Improving Critical Malay Essay Writing Competency through Authentic e-Learning

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Abstract
This study focuses on the significance of employing authentic e-learning strategies to improve Critical Malay Essay Writing among Chinese school students. Ministry of Education reports have highlighted the inadequate performance of Chinese school students in Malay essay writing, attributing this to their limited Malay language proficiency, inadequate thinking competencies, and minimal exposure to authentic e-learning environments. Consequently, a transformation in education is imperative, integrating multimedia technology to enhance essay writing skills and critical thinking abilities. The research implemented an authentic e-learning environment, a multimedia technology platform, to facilitate this transformation. Employing a pre-experimental time series design, the study involved 33 students from a secondary school. The research instruments included Pre-Activity, Post1-Activity, and Post2-Activity essays, analysed using the Friedman Test and Wilcoxon SR Test through the SPSS application. The test results indicated a significant difference ($p < 0.05$) between Pre-Activity, Post1-Activity, and Post2-Activity, signifying a positive impact of the treatment on students' critical Malay essay writing competencies. The findings underscore the identification of five authentic e-learning activities crucial for supporting students in writing critical Malay essays. These activities merit inclusion in the critical essay writing curriculum. Additionally, this study proposes further research endeavours focusing on the implementation of these activities.
Keywords: Authentic Learning Strategy, Critical Thinking Competencies, Multimedia Technology

Introduction
The introduction of technology and its continuous development have permeated society, altering how people engage with and use it. Technology has changed the class lesson, moving from the use of chalk and the blackboard in traditional classrooms to today's availability of multimedia technology. These days, all students have access to technology because it has become much more important and affordable. Teachers may use technology early in the planning process of a lesson. A variety of multimedia technologies allow students to foster new knowledge when utilized appropriately. Students' learning has become more enjoyable and easier. Students have demonstrated that learning environments with more

technology can boost students' motivation, engagement, and workforce of the twenty-first century. Technology also seems to enhance language learners' academic performance.

Through writing, students can refine their concepts and strengthen students' language competencies so they can be expressed in written performance (Elsulukiyyah and Aisyah, 2019). Ali *et al* (2021) concluded that non-native speakers have problems in terms of ideas generation, technical aspects of essay writing, and limited vocabulary mastery. According to Ali and Othman (2018), students who have problems in writing Malay essays are due to lack of ideas due to students not being able to connect ideas with real-life situations. In addition, there are several Malay language teachers asking students to memorize model essays with the hope that they can be used when writing essays. According to Alston et. al., and Jalil, there are a few school teachers who only give guidance at the stage of pre-writing Malay essays but lack guidance at the stage of the writing process of a more structured Malay essay. Teachers are more comfortable with conventional teaching by explaining the contents of essays and providing a framework of ideas to students so that they have less initiative to think and find ideas to strengthen their writing (Ali and Othman, 2018b). Next, there is the use of ungrammatical sentences as well as the processing of essays that are less effective and less interesting because they are not exposed to a critical writing style in addition to the lack of exposure to the reality environment in their learning process (Chiquet *et al.*, 2023).

Students should become adept at critical thinking in addition to communication and teamwork in the 21st-century learning environment (Liu *et al.*, 2019; Hassan and Venkata, 2015). According to the Malaysia Education Blueprint (2013–2025), students are still unable to apply their knowledge and engage in critical thinking in daily life. Prior research has proved the necessity of prioritizing critical thinking. It is important to highlight the critical thinking competencies that students should possess, especially when it comes to expressing ideas and arguments in essays. However, since Malay is their second language, Malaysian students in Chinese schools do not have the necessary essay-writing competencies in the language (Ali *et al.*, 2022). According to Ali *et al.*, (2022), traditional teaching strategies that do not contextualize real-world ideas are ineffective. Due to the inability of teacher-centered pedagogy to generate new ideas that could be broadly elaborated analytically, meaningfully, accurately, and clearly, students mastered critical writing competencies moderately.

