

Self-Perceptions and Actual Performance of Critical Reading Skills Among Malaysian Engineering Students

By

Aminabibi Saidalvi, Maisarah Noorezam,
Universiti Teknologi MARA Johor, Pasir Gudang Campus, Johor, Malaysia
Corresponding Author: aminabibi@uitm.edu.my
<http://orcid.org/0000-0001-8040-5136>

Wan Farah Wani Wan Fakhruddin
Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia
<https://orcid.org/0000-0002-3374-2022>

Ameiruel Azwan Ab Aziz
Universiti Teknologi MARA, Alor Gajah Campus, Melaka, Malaysia
<https://orcid.org/0000-0003-3645-3530>

Abstract

Students at any level need critical reading skills, especially in higher learning institutions. Students are required to extensively read, critically engage, and carefully question the content quality and factual veracity. In the era of information technology, anyone can create and publish information without peer review. Although the importance of critical reading skills is generally acknowledged, little is known about the critical reading skills of Diploma level students in the local context. Thus, this article examines Diploma students' critical reading abilities based on self-perceptions and performance when reading English texts. The study employed a quantitative research method based on a descriptive survey design. The research sample consisted of 44 engineering major Diploma students selected using a simple random cluster sampling design from a university in the southern region of Malaysia. Data was collected using a questionnaire. Besides, a critical reading comprehension test was distributed online through course teachers. Prior to collecting data, the questionnaire and the comprehension test were subjected to reliability testing. The findings indicate that Diploma students overestimated their critical reading skills compared to their actual performance, as they scored below average for some of Bloom's Taxonomy critical thinking skills. It is believed that the findings of this study would assist teachers in developing novel techniques to help students develop critical thinking skills. The pedagogical implications for language acquisition and instruction and future potential study areas are also discussed

Keywords: critical reading skills; critical thinking skills; perceptions; performance.

Introduction

Some people argue that reading is a passive, and an unactive process compared to speaking and writing skills. On the contrary, a person who reads has to actively connect knowledge and understanding in his mental process to develop comprehension of the reading material. Critical reading is defined by [Thuy \(2015\)](#) as the process of making judgments in reading; evaluating the relevance and adequacy of what is read, while critical thinking refers to the ability to analyse information, determine the relevance of information gathered, and then interpret it in solving the problems ([Gagne, 1988](#)). Based on Bloom's Taxonomy, human thinking skills are divided into two categories; higher-order thinking abilities (HOTS), which

include analysing, synthesising, and assessing, and lower-order thinking skills (LOTS), which include remembering, understanding, and applying. The former is the highest part of Bloom's Taxonomy since it involves the cognitive domain. Students who have the HOTS are thought to be skilled at coping with learning, improving their performance, and reducing their weaknesses (Heong et al., 2011) and are perceived to be better at handling problems, dilemmas, uncertainties, and questions both academically and personally (Tanujaya, Mumu & Margono, 2017). In the context of 21st-century education, elements of HOTS should be developed within students to help them acquire critical thinking abilities (Ahmad et al., 2019).

Critical reading skills involves high cognitive process and it is inevitable for students in their learning process. They need to examine, evaluate, and criticise many reading materials to fully engage with their studies. It is a challenging process since critical readers must simultaneously think and analyse, naturally leading them to a deeper interpretation of the text (Jinhong Yu, 2015). Students who are taught critical reading skills have more immense possibilities to identify, synthesise, compare, and contrast vital elements in texts. Besides, students who are able to acquire these skills, find it useful in reading their textbooks and various reading passages systematically and critically (Nasrollahi, 2015). According to Pardeded (2007), critical readers not only can accept new ideas by avoiding biases and prejudice interference, but they also interact with the writer by absorbing the writer's thoughts and adapting them to fit their purposes. With these skills, critical readers can go beyond the text to understand how the author reached that conclusion and its veracity. They can also assess the correctness of facts and their interpretations.

