the number of 15-year-old students who performed at the highest levels rebounded from the previous evaluation in 2009, growing from 7 to 9 percent in 2018 [4], which could be seen as a marginal improvement in the students' critical reading skills over the course of 9 years.

As shown in Figure 1, Malaysia's reading score (415) is lower than the OECD average of 487 [9]. Malaysian students obtained at least Level 2 competency in reading at a rate of 54 percent (OECD average: 77 percent). These students can, at a minimum, determine the main concept of a moderately lengthy text, retrieve information using explicit, though sometimes complex criteria, and, when explicitly instructed, reflect on the purpose and form of texts. A small percentage of Malaysian students achieved Level 5 or 6 on the PISA reading test, suggesting they were proficient readers (OECD average: 9 percent). Students at these levels can grasp lengthy texts, deal with abstract or counterintuitive concepts, and distinguish between fact and opinion based on implicit indications regarding the content or source of information [9].

The Ministry of Education and Training (MOET) reports that Vietnamese students scored higher on the 2018 PISA than in previous years. Vietnam received a reading comprehension score of 505, ranking thirteenth out of 79 countries and territories, a 19-grade improvement from 2015. Vietnam, on the other hand, was not included in PISA 2018 rankings. MOET cites the discrepancy between the evaluation metrics of Vietnam and OECD nations as one of the explanations. According to Le Thi My Ha, Country Director of PISA Vietnam and Director of the Center for Educational Quality Assessment within the MOET's Department of Quality Management, Vietnamese students fared well on the complicated questions posed by the OECD. Surprisingly, they performed poorly on the simple PISA test items. The questions about subway travel, financial investment, and international calling were deemed "tough" by Vietnamese students, despite being viewed as incredibly straightforward by students from other countries. Vietnam's exclusion from the 2018 PISA ranking indicates that young people have academic knowledge but lack experience and life skills. This illustrates the insufficiency

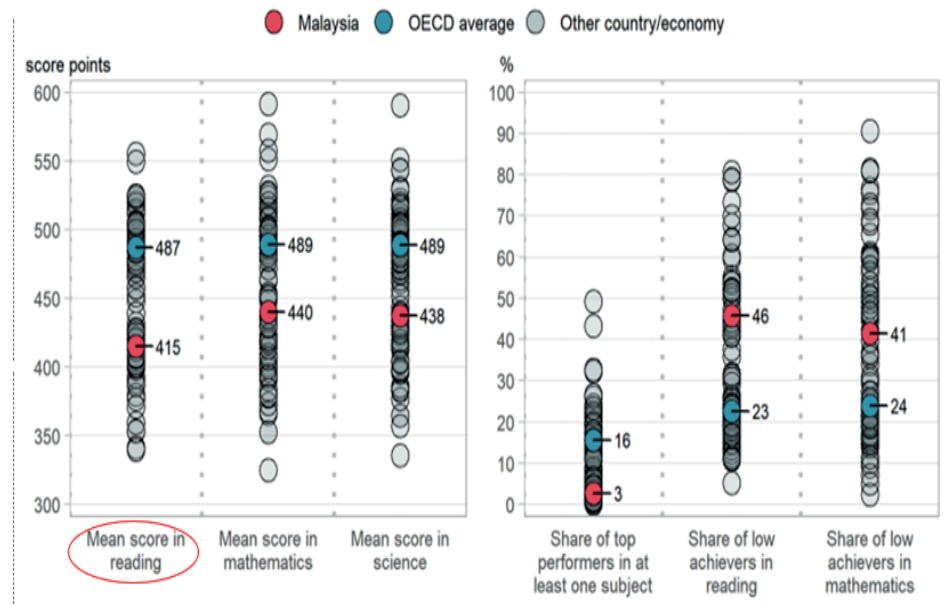


Figure 1: Snapshot of 15-year-old Malaysian students' performance in reading, mathematics, and science.

of the Vietnamese educational system in transmitting soft skills to students to produce graduates who are competitive in the evolving employment market.

However, compared to previous PISA cycles, Vietnam's 2015 reading score of 487 was below the OECD average of 493 [10]. It was ranked 19th in reading out of 65 participating countries in the 2012 PISA cycle, with a mean score of 508, higher than all other developing nations. Concerns have been voiced over Vietnam's exceptional performance. While some scholars feel that education contributed significantly to Vietnam's economic growth in the 1990s and early 2000s [11], others have qualms about the PISA sample frame in Vietnam. Spaul (2019) observed that Vietnam excluded more 15-year-olds than any other country from the PISA sampling frame, meaning that almost half of all 15-year-olds are not represented in the PISA sample [12]. Therefore, Vietnam's PISA response data statistics cannot reasonably estimate the performance of all Vietnamese adolescents.