According to Elsulukiyyah and Aisyah (2019), there are two approaches to teaching essays; writing as a process and writing as a product. When students write as products, they do so based on assigned topics without the guidance or advice of their teachers. In contrast, teachers guide students in writing by providing them with writing methods, which include selecting and researching topics, creating writing designs, drafting, revising, and editing. Writing an effective essay is difficult, it becomes more complicated for Chinese School students where they need to be able to express their thoughts in Malay which is their second language before putting them on paper. Critical Malay essay writing in this study is expected to be taught successfully in an authentic e-learning environment. Authentic e-learning environments can be applied at all levels of the Malay language classroom. Hence, writing essays should integrate contextual learning and critical thinking competencies (Chamba *et al.*, 2019). Thus, it is important to explicitly or deliberately apply critical thinking competencies so that students can use them in their essay writing and daily lives (Lai, 2017; Ali *et al.*, 2021). To improve their understanding of essay writing, students should be exposed to a real-world learning environment that encourages the growth of their critical thinking competencies. The utilization of an authentic learning environment inspired students to

write better essays. Due to its accessibility, the internet proved to be the most valuable resource. Modern multimedia technology can help to represent such an environment. In addition, students are drawn in and motivated to pick up the essay writing competencies more quickly when they are exposed to the authentic e-learning environment. Therefore, this study was carried out to design and develop learning activities that support the proficiency of critical thinking to Malay-language essay-writing competencies among Chinese school students based on a multimedia technology-aided authentic e-learning environment as well as the Malaysian Education Development Plan 2013–2025.

Every facet of life can provide linguistic input for learners, an authentic e-learning environment being one of them. By simulating an authentic e-learning environment, the use of multimedia technology in student learning activities can offer learning opportunities (Zainudin, 2020; Muna, 2016). Learning in an authentic e-learning environment is made possible by extending education outside of the classroom, which promotes efficient and worthwhile learning (Shadiev *et al.*, 2018; Alioon and Delialioğlu, 2019). In this study, the researcher used an authentic e-learning environment for Malay essay writing in support of the mastery of critical thinking characteristics.

Refer to Herrington *et al* (2010) authentic activities must relate to the world of life. Design tasks that are very similar to real and practical professional tasks. Rather, it is not a traditional classroom activity that is out of context with the real world. Critical thinking characteristics of detecting accuracy can be integrated into this element when making judgments about a source of information or statement. Authentic activities are clearly defined and the problem is open to various interpretations and is not easily solved in the existing way. Assignment problems are complex and require students to find relationships between variables that are not clearly related. Critical thinking that gives certain characteristics to an element can be absorbed when defining a concept.

However, due to the fact that authentic activities are usually complex and cannot be completed in minutes or hours, students need a long period to explore and research them. Such assignments require a lot of time and need to use intellectual or scientific materials. Hence. critical thinking that leads to gathering and classifying information is appropriately integrated into this element. Students find authentic activities challenging as these activities encourage students from a variety of theoretical and practical perspectives by using a variety of sources that require students to evaluate information. critically. The use of multiple sources asks students to distinguish relevant information from piles of information in the process of solving problems. Features of critical thinking such as collecting and classifying, evaluating, and making appropriate conclusions are absorbed into this element. Furthermore, authentic activities help to promote cooperation or collaboration. Collaboration is essential to completing tasks as it improves the success rate of the task given.

In addition, authentic activities allow students to think and make self-reflection on the learning that takes place. The activities drill students to make choices and reflect on their learning either individually or in groups. Critical thinking that contains competencies such as comparing and contrasting, analyzing, and drawing conclusions can be applied. There is no subject limitation where authentic activities could apply. These activities can be integrated and applied across different subject areas. Authentic assignments that cross various subject areas will lead to learning outcomes that go beyond or limit the main subject. While working on authentic activities, students also learn to evaluate the authenticity of the products. Students would be able to give their perceptions, assumptions, and critiques towards lesson

notes, books, and contents delivered during class sessions. As a result, the outcomes or products of authentic activities will be more versatile without a proper rubric or answer scheme.

Therefore, by designing learning activities based on the elements of authentic e-learning through multimedia technology in this study, the researcher hopes that it able to enhance students' critical Malay essay writing competencies.

Literature Review
Essay Writing Issues

According to Idrik and Piang (2022), many students struggle with essay writing because they lack ideas and can't connect concepts to the real world. This lowers the level of the essays they write. Additionally, some language educators assign students to memorize model essays in the hopes that the students will be able to use the memorization when writing essays (Ali *et al.*, 2021). The majority of students cannot understand the purpose of learning or apply what they have learned to daily life because the current educational system prioritizes theory (Idrik and Piang, 2022; Lai *et al.*, 2017). Additionally, when teaching students essay writing, methods and strategies for language learning and teaching are crucial (Ashrafiany et. al., 2019). In a similar vein, Siew and Mahamod (2001) claimed that appropriate techniques and approaches, including the use of technology, are required to improve essay-writing teaching.