The executive summary of the Malaysia Education Blueprint 2015-2025 (Higher Education) emphasises producing students who can apply, create, and connect knowledge to provide solutions. This is in line with the process of critical reading, which involves critical thinking competence. Critical readers will be able to understand, question, and evaluate a text to assess the accuracy and validity of a writer's ideas actively and consciously. In realising the aspiration and vision in producing high-quality graduates with high thinking skills, Malaysia has joined PISA (Programme for International Student Assessment) partnerships. PISA focuses on assessing student performance in reading, mathematics, and science because these subjects are the foundation of a student's ongoing education. The recent PISA 2018 reading assessment placed greater emphasis on the ability to find, compare, contrast, and integrate information across multiple sources of text, including the electronic platforms. It is important to note that this assessment does not only look at students' ability to apply knowledge and skills in key subject areas as well as their ability to analyse, reason, and effectively communicate as they examine, interpret, and solve problems. PISA also promotes lifelong learning in which young people need not only knowledge and skills but also an awareness of why and how they learn.

The measures of the Malaysian Ministry of Education listed above demonstrate how crucial and challenging it can be for Malaysian children to learn and master the ability to read because reading is not part of their common culture. Students should develop their critical reading skills since doing so will enable them to think critically about themselves, their situations, and their surroundings in the classroom (Norris, Lucas & Prudhoe 2012). These include four critical reading skills; summarising, making inferences, synthesising, and drawing conclusions (Shamida, Sidhu & Md Naw, 2021), categorised in the HOTS category outlined in Bloom's taxonomy (Analysis, Synthesis and Evaluation). Several studies have explored students' critical reading skills at the postgraduate level (Khalil, 2019; Shamida, Sidhu & Md Naw, 2021) and undergraduate level (Rodzalan & Saat, 2015). However, very few studies investigate students' critical reading strategies in the local context, particularly among university students at the diploma level. To reiterate, as advocated by Koray and Çetinkılıç

(2020), critical reading is a cognitive ability that students should possess at the tertiary level; a skill that should be imparted and taught throughout their learning process to enable them to make better judgements and evaluations when reading texts.

Thus, this study examined the critical reading skills of diploma engineering students who enrolled in an Integrated Language Skills (ELC151) English proficiency course at a university in the southern region of Peninsular Malaysia. The aim of the study was to look at the students' perceptions and actual performance of their critical reading abilities. The findings will be helpful for teachers and the Ministry of Education to develop critical reading intervention programmes for students.

Literature Review

In meeting the challenging demands in the era of globalisation through English language acquisition, the integration of four language skills; reading, listening, speaking, and writing; is requisite. For all language skills, reading is viewed as an unavoidable medium for language learning (Kiew & Shah, 2020). Hence, reading is considered a critical skill to master in an academic setting as it acts as a tool to consolidate and extend proficiency and provide knowledge and gratification (Khair & Shah, 2021; Oktovia & Fitriana, 2017).

Critical Reading Skills

The term critical reading refers to the act of interpreting printed material and attributing meaning to it is referred to as (Samsuddin & Aspura, 2021; Abd Kadir, Subki, Jamal, & Ismail, 2014). Critical reading is the ability to think, or cogitate, while reading (Vaseghi, Gholami, & Barjestech, 2012), to evaluate a text and draw many inferences from it in a way that leads to various conclusions (Bobkina & Stefanova, 2016). The ability to comprehend the written word, to conceptualise meaning from the text, to understand the author's aim, to be aware of the text's theme, and to employ language to produce special effects are all required for critical reading text comprehension (Taboada, et al., 2009). Thus, reading critically, is reading with a critical mind, which leads to comprehension, evaluation, and a decision to accept or reject what has been read.

Critical reading is a prevalent and complex process of basic deciphering to integrate meaning between the author and the readers' aim of comprehending the texts. This process is significantly influenced by readers' past experiences, background knowledge, perspectives, and surrounding environment (Grabe & Stoller, 2013). Critical reading is highlighted as a prerequisite for educational attainment as interpreting texts in various situations where the information was presented and a variety of readers' approaches and reflecting on the written information. Critical reading is a combination of cognitive and linguistics competencies, from basic deciphering to understanding words, more massive comprehension structure, and meaning integration with one's world knowledge. Although the decoding, interpreting, and deliberating on texts are considered essential skills, immense attention to the integration of readers' ability to employ various reading strategies to monitor their understanding and resolve ambiguities has redefined reading comprehension (Ulu, 2019). Thus, reading is now regarded as a critical fusion of highly complicated, productive, and multi-faceted processes encompassing the amalgamation of readers' linguistics and prior knowledge, accurate usage of strategies (Kung & Aziz, 2020) and precise manoeuvring through the complexity of the textual evidence (Elleman & Oslund, 2019; Grabe & Stoller, 2020).