2. Research Objectives

According to OECD data, Malaysian and Vietnamese students performed below the OECD average on the PISA reading test during the past few years. Furthermore, Asian students are regarded as lacking critical reading and thinking skills [5-8]. Nonetheless, as examined from the literature, there is a dearth of tertiary-level studies assessing the critical reading skills of Asian students using the PISA reading framework. In addition,

few empirical studies have been conducted to measure the critical reading skills of engineering students, which could be viewed as a crucial ability for engineering students' academic progress and future careers [3]. Hence, this study set out to:

1. evaluate the critical reading abilities of engineering students at two private universities in Malaysia and Vietnam using a test based on the PISA reading framework;
2. ii. compare the critical reading performance of first-year and final-year students between the two universities.

3. Research Questions

This study, consequently, is in search of answers to the following questions:

1. What are the critical reading levels of first-year and final-year Malaysian and Vietnamese engineering students?
2. Are there any significant differences between the results of the critical reading test of first-year and final-year Malaysian and Vietnamese engineering students?

4. LITERATURE REVIEW

1. International Student Assessment Program (PISA) and PISA Reading Domain

The Programme for International Student Assessment (PISA) is a triennial assessment of 15-year-old students that evaluates their mastery of the basic information and skills for full participation in society. The evaluation focuses on students' ability in reading, mathematics, science, and an innovation domain (global competence in 2018), as well as their well-being [13].

As was the case in 2000 and 2009, reading was the focus of PISA's principal evaluation area in 2018. New names have been given to the same three assessment subscales used beginning in 2000 and again in 2009. The PISA 2018 reading literacy framework identifies "Evaluating and Reflecting" as the final stage [13]. Reading comprehension has always relied heavily on critical thinking and introspection. Thus, it is not enough for a reader to merely understand the meaning of a book or collection of texts; they must also assess the reliability of the information contained inside and the accuracy of the presentation [3, 14].

The PISA measures reading ability on a spectrum from low to high. Adolescents scoring in the fifth and sixth percentiles on the PISA test are thought to have advanced

cognitive skills [15, 16]. PISA-successful nations have underlined the necessity of nurturing young minds' capacity for critical analysis and creative problem solving so that they may one day compete successfully on a global scale [17, 18].

5. Assessment of Malaysian students through the lens of PISA

According to the Malaysian government's Education Blueprint 2013-2025, the amount spent on education in 2011 was not only more than the OECD average of 3.4% of GDP and 8.7% of overall government spending, but it was also on par with or higher than systems in Singapore, Japan, and South Korea. In 2022, the government continues to allocate the largest share of its budget, 16 percent, to the Ministry of Education, with a budget of RM52,6 billion. This exemplifies the government's dedication to education as a national priority (Ministry of Education Malaysia, 2022). In contrast, in both the 2009 and 2012 rounds of the Programme for International Student Assessment, Malaysia scored worse than other nations with comparable income per capita or education expenditure (PISA). Importantly, it rated significantly lower than the high-income East Asian economies with which it seeks to compete for innovation and knowledge-based investments. In each of the three subject areas, the country's exam scores were at least 100 points below those of its regional peers, such as Korea and Singapore.

The 2018 Programme for International Student Assessment (PISA) reveals that Malaysian students have improved in mathematics and science. In Malaysia, the mean scores for mathematics (440) and science (438) were higher than in 2009 and 2012, when this country participated for the first time. In reading (415), last year's performance was comparable to that of 2009 but superior to that of 2012 [4]. In general, both high- and low-achieving students had enhancements; however, the improvements in mathematics were most noticeable among the highest-achieving students: at the 90th percentile, performance increased by around 17 score points over a three-year period. Figure 2 depicts the performance trends of Malaysian students in reading, maths, and science from 2000 to 2018.