Critical Thinking Issues

Critical thinking is very important in problem-solving. Previous studies have indicated that critical thinking competencies should be integrated into language learning programs to generate human capital and a workforce that can address the challenges in the twenty-first century. Similar to this, the Curriculum and Assessment Standards Document (DSKP) asserts that the foundation of knowledge acquisition in all subjects is critical thinking competencies. However, the majority of educators favored traditional methods of instruction and memorization of model essays (Lai *et al.*, 2017). By giving more details and examples, some teachers still believe that teaching knowledge in a traditional classroom design is beneficial. The way that many educators approach their work in the classroom today is merely a reflection of their education. They practice traditional ways of teaching that have ignored important findings of recent research on how humans learn.

Critical Thinking Characteristics

There are some characteristics of critical thinking. First of all, it is a feature that involves defining or identifying a concept or item, while comparing and differentiating requires making choices or decisions between multiple characteristics or possibilities. Collecting and classifying is another characteristic that is necessary when there is a large amount of unstructured information or items. Then, there is sequence creation involves creating a logical order that is easy to understand and detect. Following that, priority sorting helps in highlighting important things and determining primary actions. Analyzing is one of the most important criteria as it involves forming opinions or statements, identifying assumptions, and elaborating on them with factual support. Detecting bias or accuracy involves considering the influence of statements and identifying biased views. Evaluating requires accepting or rejecting ideas while establishing conclusions involves deciding based on investigation and supporting statements.

Authentic e-Learning Elements

Authentic activities in education are essential as they relate to real-life situations, providing students with practical skills and knowledge. These activities are not easily solved using existing approaches, allowing for multiple interpretations and critical thinking. Due to their complexity, authentic activities require a significant amount of time for exploration and study. They encourage students to approach assignments from different perspectives, utilizing diverse resources and evaluating information critically. Collaboration and cooperation are key components of authentic activities, fostering teamwork and communication skills. Furthermore, these activities promote independent thinking and reflection, allowing students to develop their ideas and insights. They can be integrated across various subject areas, providing a holistic learning experience. Authentic activities also align with real-world assessments, ensuring a cohesive connection between learning and application. Finally, these activities result in more valuable products, offering different means of resolution and diverse outcome types. Each authentic learning environment element was used to design students' learning activities that examine meaningful real-world contexts and realities (Mohd Idrik and Bee Piang, 2022). As a result, critical thinking can be integrated into the subjects taught (Bono, 2014).

Technology

In the era of information technology, technology is a part of daily life. Multimedia technology is currently being used in the learning process at many worldwide educational levels (Siew and Zamri Mahamod, 2001), which has helped students achieve more meaningful and effective learning outcomes (Atan *et al.*, 2021; Yusof *et al.*, 2021). A student-centered learning environment that fosters the development of 21st-century students' abilities and competencies to deal with the challenges of the Industrial Revolution 4.0 is required. It has been made possible by the variety of recent technologies for educators (Mohd Idrik and Bee Piang, 2022). As of right now, the best learning strategy is usually suggested to be an authentic e-learning environment (Aishah Mohammad Kassim, 2021; Hushaini *et al.*, 2020). When computer-based writing was introduced in educational institutions with contextual features, it enhanced essay writing and language use inside and outside of the classroom (Green, 2019; Raja and Nagasubramani, 2018). Furthermore, because it helps students connect their learning to real-world experiences, an authentic learning environment promotes effective learning (Prins *et al.*, 2016; Elsworth, 2019). Therefore, by facilitating the enhancement of real-world-based learning activities, multimedia technology can assist in real-world technological representation (Zainudin, 2020).

Therefore, the study of integrating technology into education has proven important to prepare students to face the challenges of the twenty-first century. In a real-world learning design, integrating technology successfully enhanced language writing competencies (Nikolay, 2015; Kasuma *et al.*, 2018). When teaching writing in a foreign language, as in Indonesia, authentic materials produced by technology are employed to form the writing competencies of the students. Print materials from the Internet (short stories) (Setyowati *et al.*, 2017), printed texts (Performa and Siswa, 2019), multimedia technology resources like YouTube and picture series (Setyowati *et al.*, 2021), and websites (Sundana, 2017; Setyowati *et al.*, 2021), are examples of authentic materials used to teach writing.

