The impact of Multiple Intelligences Activities-Based Differentiated Instruction on Enhancing Secondary Stage Students' EFL Critical Reading Skills

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Abstract

The present research aimed at enhancing First Year Secondary students' critical reading skills. This was achieved through applying a proposed approach which employed Multiple Intelligences Activities-Based Differentiated Instruction (MIABDI). The research adopted two groups design with pre-test, treatment and post-test. The following instruments were designed and used: A Critical Reading Skills Checklist (CRSC) for identifying the critical reading skills needed to be developed for the targeted students; A Multiple Intelligences Inventory (MI) for identifying the common and dominant intelligences among the targeted students and the related activities; and A Critical Reading Pre/Post Test (CRPPT) for assessing the students' performance in the identified critical reading skills before and after receiving the treatment. The proposed model employing MIABDI developed the identified critical reading skills and the assessment methods helped both the researcher and students to assess the performance level. Results of the research indicated that there were statistically significant differences at 0.01 level between the mean scores of the experimental group on the pre/post administrations of the pre/post test in favour of the post one. In addition, the experimental group students outperformed their counterparts of the control group students in the target critical reading skills. Consequently, the proposed model proved to be effective in developing critical reading skills for Secondary School students.

Keywords: Differentiated Instruction, Multiple Intelligences Activities, Critical Reading Skills.

Introduction and Overview

In today's global world, the significance of English cannot be denied or overlooked. With the help of modern technology, English has been playing a crucial role in various fields including education which is the foremost imperative field where English is needed. As a result, English has become the medium of instruction at universities. Apparently, this is because of various reasons including getting a high-quality job, communicating with the individuals worldwide, and having access to scientific and academic sources in the students' major fields.

Critical reading is a major skill that EFL students need improve the learning process. This is mainly because reading plays a crucial role in the development of English in general and is the basic activity through which

students learn academic courses. The strong relationship between read critically, achieve academic success, and the need for critical thinking has been observed by many researchers (Edman, 2008; Ennis, 2018; Huijie, 2010; Wade, 2008).

Critical reading refers to attentive, active, thoughtful and analytic reading (Kurland, 2002). It helps students analyze written texts in terms of the writer's main argument, sufficiency of the evidence provided to support this argument, tone and style adopted by the writer and the overall plausibility of the subject matter (Gulcat, 2004).

Critical reading is regarded as a highly reflective skill that asks students to stand back and gain some evidence from the text they are reading (Knott, 2008). Therefore, it is necessary for English as foreign language (EFL) teachers to help students become critical readers. It is worth noting that critical reading has become essential nowadays because it requires the reader to examine the information which they receive to make sure this information is accurate or not.

Critical reading requires students to ask questions throughout the reading process to determine the purpose of the text, its suitability as well as determining the consistent and inconsistent aspects and contradictions between the ideas within the text. In this way, various processes take place such as examining cause and effect relationships, analyzing, synthesizing, arranging, comparing, deducing, discussing, evaluating, and problem solving (Halpern, 2003).

Unlike poor readers, good readers usually implement a wide range of strategies to approach reading texts and overcome textual difficulties (Kim, 2020). Utilizing these strategies effectively turns students into critical readers who apply higher-order thinking skills. In the context of language learning, the word "critical" does not only imply negative meanings, i.e., looking for mistakes and flaws; but also entails using careful evaluation, sound judgment, and reasoning powers.

Consequently, students who have been taught to read critically raises crucial questions and formulates them clearly and accurately. Those students gather relevant information, come to justified conclusions and results, test them according to the relevant criteria, open-mindedly think about alternatives, recognize and assess the assumptions, implications, and practical consequences, and communicate effectively with others to figure out solutions for complex problems (Scriven & Paul, 2008).

Successful critical readers are those who actively make evaluations, ask questions, and achieve their goal at the end of the learning process.

Critical reading skills improve in parallel with higher-order thinking. When students utilize multi-dimensional thinking by activating their mental skills, they can properly solve problems and find precise results that support the assumptions they have created (Willingham, 2020). Moreover, they can easily analyze the implications of meaning within the text, realize how the author's way of thinking was developed, and determine the author's purpose within the text to establish meaning integrity (Allen & McNamara, 2020).

Consequently, it is argued that critical reading requires students to use their power of thinking actively and improve their multi-dimensional thinking competence. Ünalan (2010) declared that the purpose of critical reading is basically to gain a clear and correct understanding of the text. After reading, students need to evaluate, interpret and criticize the text. They are asked to make inferences by interpreting the conclusions they have reached through their logic (Özensoy, 2011). Critical readers are confident about their decisions regarding accepting, rejecting, or adopting an idea (Ruggiero, 2011).