*(Notes: * indicates mean-performance estimates that are statistically significantly above or below PISA 2018 estimates for Malaysia. The blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The red dotted line indicates mean performance in Malaysia. The black line represents a trend line for Malaysia (line of best fit).)*

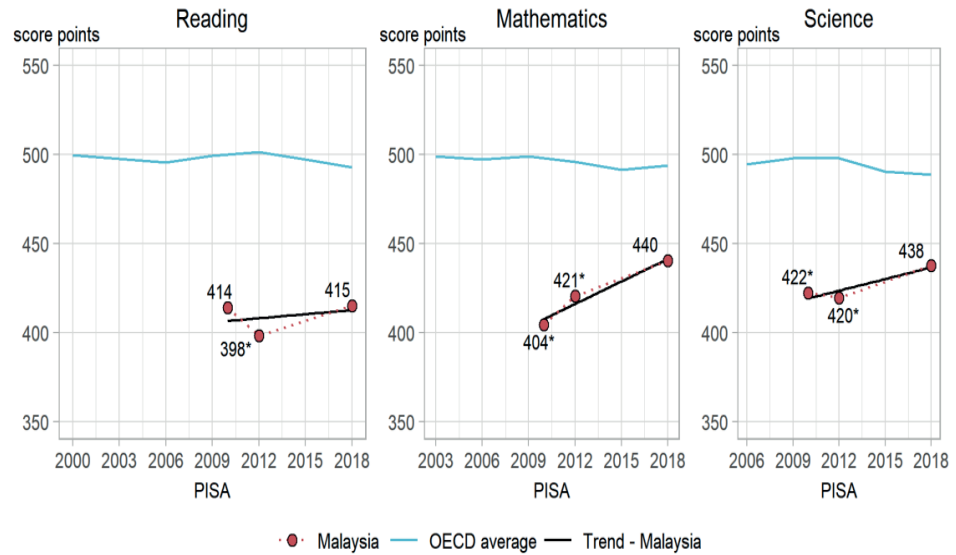


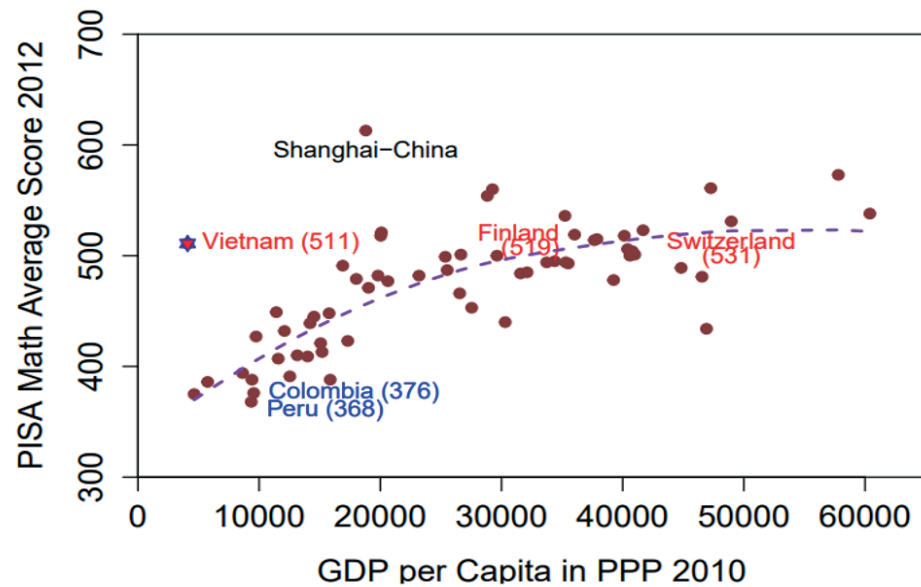
Figure 2: Trends in performance in reading, mathematics, and science.

Compared to math and science, it is evident that the reading skills of Malaysian adolescents between 2000 and 2018 have not improved dramatically.

6. Assessment of Vietnamese students through the lens of PISA

Vietnam participated in the Programme for International Student Assessment (PISA) for the first time in 2012. It did much better than other developing countries in this programme. The PISA scores for 15-year-olds in Math, Reading and Science are based on an OECD mean of 500 points and a standard deviation of 100 points. Only a few developing countries participated in the PISA, which may be because most of them score much lower than OECD countries. In the OECD-PISA 2012 database, Vietnam is one of seven countries with a GDP per person of less than US\$10,000. Some of these countries include Albania, Colombia, Indonesia, Jordan, Peru, Thailand, and Tunisia. At \$4,098 per person, Vietnam has this group’s lowest GDP per person. Figure 3 shows that there is a positive, but not a straight line, link between GDP per capita and PISA test scores. Figure 3 shows that Vietnam, marked by a red star, is a long way ahead of the other developing countries grouped together in the bottom left corner. With an average math score of 511, Vietnam is more like Finland (519) and Switzerland (531) than Peru (368) and Colombia (376).