Authentic Learning Strategy

According to a previous study, using authentic materials helps students become more proficient writers. This ultimately demonstrates how computer technology offers many chances to use reliable materials in the classroom (Reinders and Benson, 2017; Zheng *et al.*, 2013). Compared to traditional methods, the use of technology in integrating language, content, and culture is more useful and meaningful. Moreover, it offers students the opportunities for independent learning (Zoheb, 2017). Therefore, it is especially crucial to use new technologies appropriately in bilingual and foreign language education (Zoheb, 2017) (Maslawati *et al.*, 2018). Additionally, enhancing students' critical thinking competencies through the use of an authentic e-learning environment in essay-writing learning activities would be beneficial (Maslawati *et al.*, 2018). As a result, students would be better prepared to write critical essays learning activities that support critical Malay essays writing. Overall, the integration of authentic e-learning and critical thinking competencies can support the proficiency of students' critical essay writing competencies.

Authentic e-learning (AeL) is a learner-centered approach in which learners co-construct their knowledge by engaging in real-life tasks that require higher-order thinking competencies (HOTS) (Baloyi, 2018). Critical thinking is one of the higher-order thinking competencies. Instead of relying on textbooks, learners need to engage in realistic tasks and use real-world resources and tools that provide them opportunities to learn with intention by thinking and acting like experts in order to address real-life problems (Redmond *et al.*, 2018). In Malaysia's Education Curriculum, critical thinking skill is implemented in almost every subject. HOTS questions are set to allow students to think ahead which are highly relevant to real-world life. Thus, critical thinking is indispensable in the development of a 21st-century workforce who is expected to effectively and successfully solve real-world, complex problems (Luttfi, 2022).

Integrating Authentic e-Learning (AeL)

It is important to bring AeL into the classroom as it allows learners to face realistic problems. In this competitive era, young learners should be equipped with 21st-century cognitive, intrapersonal, and interpersonal competencies such as critical reflective thinking, effective problem-solving, rational making, communication, collaboration, emotional intelligence, and metacognition. These competencies will definitely be helpful to win the rat race. Based on the findings, AeL is rooted in constructivism and humanism philosophies, motivational, situated learning, and experiential learning theories, problem-based learning, and activity-based and participatory learning approaches (Martínez-Argüelles *et al.*, 2023).

Many researchers have documented positive outcomes of AeL and authentic assessments (Cremers *et al.*, 2016; Baloyi, 2018; Nyanjom *et al.*, 2020; Villarroel *et al.*, 2018). In addition, there are some research in general has shown that authentic materials are beneficial for both students and teachers (Hussein and Elttayef, 2019). Despite knowing its benefits, getting and creating an authentic e-learning environment in a classroom is really challenging for all educators. However, the advancement of technology has made it possible.

Integrating Critical thinking into AEL

Within the context of this study, critical thinking is related to the nature of thinking competencies presented by (Bono, 2014). According to Zainudin (2020), authentic e-learning environments including learning activities that expose students to real-world life have positive

outcomes. multimedia technology can help students to mastery critical thinking competencies once they have mastered essay writing competencies (Shuib *et al.*, 2018). In this study, the critical thinking competencies suggested by Beyer, (2008) were integrated into authentic e-learning elements highlighted by Herrington *et al.*, (2010) to teach Malay essay writing. A Malay-language essay-writing learning multimedia technology AeL was used to integrate elements of an authentic learning strategy.

Methodology

In this study, a pre-experimental design was employed to address the research questions. Form 3 Students in a government secondary school who will take the Form Three Assessment, a public nationwide examination, participated in the study. A total of thirty-three students were randomly selected to be used as study samples. One group took the Pre- and Post-Tests in this pre-experimental time series design study (Campbell and Stanley, 2015). Besides, alpha testing was conducted by an expert and a Malay language teacher while beta testing was also conducted by two information technology experts with 10 volunteer students on the design of an authentic e-learning platform from four aspects that include technical and technological, presentation, teaching and learning as well as information by using the evaluation form and then improvements are made based on the results and comments given. All this will be able to increase the validity and reliability of the study results.

The primary tools for collecting data were a few essays written through pre-activity, intervention activities, Post 1-Activity, and Post 2-Activity. Each one of the instruments was tested according to the requirements of the study and was found to be high reliable and validity. The Pre-Activity and Post-Activity essay writing were spaced out by a few weeks, as suggested by Babbie et al (2015), and the study should last at least seven weeks or more. Since the students would have forgotten the Pre-Activity test question, the mentioned treatment has brought positive changes.

A language teacher assessed the students' critical thinking characteristics in Malay essays by using the Critical Thinking Competencies Rubric. The essays were written on Pre-Activity, Post 1-Activity, and Post 2-Activity. At the same time, the Form 3 Assessment (PT3) Malay Essay-writing Scoring Scheme was used to identify the number of students who successfully completed the learning activities essay writing. This is to determine the type of learning activities that support critical Malay essay writing competencies. To statistically analyze the data, the researcher used the IBM SPSS Statistics version 22.