The existing literature on reading comprehension has revealed that using a wide range of strategies to differentiate key ideas and detailed information produced better academic

performance (Wibowo et al., 2020). These reading strategies are remarked as conscious, purposive, and intended actions to overcome reading difficulties by systematically selecting and applying comprehension processes to assist in making sense of the information presented in the texts. Based on Naidoo, Dorasamy & Reddy (2012), critical reading skills are necessary for students to meet the economic, social, cultural, digital, and political demands of an increasingly globalised world. Therefore, these strategies must be developed and should be the main aim of instruction (Fatemi et al., 2018) to cope with academic reading.

At the university level, numerous efforts have been placed on improving students' reading skills. Nevertheless, despite the prevalent efforts, many university students still perform poorly due to a history of reading difficulties (Mackay et al., 2019). Elleman and Oslund (2019) hypothesised that skilled readers could comprehend simple texts, but there is an excellent possibility of facing difficulties when dealing with more challenging texts with the increase in their complexity. The increased complexity in the text further intensified the problems for students as texts tend to get more challenging at the tertiary level. The reading competency in more straightforward texts does not substantiate successful attainment of reading skills and strategies among university students in decoding more critical and complicated materials. Students' incomprehensiveness of text hinders their learning as the lack of reading ability hampers their understanding and proper interpretation of the information presented in the text (Wanzek et al., 2018), and this inability to procure the crucial subject matter could obstruct their academic performance. Therefore, more attention should be placed on addressing issues in reading strategies as a measure to counter precipitous deterioration in English language competency. Elleman and Oslund (2019) highlighted that a reasonable point to begin addressing reading comprehension perplexities is by ensuring the establishment of a credible transfer of meaning from the text to the reader by using reading strategies.

Hence, it is important to examine students' critical reading skills firstly from their own perspectives and also examining their actual reading performance when engaging with English texts especially in the local context of Malaysia among the diploma level students.

Method

Research Approach

A quantitative research approach was utilised to conduct this study. Quantitative research, according to Creswell (2014), is a systematic and objective technique of using numerical data from a small subset of a population. Besides, data that is predominantly numerical is mostly analysed using a quantitative technique (Babbie, 2010). The norms of objectivity are strictly applied in quantitative research. One way to achieve objectivity is to employ tools that are tested for validity and reliability. The current study employed a quantitative research approach to collect numerical data, specifically using a questionnaire and a reading comprehension test scored numerically to examine students' self-perceived ability and how well they performed in critical reading skills.

Participants

A total of forty-four students majoring in engineering courses at the diploma level were selected from a university in the southern region of Malaysia. The students were chosen using a simple random cluster method from two intact classes. They were already in two different classes with no difference in their ability or performance, taking the same Integrated Language Skills (ELC 151) English proficiency course. This method is used when groups are made up of similar but internally heterogeneous groups and are able to provide adequate information on

the goals of the current study, which is to examine the students' self-perceived abilities and their actual performance of critical reading skills.

Data Collection and Analysis

Data were collected using two instruments: a self-rated questionnaire and a critical reading comprehension test.

There were two sections to the questionnaire. The demographics of the students were examined in Section A, while the students' self-perceived ability to use critical reading skills was tested in Section B, which included 34 questions. The questionnaire consists of a four-point Likert scale: (1) Never, (2) Sometimes, (3) Most of the Time, and (4) Always as to understand the intensity of the skills students are equipped with and to achieve consistency in analysing the data. The statements in the questionnaire were written in a simple, clear, relevant and precise manner to ensure that every student understood them. The Cronbach Alpha was used to determine the reliability of the questionnaire, and a value of 0.750 was discovered, which according to [Tavakol \(2011\)](#) was regarded high.