Vietnam did take part in the 2018 PISA utilizing paper instruments. The international comparability of Viet Nam’s performance in reading, maths, and science could not be



Source: OECD-PISA database

Figure 3: The correlation between GDP and PISA test scores in Vietnam.

guaranteed when this report was issued. For this reason, the OECD did not report PISA performance comparisons between Vietnam and other countries. Nevertheless, according to the Ministry of Education and Training (MOET), the PISA 2018 scores of Vietnamese students were higher than in previous years.

One likely interpretation of Vietnam's PISA results is that Vietnamese students surpassed those of the majority of other countries not due to more incredible talent but rather because they were highly motivated and well-prepared for the PISA examinations. Several instances highlight the competitive nature of Vietnamese students and teachers when it comes to examinations [19]. The academic skills of non-enrolled 15-year-old Vietnamese are likely lower than those of enrolled students. Since the PISA exam only includes school-aged students aged 15, this may contribute to Vietnam's high PISA scores compared to other PISA countries [19]. However, Parandekar and Sedmik (2016) argue that the most compelling explanation for Vietnam's outstanding achievement is a trifecta of diligent Vietnamese students, robust monitoring from their teachers, and supportive parents [20].

7. Critical Reading (CR) skill and its significance toward undergraduates' development

Reading proficiency is particularly crucial since it enables students to be involved in the evolution of knowledge in the global world. Reading is not only a way for

writers and readers to exchange ideas but also a typical technique for most people to obtain information and increase their knowledge. Reading is a receptive talent, yet it requires an active thought process and has cognitive repercussions for the reader. According to Yamasaki, McGregor, and Booth (2020), critical reading skills are one of the reading skills categories [21]. Students with critical reading skills will be able to analyze, synthesize, and evaluate what they read, as critical reading is an academically relevant cognitive skill. When teachers expose students to critical reading skills, they will also encourage students to recognize cause-and-effect links, compare textual relationships, and develop an essential posture towards the text. In other words, when teachers educate kids on critical reading abilities, they will also develop critical thinking skills because critical reading will lead to critical thinking (critical reading will precede critical thinking) [22]. It means that students must fully comprehend a text to analyze, synthesize, and evaluate it. Only then will they be able to think critically about the text, such as choosing or rejecting the ideas presented, agreeing or disagreeing with the issues, and, most importantly, understanding why they make these decisions.

Critical reading generally entails acquiring insight into numerous facets of textual content. Among these are the author's intent, credentials, prejudice, target audience, attitude, and supporting sources. In addition, the reader should be able to distinguish between facts and opinions, utilize existing information, and fill in the spaces. A reader should also be familiar with the material's authenticity, language, and logic.

8. METHODOLOGY

8.1. Participants

The G*Power 3.1 software was used with a t-test family and "a priori power analysis" to estimate the required number of study participants [23]. The minimal number was determined to be 82 ($\alpha = 0.05$, $power = 0.85$, medium size $d = 0.6$ one-tailed, each group with at least 41).

One hundred eighty-two engineering students between the ages of 18 and 23 from Malaysian and Vietnamese private universities participated in the study. Among such participants, there were 94 first-year engineering students and 88 seniors from two private institutions of higher education where English is the medium of instruction and where the entry requirements for engineering programmes are comparable in terms of Math, Physics, Chemistry, and English proficiency.

All of the participants volunteered to participate in the study, which was sanctioned by the university's administration and their lecturers.

8.2. Instrument: Critical Reading Test

This current study aims to compare the critical reading levels of Malaysian and Vietnamese engineering students; thus, a test adapted from the PISA 2018 reading framework and assessment was utilized.

The PISA reading test evaluates the reading skills of 15-year-olds who have finished their compulsory education. Each task shows this level of reading skill by simulating a reading activity a reader might do at school, at home, as a teen, or as an adult [13]. However, the PISA reading assessment can be used to evaluate students' reading abilities at the tertiary level because it contains multiple texts and activities of varying difficulty and requires students to apply a number of processes or diverse techniques for cognitively interacting with the text. The reading proficiency scale was divided into levels 1b, 1a, 1c, 2, 3, 4, 5, and 6 for the PISA 2018 cycle. In order to examine the critical reading skills of university students, only items from levels 3, 4, 5, and 6 were selected for the critical reading test. Levels 3, 4, and 6 of the PISA 2018 evaluation capture students' ability to evaluate the quality and credibility of information and manage textual conflicts, an aspect of reading literacy that was not emphasized in initial tests. The items for levels 3, 4, 5, and 6 of the critical reading test are included in Table 4.