Procedure

The students were informed that they were involved in a study prior to the treatment. In total, 10 learning activities were conducted in 11 weeks to collect data. Starting from learning activities, Pre-activities, intervention activities, Post 1-Activities, and intervention activities to Post-2 Activities, all activities are conducted through the AeL in Google Classroom. Some teacher's instructions, interactions, and collaborations between teacher and students, among students were carried out through multimedia technology. The writing process was designed based on the prewriting, writing, discussing, and rewriting procedure. Both the feedback procedure and the student-teacher discussion took place virtually. Before submitting their work, the students discussed their essays with the teacher and friends through the stream discussion room. Afterward, students edit the essay based on the

discussion before sending it to the teacher. There are also collaborative and cooperative essay-writing activities that follow the same procedure.

Findings and Analysis
Critical Malay Essay Writing Competencies

In this study, evaluation of the impact of treatment activities on the level of critical thinking competencies of the student was carried out on 33 students. The following Table 1 is the critical thinking characteristics rubric which was adopted from the thinking model by the Malaysia Ministry of Education (Kemen. Pend. Malaysia, 2002). It is used by the research assessor to evaluate the critical thinking characteristics which improve the critical Malay essay writing competencies.

Table 1
Critical Thinking Characteristics Rubric (Kemen. Pend. Malaysia, 2002)

No	Critical Thinking Characteristic	Description and Explanation			
1	Characterize	Defining a concept or item	Identifying similar concepts or items		
2	Comparing and differentiating	When there are more than 2 features or possibilities	Making a choice or decision		
3	Collecting and classifying	When there are many items or much information	Unstructured items or information		
4	Sequence creation	Easy to understand	Certain items are easy to detect		
5	Priority sorting	Highlighting important things	Determining the primary actions		
6	Analysing	Establishing an opinion or statement	Identifying implicit assumptions, elaborating on them into more detailed features	Rethinking opinions or assumptions	Establishing a corrected statement with factual support
7	Detecting bias	When a statement tends to influence a decision or opinion	Considering the accuracy of the information or statement resource	Identifying biased views	
8	Evaluating	Selecting something	Accepting or rejecting an idea		
9	Establishing conclusions	Deciding on a study result	Explaining something based on investigation	Predicting and supporting statements	
	Number of Scores				

In this research, the Malay essays in Pre-Activity, Post 1-Activity, and Post 2-Activity is the instruments. The mastery of critical thinking characteristics and the total characteristics mastered by students were showed by Table 2 and Table 3 below.

Table 2
Mastery of Critical Thinking Characteristics Characteristics Mastered By Students

MATTER	ACTIVITIES		
Total Characteristics (9)	Pre-	Post 1	Post 2
	Number of Students		
0	0	0	0
1	0	0	0
2	10	0	0
3	15	3	0
4	6	1	3
5	2	3	2
6	0	26	28
7	0	0	0
8	0	0	0
9	0	0	0
Amount	33	33	33

Table 3
Summary Of Total Critical Thinking

MATTER	ACTIVITIES		
Total Characteristics (9)	Pre-	Post 1	Post 2
	Number od Students		
0	0	0	0
1	0	0	0
2	10	0	0

3	15	3	0
4	6	1	3
5	2	3	2
6	0	26	28
7	0	0	0
8	0	0	0
9	0	0	0
Amount	33	33	33

Table 2 shows the mastery of critical thinking characteristics by students for this study based on authentic e-learning. With the help of multimedia components, authentic e-learning has been able to improve students' critical thinking competencies. The maximum scores of critical thinking characteristics mastered by students before the treatment activities is as many as two characteristics. While the maximum score of critical thinking characteristics mastered by students after treatment has improved to six characteristics. In addition, the minimum score of critical thinking characteristics mastered by students also improved from mastered two critical thinking characteristics during Pre-Activity to mastered four critical thinking characteristics during Post-2 Activity. The Table 2 also shows that all students, that is 100 percent of students have shown an increase in the mastery of the number of critical thinking characteristics.

Table 3 is the summary of total critical thinking characteristics mastered by students. There are as many as nine characteristics of critical thinking learned by students in treatment activities. Referring to Table 3, during the Pre-Activity, there were ten out of 33 students obtained a score of two critical thinking characteristics, and 15 out of 33 students who had a score of three critical thinking characteristics. This data shows that the majority of students, 25 out of 33 students, are at a low level of mastering critical thinking characteristics. In addition, there were six out of 33 students scored four critical thinking characteristics, and two out of 33 students who scored five critical thinking characteristics. This shows that the minority students, eight out of 33 students, are at a moderate level of mastering critical thinking characteristics.