A critical reading comprehension test was administered to the students in addition to the questionnaire. This is to investigate the actual critical reading performance of the students. The data will be helpful for understanding the relationship between the students' self-perceived critical reading ability and the actual state of their critical reading performance. The reading comprehension text encompasses 800-900 words length essay entitled *Cycling: A Growing Trend* followed by 15 questions. The text, which was drawn from the reading assessment for the English ELC151 course, deals with contemporary themes familiar to the students. The text is used to assess students' ability to use the six critical reading strategies: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation. The test was graded in accordance with the standard scoring rubrics of the department. In addition, an inter-rater reliability test was conducted on the scores in which two of the course lecturers were assigned to validate the scores.

Findings And Discussion

The following section presents the findings of the study. The demographic profile consists of respondents' gender and course of study. Most of the respondents (n= 28) or 61.4 percent were females, and another 38.6 percent (n=16) were their male counterparts. The respondents are between the ages of 18–19 years old as there are in the diploma level of study. Regarding the course of study, most of the students (n=28) or 68 percent major in Diploma in Business Management at the Faculty of Business Management, and another 32 percent (n=16) are from the Faculty of Engineering, majoring in Diploma in Mechanical Engineering.

The Perceptions of Critical Reading Skills Among Students

This section reveals the findings from the questionnaire regarding the students' self-rated perceptions of their critical reading skills. The Diploma students' perceptions of the six Bloom's Taxonomy skills are presented in this section: (1) knowledge; (2) comprehension; (3) application; (4) analysis; (5) synthesis; and (6) evaluation. In this paper, these skills are divided into two categories: lower-order thinking skills and higher-order thinking skills. Lower-order thinking skills include knowledge, understanding, and application, whereas higher-order thinking skills include analysis, synthesis, and assessment. Table 1 highlights the students' self-rated perceptions of using critical reading strategies.

Table 1: Students' self-perceptions of using critical reading skills

Critical Reading Strategies	N	Mean	SD
Lower-Order Thinking Skills			
Knowledge	44	3.69	.293
Comprehension	44	3.01	.548
Application	44	3.33	.424
Higher-Order Thinking Skills			
Analysis	44	3.57	.639
Synthesis	44	2.85	.593
Evaluation	44	2.93	.572

Scale: 1=Weak, 2= Limited, 3=Good, 4= Excellent

Table 1 depicts students' perceptions of using critical reading skills. A score of below one is considered very weak, and more than 1 demonstrates weak to limited ability in the skills. A score of 2 and above indicates limited ability, a score of 3 and above shows good ability. Finally, a score of 4 and above would demonstrate high ability in the skills.

From Table 1, it can be seen that most students perceived the three lower-order thinking skills (knowledge, comprehension, and application) as good to excellent. The first strategy in the critical reading skills, which is knowledge (M=3.69, SD=.293), was perceived as the highest-rated ability, followed by application strategy (M=3.33, SD=.424) and comprehension strategy with a mean of 3.01 (SD= .548). This shows students have a good grasp of lower-order thinking skills, especially those related to knowledge strategy, which was perceived as the highest mean. This is also the lowest skill that students should acquire, as illustrated in Bloom's Taxonomy, to ensure students understand further the reading text.

The analysis strategy which is in the higher-order thinking skills is also rated as good to excellent (M=3.57, SD=.639) which shows students believe they can analyse reading materials well. However, the two other higher-order thinking skills (synthesis and evaluation) are limited to good, in which M=2.85 and SD=.593 were recorded for synthesis and evaluation strategy (M=2.93, SD=.572), which highlights that student believe that they have difficulties in synthesising and evaluating reading materials. These two higher-order thinking skills indicate that students had limited confidence in their abilities to evaluate a text. This highlights student perceived that they are unable to evaluate text in depth. This is worrying as university students are expected to be able to think critically and evaluate texts' trustworthiness, validity and accuracy of the information, point of view, and bias of information.

Students' self-rated perceptions in this study found that students have the perceptions that they can do well in the lower-order thinking skills but have difficulty evaluating higher-order textual comprehension questions except for analysis strategy which was rated high.