9. DATA COLLECTION AND ANALYSIS PROCEDURES

The researcher initiated data collection in September 2021. Due to the outbreak of COVID 19, the researcher attended eight virtual classes (four classes with first-year students and four classes with seniors from two universities) to request that they complete the critical test designed via a Google form link, after receiving permission from four lecturers and tutors to visit their virtual classes to collect data.

The test was administered in virtual classrooms in 30 minutes, with no discussions or dictionaries permitted. The researcher then requested a Ph.D. scholar in applied linguistics from Vietnam to independently grade the exam responses of 182 participants, assigning 1 for correct answers and 0 for incorrect ones. After completion, an inter-rater reliability test was conducted to evaluate the results of two raters for open-ended questions (three items: Questions 2, 5, and 6) and critical reading level. Table 5

Reading process (Aspect)	Question format		
	Multiple choice	Complex multiple choice	Open response
Represent literal meaning			1 Question: level 3
Access and retrieve information within a text	1 Question: level 4 1 Question: level 5		
Reflect on content and form		1 Question: level 5 (Level 4 if partial credit)	
Detect and handle conflict			1 Question: level 4
Integrate and interpret			1 Question: level 6

Figure 4: Descriptions of the Top Levels on Reading Proficiency in Critical Reading Test.

illustrates the inter-rater reliability of test scores of first-year and final-year Vietnamese and Malaysian students.

TABLE 1: Inter-rater reliability of test scores of first-year and final-year Malaysian and Vietnamese students.

	CR Questions and Level	Cohen's Kappa Value
First-year Group	2	0.95
	5	0.91
	6	0.93
	CR Level	0.96
Final-year Group	2	0.93
	5	0.92
	6	0.94
	CR Level	0.96

According to Table 5, since Cohen's kappa (k) values were all greater than 0.90, it could be indicated that there were strong agreements between the two raters. However, any discrepancies in the scores were solved via discussion between the raters until the agreed final scores were reached for all items.

All of the data were imported into an Excel file prior to processing in SPSS version 25.0. (Statistical Packages for Social Sciences)

10. RESULTS AND DISCUSSION

Compare the critical reading test scores of the first-year Malaysian and Vietnamese engineering students.

Independent Samples t-tests were performed to compare the critical reading abilities and the 6-question test scores of first-year students in Vietnam and Malaysia. The results were summarized as follows.

TABLE 2: The Independent Samples t-tests of 6-question test scores and CR levels of first-year Malaysian and Vietnamese students.

INDEPENDENT SAMPLES T-TEST							
	t	Df	Sig (2-tailed)	Mean	SD	95% CI	
				Differen		Lower	Upper
Q1	-3.012	90.611	.003	-.278	.092	-.462	.95
Q2	-1.319	88.192	.191	-.132	.100	-.330	.067
Q3	-1.332	88.615	.186	-.135	.101	-.335	.066
Q4	-1.890	92	.062	-.194	.102	-.397	.010
Q5	-2.701	92	.008	-.271	.100	-.469	-.072
Q6	-3.406	80.206	.001	-.320	.094	-.507	-.133
CR Level	-3.723	88.109	.000	-.647	.174	-.993	-.302

As illustrated in Table 6, there was no statistically significant difference between the Question 2 results of Vietnamese and Malaysian first-year students ($p=.191 > .05$). This open-response question corresponded to level 3 of the PISA reading assessment framework and was also the lowest-scoring question on the critical reading exam administered in this study. This item was used to illustrate the literal meaning of the text. Although it was deemed the simplest question on the critical reading exam, few Malaysian and Vietnamese students were able to produce the proper responses, with mean scores of 0.43 and 0.30, respectively.

Likewise, there were no significant differences between the two groups for Questions 3 ($p=.186 > .05$) and 4 ($p=.062 > .05$). The third multiple-choice question was complicated and required students to consider the text's item; the student must accurately complete all five rows. Students were required to fill in four rows accurately for partial credit. Students who correctly answered fewer than four statements are not awarded credit. Questions 3 and 4 are both level 5 questions on the PISA reading test; however, Question 3 is a complicated multiple-choice question, whilst Question 4 is a basic multiple-choice question. Question 3 required students to distinguish between claims

of truth and expressions of opinion, while Question 4 examined their ability to discover and retrieve information from a text.