Based on Table 3 again, during Post 2-Activity, there are no more students who mastered three characteristics of critical thinking which are low level. Students who mastered the six characteristics of critical thinking, which is a medium level, have improved to 28 out of 33 students compared to Post 1-Activity. This shows that the majority of students gained a positive impact from the treatment activities.

Table 4
Friedman Test Analysis of Students'

Activity	Median	Mean Rank	$\chi^{2\,a}$	df^a	*p*-value[a]
Critical Thinking Competencies Pre activity	2.00	1.00			
Critical Thinking Competencies Post activity 1	3.00	2.41	62.91	2	*p*< 0.05
Critical Thinking Competencies Post activity 2	4.00	2.59			
[a]Friedman Test					

[a]Wilcoxon signed rank test.
The significance level is at 0.05.

Table 4 shows the Friedman test revealed a significant effect of authentic learning strategies on critical thinking competencies χ2 (2, n=99) = 62.91, *p*<.05. Mean value indicated that critical thinking scores were highest in Post 2-Activity (Mean = 2.59), followed by Post 1-Activity (Mean = 2.41) and followed by pre-activity (Mean =1.00).

Next, for the sake of comparing the significant differences in paired critical thinking competencies data among the three groups to determine the impact of the learning activities, the Wilcoxon Signed Rank test was then used.

Table 5
Students' Critical Thinking Competencies Median Scores Between Pre-activity and Post-activity 1 and Post-activity 2

No.	Activity	*p*-value[a]
1	Median differences between pre-activity and post-activity 1	0.00
2	Median differences between pre-activity and post-activity 2	0.00
3	Median differences between post-activity 1 and post-activity 2	0.014

The significance of Table 5 concluded that there are significant differences in the median score values between the three phases for groups of paired critical thinking competencies. The Median differences between Pre-Activity and Post 1-Activity and the Median difference between Pre-Activity and Post 2-Activity were 0.00. While the Median difference between Post 2 Activity and Post 2 Activity is 0.014. The *p* value of all the three pairs' Median differences were less than 0.05 (Table 5). So, it can be concluded that there are no similarities between the three groups of paired critical thinking data. Therefore, this means that learning through multimedia technology has increased the students' mastery of critical thinking characteristics in Post 1-Activity and Post 2-Activity.

Learning Activities That Support Critical Malay Essays Writing

During the treatment activities, proficiency in critical thinking characteristics is evaluated with the help of the evaluation rubric. Evaluation is done on students' essays from learning activity A1 to learning activity A10. Symbol 1 means that students have successfully mastered the critical thinking characteristic and symbol 0 means that students have not yet mastered the characteristic. Learning activities A1 to A10 were carried out in an authentic learning environment.

The analysis of the number of students who successfully completed the task of writing a learning activity essay is displayed through the following Table 6.

Table 6
*Number of Students Who Successfully Completed the Learning Activities Task*

Learning Activity	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Student / Authentic Element	Exploration (Google Search)	Various Intepretations (Stream)	Various Perception	Real-wprld Life (Power Point)	Various Intepretations	Various Perception	Various Way of Solution (Stream)	Exploration (e-modul)	Reflection (Quiz)	Cooperation and Colaboration (Stream)
S1	0	0	0	0	0	1	1	1	1	1
S2	1	1	1	0	1	1	1	1	1	1
S3	1	1	1	1	1	1	1	1	1	1
S4	1	1	1	1	1	1	1	1	1	1
S5	0	0	1	1	1	1	1	1	1	1
S6	1	1	1	1	1	1	1	1	1	1
S7	1	1	1	1	1	1	1	1	1	1
S8	0	0	0	1	1	1	1	1	1	1
S9	1	1	1	1	1	1	1	1	1	1
PS0	1	1	1	1	1	1	1	1	1	1
PS1	1	1	1	1	1	1	0	1	1	1
S12	1	1	0	1	1	1	0	1	1	1
S13	0	0	0	1	0	1	1	1	1	1
S14	1	1	0	1	1	1	1	1	1	1
S15	1	1	1	1	1	1	1	1	1	1