Actual Performance of Students' Critical Reading Skills

This section reveals the findings from the reading comprehension test regarding the students' actual performance in critical reading skills. The scores were analysed based on the students' performance of the six Bloom's Taxonomy skills; (1) knowledge; (2) comprehension; (3) application; (4) analysis; (5) synthesis; and (6) evaluation. Similar to the self-perceived scoring, the Taxonomy is divided into lower-order thinking skills and higher-order thinking skills. Lower-order thinking skills include knowledge, understanding, and application, whereas higher-order thinking skills include analysis, synthesis, and evaluation. Table 2 highlights the students' actual performance in critical reading strategies.

Table 2: Students' actual performance in critical reading skills

Critical Reading Strategies	N	Mean	SD
Lower-Order Thinking Skills			
Knowledge	44	3.47	.268
Comprehension	44	2.50	.618
Application	44	2.95	.458
Higher-Order Thinking Skills			
Analysis	44	2.82	.635
Synthesis	44	1.78	.554
Evaluation	44	1.63	.749

Scale: 1=Weak, 2= Limited, 3=Good, 4= Excellent

Overall findings on the actual performance shown in Table 2 indicate that the students had limited ability to good for lower-order thinking skills and weak to limited ability in higher-order critical reading skills.

Students were noted to score the highest for the knowledge strategy ($M=3.47$, $SD=.268$), which is the only strategy to be in the good to the excellent ability. The second highest skill is application ($M=2.95$, $SD=.458$), followed by the comprehension skills ($M=2.50$, $SD=.618$) and subsequently the analysis skills ($M=2.82$, $SD=.635$). Students did poorly in the two last higher-order thinking skills (synthesis and assessment). The students graded synthesis poorly ($M=1.78$, $SD=.554$), and evaluative abilities were the worst of all ($M=1.63$, $SD=.749$).

Students' actual performance in this study found that they did not perform in the test regarding how they perceived their critical reading skills. The lower-order thinking skills were performed relatively better than the higher-order thinking skills. It was noted that students have difficulty evaluating higher-order textual comprehension questions.

Critical Reading Skills: Perceived and Actual Performance of Students

The third research question examined whether there is a significant difference between the students' perceived and actual performance in critical reading skills. The students' perceived and actual performance in critical reading abilities were compared using a paired sample t-test. The results of the test are presented in Table 3.

Table 3: Paired sample t-test results for students perceived and actual performance

Critical Reading Skills	Self-perception	Actual performance	Mean difference	t	df	Sig. (2-tailed)
Lower-Order Thinking Skills						
Knowledge	3.69	3.47	.221	3.30	43	.000
Comprehension	3.01	2.50	.508	3.89	43	.000
Application	3.33	2.95	.380	4.16	43	.000
Overall lower-order thinking skills	3.34	2.97	.370	3.78	43	.000
Higher-Order Thinking Skills						
Analysis	3.57	2.82	.745	4.82	43	.000
Synthesis	2.85	1.78	1.08	8.09	43	.000
Evaluation	2.93	1.63	1.29	8.45	43	.000
Overall higher-order thinking skills	3.12	2.07	1.04	7.12	43	.000
Overall Critical Reading Skills	3.23	2.52	.705	5.45	43	.000

Based on the results shown in Table 3, it can be seen that there is a statistically significant difference in the mean scores between students perceived ($M=3.34$) and actual performance ($M=2.97$) conditions; $t(43) = 3.78, p=0.000$ in the overall lower-order thinking skills. In the overall higher-order thinking skills, it was noted there is a statistically significant difference in the mean scores between students perceived ($M=3.12$) and actual performance ($M=2.07$) conditions; $t(43) = 7.12, p=0.000$. In analysing the overall critical reading skills for both lower and higher-order thinking skills, it can be seen that there is a statistically significant difference in the mean scores between students perceived ($M=3.23$) and actual performance ($M=2.52$) conditions; $t(43) = 5.45, p=0.000$. Besides, the highest mean difference recorded was for evaluation skills (Mean difference= 1.29) while the lowest mean difference recorded was for knowledge (Mean difference= $.221$).

Discussion

Based on the results, it can be concluded that students believed their critical reading skills to be in the good to excellent range, with knowledge receiving the highest score ($M=4.25$) and synthesis skills receiving the lowest ($M=2.85$). These results are comparable to those of [Anuar and Sidhu \(2017\)](#). In their study, the six Bloom's Taxonomy skills were rated by thirty postgraduate social science students. The findings indicated that postgraduate students were moderate to highly prepared in all six skills, with the highest mean scores for synthesis ($M=3.592$) and evaluation ($M=3.379$). These findings indicated that the students were confident in applying critical reading abilities to academic texts and materials.