The findings of the remaining three questions, however, differed significantly between the two groups (all p-values were less than .01). In Question 1, Question 5, and Question 6, Vietnamese students performed poorer than Malaysian participants, with a mean difference of -.278, -.271 and -.320, respectively. Question 1 is a straightforward multiple-choice question that evaluates participants' ability to recognize and retrieve information from a text. According to the PISA 2018 reading framework, this is a level 4 item. Questions 5 and 6 are level 4 and level 6 open-response questions, respectively. Question 5 examines participants' abilities to detect and handle conflict, whereas Question 6, the highest level of reading competency on the PISA reading assessment, evaluates students' ability to integrate and comprehend information. Malaysian students performed better than their Vietnamese counterparts with the highest level item (Question 6).

To determine the critical reading levels of participants from two universities, the researcher split them into four categories based on the proportion of correct test item responses: low, medium, high, and special cases. Table 7 shows how participants were divided into four groups of critical reading levels based on the results of their tests.

TABLE 3: Description of Critical Reading Level Groups.

Level	Q1(L4)	Q2(L3)	Q3(L5)	Q4(L5)	Q5(L4)	Q6(L6)
Low	x	x	x	x	x	x
	x	v	x	x	x	x
Medium	v	v	x	x	v	x
	v	v	x	v	x	x
Special case	x	x	v	v	x	v
	x	x	x	v	x	v
High	v	v	v	v	v	v
	v	v	v	v	v	x

Notes: x for incorrect answers; v for correct answers

As illustrated in Table 7, students with all accurate answers or five correct responses out of six, except for Question 6 (level 6), were assigned to the High CR level group. In contrast, those who answered all six questions incorrectly or who answered only one level 3 question correctly were assigned to the Low-level group. Individuals in the Medium-level group completed all level 3 and level 4 questions correctly. Students in the special case group were unable to answer questions at levels 3 and 4, although they could respond to questions at higher levels (levels 5 and 6).

There was a statistically significant ($p < .001$ – Table 6) difference between the critical reading levels of first-year students in the two countries. It shows that Malaysian undergraduates in their first year are more adept at critical reading than their Vietnamese counterparts. Figure ?? displays the critical reading levels of Malaysian and Vietnamese first-year students based on the numbers of students categorized in each level group

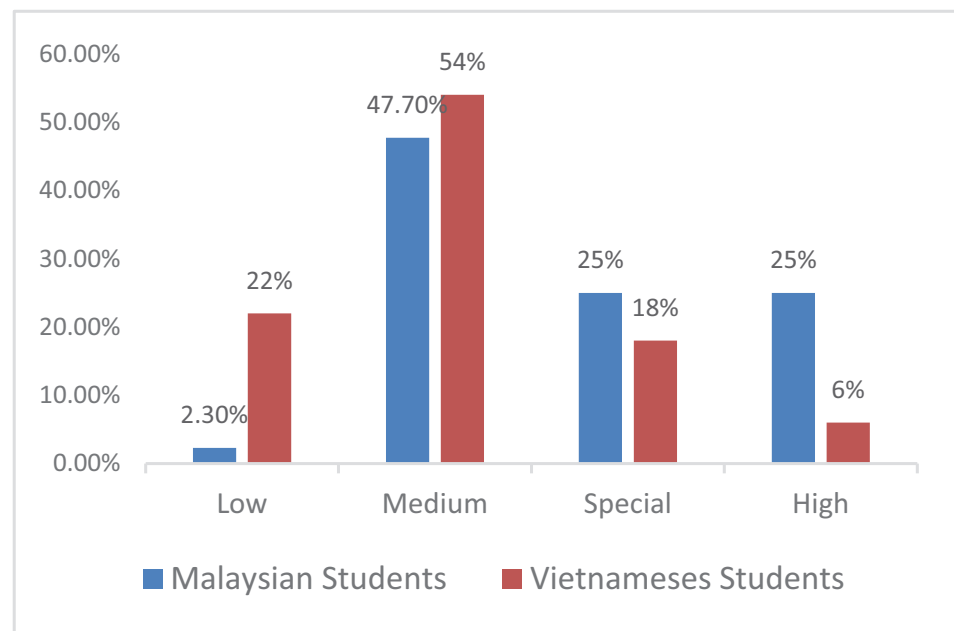


Figure 5: Critical Reading Levels of Malaysian and Vietnamese First Year Students.