S16	1	1	1	1	1	1	1	1	1	1
S17	1	1	1	1	1	1	1	1	1	1
S18	1	1	1	1	1	1	1	1	1	1
S19	1	1	1	1	1	1	1	1	0	1
S20	1	1	0	1	1	1	1	1	1	1
S21	1	1	1	1	1	1	1	1	1	1
S22	1	1	0	1	1	1	0	1	0	1
S23	1	1	0	1	1	1	0	1	0	1
S24	1	1	0	1	1	1	0	1	0	1
S25	0	0	0	0	1	0	0	0	0	0
S26	0	0	0	1	1	0	0	0	0	0
S27	1	1	0	0	0	1	0	1	0	1
S28	1	1	0	1	1	1	0	1	0	1
S29	0	0	0	1	1	1	1	1	1	1
S30	0	0	0	1	1	0	0	0	0	0
S31	1	1	0	1	1	1	1	1	1	1
S32	0	0	0	0	0	1	1	1	1	1
S33	1	1	0	1	1	1	1	1	1	1
Number of Students	24	24	15	28	29	30	23	30	24	30

Table 6 above shows the success of students in completing the tasks given in treatment activities through authentic e-learning strategies and thinking competencies.

There are ten treatments. The number of students who successfully complete the task is different treatment activities in the authentic e-learning. In addition, the table above reports that there were five treatment activities obtained more than 80 percent of students successfully completed the tasks. The treatment activities A4, A5, A6, A8, and A10 which are colored green are the learning activities that support critical Malay essay writing. These activities each use authentic elements of the real world (video), diverse interpretations (stream), multiple perspectives (video), exploration on the website (e-module), and cooperation and collaboration (stream). Next, there are five authentic e-learning activities that support the critical Malay essay writing learning activities can be illustrated through the Figure 1 below.
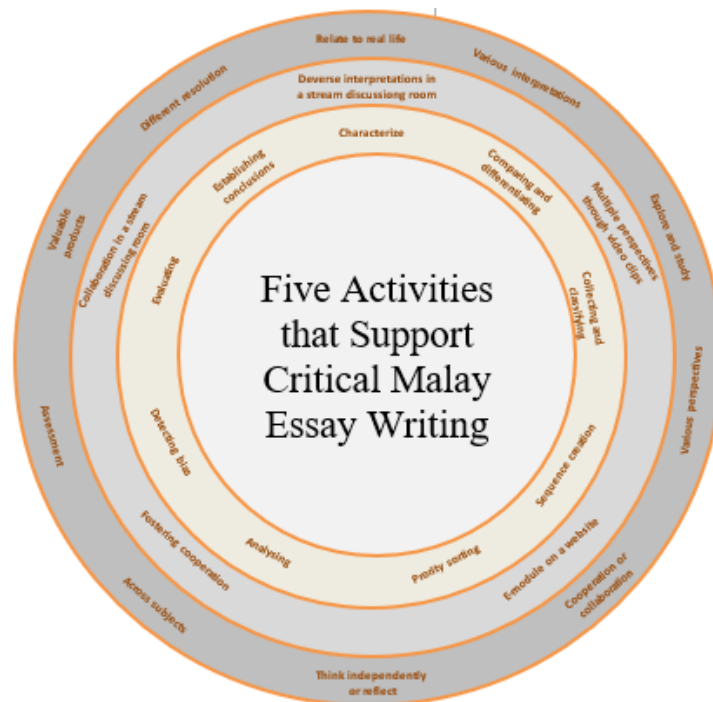
Notes: Ten Authentic Elements
        Five Supporting Activities
        Nine Critical Thinking Characteristics

Figure 1: Five Activities that Support Critical Malay Essay Writing

Meanwhile, there are five treatment activities' tasks could complete by less than 80 percent of students. The activity tasks include the A1, A2 and A9 activity tasks which obtained 24 out of 33 equivalents to 72.72 percent of students able to complete the tasks. Next, activity tasks A7 got 33 out of 33 equivalents to 69.69 percent of students who could complete the activity tasks, and lastly, is activity A3 where there were only 15 out of 33 equivalents to 45.45 percent of students who could complete it.

This phenomenon also shows that treatment activity tasks that use authentic elements have a positive effect on critical Malay essay writing competencies.

Discussion

This study found that critical thinking characteristics such as categorizing, analyzing, and assessing information as well as formulating a conclusion are critical thinking competencies required when writing a Malay essay. Writing an essay in Malay also requires students to strengthen their arguments and arrange their ideas logically and clearly. This result corroborated the findings of Suteja and Setiawan (2022); Meirbekov *et al* (2022), who stated that writing essays helps students develop their critical thinking competencies because it necessitates analyzing and evaluating information, connecting disparate ideas, and forming perspectives.