The findings of this study also demonstrated that students overestimated their critical reading skills compared to their actual performance, as they scored below average for synthesising and evaluation in the reading comprehension test. Similarly, their actual performance in the reading test indicated average marks for comprehension skills, which is one of the lower-order thinking skills. Several studies also reported similar findings that the students had low competency in critical reading skills. In a study by [Olifant, Cekiso and Rautenbach \(2020\)](#) investigating 166 Grade 8 learners' critical reading self-perceptions and practices in the English foreign language classroom highlighted that student were unable to apply most of the critical reading strategies they claimed to be using. A study by [Zin et al. \(2014\)](#) found that students' inferencing skills were low, and they could not critically analyse and evaluate information from the reading texts. The study suggests that students lacked the necessary higher-order thinking skills for tertiary level in their critical reading abilities.

Furthermore, the results of this study also indicated that there is a significant difference between students perceived and actual performance in all the critical reading skills (lower and higher-order thinking skills). The highest mean difference was recorded for evaluation skills (Mean difference= 1.29) while the lowest mean difference recorded was for knowledge (Mean difference= $.221$). These findings are similar to a study by [Gorzycki et al. \(2014\)](#). It was reported that the students' performance in the reading test was poor and did not reflect their positive self-perception. Thus, they too implied that the students overestimated their critical reading skills.

CONCLUSION

This study was conducted to evaluate the perceived and actual performance of diploma students' critical reading skills in an English proficiency course. The researchers found that comparing the perceptions and performances of students' critical reading skills can be

challenging. Thus, all measures have been taken to ensure the reliability and validity of the critical reading comprehension test scores. Thus, data obtained from the self-perceived questionnaire have also been thoroughly accounted for thorough qualitative and quantitative means. Students at the diploma level observed in this study, however, have not yet mastered the ability to critically analyse, synthesise, and evaluate reading texts; skills that should be acquired as they pursue their studies at the tertiary level, similar to the findings obtained in previous studies focusing on postgraduate and undergraduate levels (Shamida, Sidhu, and Md Nawi, 2021; Rodzalan & Saat, 2015).

Besides, it was also noticed students self-perceived their critical thinking abilities as overestimated to their real performance, especially for the HOTS, which comprises the analysing, synthesising, and evaluating included in Bloom's Taxonomy of cognitive domain. The results of this study suggest that diploma students should receive immediate instruction in critical reading skills so that as they continue their education, they will be better equipped with the necessary critical reading skills and strategies to help them make rational decisions as they read texts.

There are several limitations of this study that can be further improved in future studies. In terms of the sample size, this study only observed diploma students from a public university in the southern state of Malaysia. Therefore, generalisations to account for the entire population of diploma students would not be possible. This study also utilised a self-perceived questionnaire to gauge diploma students' perception of their critical reading skills as well as test scores obtained from only one reading comprehension test administered by the researchers, which may not be exhaustive in providing concrete evidence of the students' perceived and actual performance in their critical reading skills. Nevertheless, this study has contributed to evidence of students' critical reading skills perception and performance, shedding light on their ability to read and respond critically at the diploma level.

The researchers envision several directions for future research from the results of this study. First, further research exploring evidence of students' critical reading skills should be explored from qualitative and quantitative perspectives to see specific skills that can be instilled or explicitly taught to tertiary students. Second, future studies should also consider tackling other subject matter beyond the scope of this study to investigate whether students employ different critical reading skills and strategies when reading different text types. More studies should also be done investigating whether explicit teaching of critical reading skills can help increase students' ability to acquire the desired critical reading and thinking skills, particularly at the tertiary level.

Acknowledgement

The researchers would like to thank Universiti Teknologi Malaysia (UTM) for the support and funding received under the UTMFR Grant (Vote No: Q.J130000.2553.20H82) and to Universiti Teknologi MARA (UiTM) for the support to conduct the study. The authors express appreciation to the students from the reading class who participated in the study. Special thanks to the colleagues for their support in reading and giving comments on the paper.

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