As shown in Figure ??, the majority of students in both groups (Malaysia and Vietnam) achieved medium in critical reading skills, comprising 47.7 percent and 54 percent of the total participants in the two groups, respectively. Malaysian students in the higher level category outnumbered Vietnamese participants by a significant margin (25 percent compared with only 6 percent). Intriguingly, a large proportion of participants in both groups (25 percent of Malaysian participants and 18 percent of Vietnamese respondents) were categorized as special instances with critical reading skills. This group of students could score better on questions at higher levels, but they were unable to answer queries at levels 3 and 4.

Generally, Malaysian students performed better on all test questions than Vietnamese students, notably Questions 1, 5, and 6, which correspond to reading ability levels 4 and 6. In addition, Malaysian and Vietnamese students in their first year of study struggled with open-ended questions (Questions 2, 5, and 6) that allowed them to provide their own replies regardless of the difficulty level when compared to their ability to answer closed-ended questions. This could be due to their poor written English expression as

non-native English speakers or the fact that they are more accustomed to the limited number of closed-ended questions than open items on the exam.

Interestingly, neither Malaysian nor Vietnamese students fared well on the test's lowest-level question (Level 3) but did well on higher-level questions such as Levels 4 and 5. It was apparent that most Malaysian and Vietnamese students could do well on level 4 and level 5 items based on the percentage of students who responded correctly to each test item in both categories. Unbelievably, half of the Malaysian first-year students answered the highest-level question correctly, which means that they are able to read critically. This contradicts the conclusions of some other research indicating that Malaysians lack critical reading skills [24-26].

1. Compare the critical reading test scores of the final-year Malaysian and Vietnamese engineering students

Table 9. The Independent Samples t-tests of 6-question test scores and CR levels of final-year Malaysian and

10.1. Vietnamese students

TABLE 4

INDEPENDENT SAMPLES T-TEST							
	t	Df	Sig (2-tailed)	Mean Difference	SD	95% CI	
						Lower	Upper
Q1	-1.238	85.637	.219	-.144	.092	-.297	.069
Q2	-.954	86	.343	-.090	.094	-.278	.098
Q3	-1.946	81.699	.055	.164	.084	-.004	.331
Q4	-.830	86	.409	-.084	.101	-.285	.117
Q5	-2.470	85.151	.016	-.242	.098	-.437	-.047
Q6	-.973	86	.333	-.094	.097	-.287	.098
CR Level	-1.663	86	.100	-.315	.189	-.691	.062

Table 9 reveals that there was no statistically significant difference in the majority of questions between final-year students in Vietnam and Malaysia, except for item 5, where Malaysian students performed significantly better than their Vietnamese counterparts ($p < .05$ and Mean Difference = $-.242$).

In addition, there was no statistically significant difference between students in their final year at the two universities regarding their critical reading ability ($p > .05$), which

indicates that the senior groups of the two universities had comparable levels of critical reading.

Figure ?? depicts the critical reading levels of the Malaysian and Vietnamese final-year cohorts as determined by their performance on each test item.

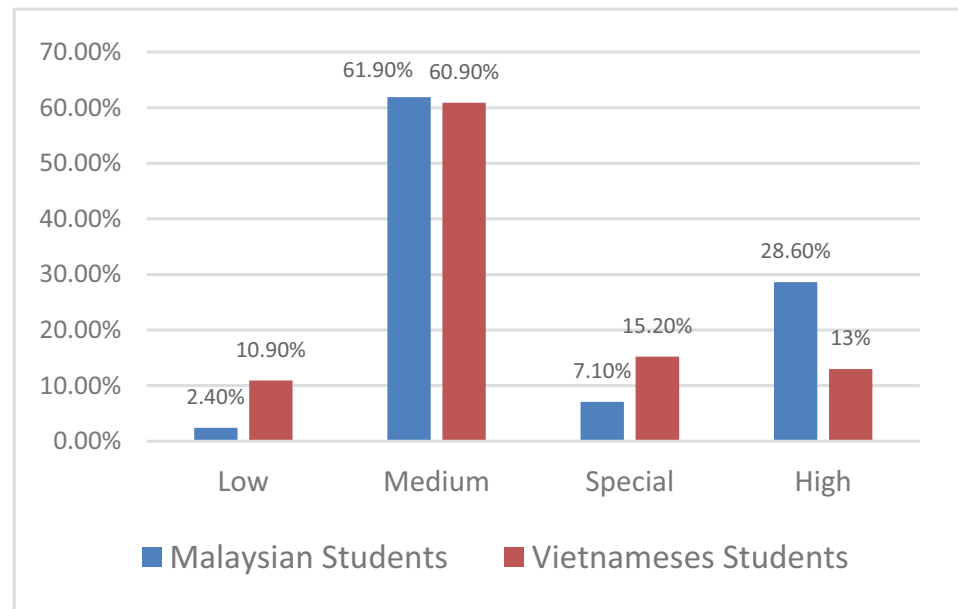


Figure 6: Critical Reading Levels of Malaysian and Vietnamese Final-Year Students.