Furthermore, this study supported earlier research that suggested educators of second-language essay writing should employ more genuine and authentic writing activities to help students develop their critical thinking competencies and comprehension of diverse contextual linguistic elements (Shemshurenko *et al.*, 2019). In addition, the teaching methods are crucial for developing Chinese school students' critical Malay essay-writing competencies. To ensure that students are enthusiastic about online learning, educators should develop original and creative online learning strategies (Purwadi *et al.*, 2020). At the same time, to meet the Ministry of Education's goals of developing students' critical thinking competencies and problem-solving competencies in daily life, educators should design teaching and learning activities and strategies for writing essays in the Malay language through an authentic multimedia technology-aided environment.

In summary, an authentic learning environment supports critical Malay essay writing by providing a context that is relevant, engaging, and practical. It fosters the development of essential skills such as critical thinking, research, analysis, and effective communication within the context of the Malay language and culture. This approach enables students to produce well-structured, informed, and persuasive essays that reflect a deep understanding of the subject matter and its real-world applications.

Ultimately, multimedia technology can play a significant role in improving critical Malay essay writing by providing various tools and resources to support the writing process. The tools and resources aid in research and exploration, collaboration writing, and self-assessment, ultimately enhancing students' critical thinking competencies and the quality of their essays.

The Learning Framework for critical Malay essays, the result of this study is expected able to improve students' critical Malay essay writing competencies. There are five authentic e-Learning activities described in this Learning Framework. The five learning activities that support the critical Malay essay writing include, integrating authentic elements of the real world, diverse interpretations in a stream discussing room, multiple perspectives through video clips, an e-module on a website, and cooperation and collaboration in a stream discussing room. Here's how each of these elements can contribute to the development of critical essay writing competencies.

Authentic elements of real-world examples, scenarios, and experiences in the context of Malay essay writing can make the content more engaging and relatable. This can help students relate their writing to practical situations and real-life issues, encouraging them to think critically about how the language is applied in different contexts.

Diverse interpretation in stream discussion room allows students to share their interpretations of a text or topic in Malay essay writing helps develop critical thinking competencies. It encourages students to analyze different viewpoints and arguments, promoting a deeper understanding of the subject matter.

Multiple perspectives through video clips related to Malay essay writing topics can broaden students' horizons. It exposes them to different viewpoints, ideologies, and cultural contexts, which is essential for critical thinking. Students can critically evaluate these perspectives in their essays, enriching their arguments.

Explore e-module is a learning activity in AeL that requires students to use critical thinking competencies. The organized e-modules provide such as grammar lessons, writing tips, and topic-specific content to the students. These resources can serve as a reference for students to improve their writing competencies. Critical essay writing often requires a strong command of the language, and e-modules can help in this regard.

Cooperation and collaboration in a stream discussing room gives students the opportunity to comment on their friends' essays and correct their own essay weaknesses according to their friends' comments.

Overall, these activities enhance critical essay writing by creating an immersive learning environment, promoting critical analysis of different perspectives, and providing resources and opportunities for competencies development. They encourage students to think critically about Malay essay writing, its applications, and the topics they are writing about.

Conclusion

This study found that the mastery of critical thinking characteristics was supported by an authentic e-learning environment in multimedia technology developed by researchers. The tactics subsequently raised the achievement scores of Chinese school students in critical Malay essays writing. Therefore, authentic e-learning activities is important and beneficial for students' critical Malay essay writing competencies. Thus, it would be appropriate to integrate authentic e-learning into the instructional strategies used by educators.

The findings of the study also show that students' mastery in critical Malay essays writing has been enhanced by learning activities for these essays that were based on an authentic e-learning environment supported by multimedia technology. Furthermore, according to the results of the study, there are five authentic e-learning activities that support the critical Malay essays writing. Therefore, those activities should be accepted and used by the educators and stake holders in the best way.

Correspondingly, these intervention activities can be used to deal with Malay essay writing deficiencies. This result reinforces the findings of (Hassan *et al.*, 2019), which stated that critical Malay essays writing learning activities based on an authentic e-learning environment by using multimedia technology helped students write more efficiently. As a result, the integration of authentic e-learning environment in the teaching of writing in the classroom needs to be applied. Students must also be taught the writing process in an authentic e-learning environment.

Overall, technology can be a valuable ally in improving critical Malay essays writing. Therefore, in writing lessons and other language classes, using authentic e-learning strategies is recommended.

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