Like first-year students, final-year Malaysian and Vietnamese respondents were assessed as medium-critical readers (61.9% and 60.0%, respectively). A total of 28.6 percent of Malaysian participants were categorized as strong critical readers, compared to 13 percent of Vietnamese students. A small percentage of adolescents scored in the top tier for critical reading skills. The rate of Vietnamese students belonging to the Special category was greater than that of Malaysian students, 15.2% versus 7.0%. A small fraction of Malaysian (2,4%) and Vietnamese (10,9%) students had inadequate critical reading skills.

According to the results of the CR test analysis in this study, both Vietnamese and Malaysian students in their first and final years did not lack critical reading skills, as stated in the OECD report and other previous research [5-7, 27, 28], with evidence that a relatively large number of students in both universities could perform well in higher level questions of critical reading skills. Undergraduates in this study had one thing in common: they tended to be challenged by open-ended topics that required them to write down their answers. It could be due to their limited usage of English as a second language, and they may lack confidence in expressing themselves in English. As a result, they were unable to deliver proper responses to the PISA reading assessment's

low-level open-ended questions. Another explanation for this phenomenon could be that students in both higher institutions were more familiar with the multiple-choice technique in reading assessments with alternatives, which have been popularly utilized in the final exams or national exams in Malaysian and Vietnamese educational systems. Text selection in PISA reading evaluation methods should also be taken into account. Clearly, the majority of texts chosen in the PISA reading tests tended to be Western culture-based styles, such as selecting an excerpt from a Western theater in the reading test, which is alien to Asian students' common sense and knowledge. As a result, students from Eastern countries like Malaysia and Vietnam may struggle to interpret, synthesize, extrapolate, and evaluate the texts' or authors' intentions.

In a comparison of students' critical reading abilities at two institutions in Malaysia and Vietnam, there was no significant difference in the critical reading skills of the final year students. In contrast, the outcomes of this study revealed significant differences in specific test items between first-year Malaysian students and their Vietnamese counterparts. Malaysian first-year students generally outperformed Vietnamese participants, particularly on higher-level questions. It seems that tertiary education contributes to the development of student's critical reading skills in some way because they have to deal with reading a plethora of academic books and articles. As a result, the importance of higher education and the necessity of adding more critical reading pedagogical approaches into university educational programs in order to strengthen young adults' critical reading and critical thinking skills could not be denied.

11. CONCLUSION

This study investigated the critical reading levels of engineering students at two private universities in Malaysia and Vietnam using the PISA reading test and compared students' critical reading skills in their first and final years. The majority of students at both universities demonstrated moderate critical reading skills, according to the data. Regarding the reading skills of Malaysian and Vietnamese participants, these results contradict the findings of prior studies and OECD reports.

Moreover, Malaysian and Vietnamese students struggled more with open-ended questions than multiple-choice items. Undergraduates at these two universities apparently lacked experience responding to open-ended queries on their terms since multiple-choice tests are pretty popular in the testing systems in Malaysia and Vietnam. In addition, many ESL/EFL students may find it challenging to articulate their opinions in English, particularly those who struggle with writing. Intriguingly, a considerable

proportion of students in both groups fared well on the more complicated questions yet could not answer the more straightforward ones. This finding coincides with the conclusion of the 2019 OECD report on Vietnamese youth. Therefore, the question posed here was why they performed better on more complex tasks than on simpler ones or whether the selection of texts and test techniques used in the PISA reading assessment appeared exotic to Malaysian and Vietnamese students, whose culture is heavily influenced by Eastern traditions, and therefore could affect their performance in each PISA reading assessment cycle.

Comparing the performance of Malaysian and Vietnamese seniors on the critical reading test, this analysis found no statistically significant differences for nearly all test items. However, significant differences were identified between the first-year participants from the two groups. On almost every exam item, Malaysian first-year students surpassed their Vietnamese counterparts. This study advised the regular use of open-ended questions in Malaysian and Vietnamese classrooms to trigger students' curiosity for reading and thinking more. Furthermore, credible projects or assignments that necessitate further research and reading from university students can be regarded as a practical strategy for enhancing their critical thinking and reading skills.

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