Rezaei et al. (2022) examined the impact of critical reading instruction on English as a Foreign Language (EFL) learners' reading comprehension and critical thinking abilities. The study involved 60 intermediate-level EFL learners at an Iranian language institute, aged 18-25. A quasi-experimental design was used with a pretest-posttest control group. The researchers found that explicit instruction in critical reading strategies significantly improved both reading comprehension and critical thinking skills among EFL students.

Zhang and Li (2022) investigated the impact of explicit critical reading instruction on the academic reading performance of advanced English as a Second Language (ESL) learners. 84 advanced ESL students in a pre-university academic preparation program at a Canadian university. Quasi-experimental design with pre-test, post-test, and delayed post-test. Intervention focused on skills such as identifying main ideas, evaluating arguments, recognizing bias, and synthesizing information and used authentic academic texts from various disciplines. This study provides evidence for the effectiveness of explicit critical reading instruction in enhancing ESL learners' academic reading abilities and preparing them for university-level studies.

Therefore, critical reading involves various skills including the ability to read texts with a critical mindset, read between lines, go beyond surface-layer comprehension to deeply engage with and evaluate the

content, arguments, and underly the author's assumptions (Wallace & Wray, 2016). Effective critical reading includes several key aspects:

1. Active reading and questioning: Actively engaging with the text by questioning the assumptions presented by the author, evidence, and reasoning, as well as questioning one's understanding and preconceptions (Kurland, 2000; Zywica & Gomez, 2008).
2. Identifying the main idea and argument: Specifying the central claims, arguments, and the supporting evidence presented in the text (Wallace & Wray, 2016).
3. Analyzing evidence: Evaluating the author's logic and the validity and sufficiency of the evidence used in the text to support claims (Kurland, 2000; Zywica & Gomez, 2008).
4. Recognizing rhetorical strategies: Identifying the rhetorical techniques used by the author such as tone and figurative language to affect the reader's perception and response (Kurland, 2000; Wallace & Wray, 2016).
5. Contextualizing and synthesizing: Considering the broader context and background knowledge which is related to the topic, and synthesizing information from various sources to formulate a more comprehensive understanding (Zywica & Gomez, 2008; Serafini, 2015).
6. Drawing inferences and conclusions: Making inferences and drawing well-supported conclusions according to the information presented in the text and one's prior knowledge (Serafini, 2015).

Eventually, it is argued that developing critical reading skills is essential for academic success as it helps students engage deeply with complex texts, evaluate arguments and evidence critically, and formulate well-informed interpretations (Kurland, 2000; Wallace & Wray, 2016). Several teaching techniques and approaches are suggested to help improve students' critical reading skills. One of these approaches is differentiated instructions.

While differentiation can be an effective approach to instruction in any subject area, it does have particular merit in the area of critical reading. Differentiation provides one of the most advantageous options for meeting varied reading abilities and needs of students, and this can be done through understanding what each student brings to reading instruction.

Differentiated Instruction

In today's classrooms, not all students are alike. Each and every student has varying abilities, interests and needs. With such a diversity, the utilization of one teaching method is not adequate. With this in mind,

teachers have to deal with issues related to meeting all students' needs in their classroom. The diversity of students requires a variety of teaching and learning strategies that address the varying needs in each classroom. An effective way to achieve this task is through differentiated instruction (Tomlinson, 1995; 2001). Differentiated instruction is designed to help teachers meet their students where they are when they come to the classroom and move them forward as far as possible on their learning path (Levy, 2008).

Tomlinson (1995) defined differentiated instruction as a flexible way to teaching in which the teacher plans and carries out various approaches to the content, the process, and the product to expect and respond to students' differences in readiness, interests, and learning needs. In other words, differentiated instruction calls for teacher to create lesson plans for every individual student and provide every student with an individualized education that will help them achieve the goals.

Bailey and Williams-Black (2008) noted that using differentiated instruction in the learning/teaching process could pave the way for all students to fit within the cracks instead of falling through the cracks in order to be successful individuals in today's society. That is, differentiating instruction is to maximize each student's growth and individual success by meeting each student where he/she is, and assisting in the learning process.

Through differentiated instruction and activities, students take a greater responsibility for their own learning. These activities mainly focus on students' multiple intelligences, higher-order thinking, and learning needs. Therefore, differentiated instruction is an effective approach to be implemented in the classroom to meet students' learning needs. In this vein, multiple intelligences strengths that, and in turn, encourages them to use higher-order thinking.

Maximizing students' learning throughout differentiated instruction strategies involves maximizing students' language skills; listening, speaking reading and writing. In particular, differentiation strategies can be applied to critical reading to help students learn a range of skills including, identifying the author's point of view, making inference, evaluating the text, drawing conclusion and analyzing argument.

Several researchers (Berger, 2000; Tomlinson, 1995) identified three areas to adjust the lesson plan to provide differentiated instruction effectively in the classroom. They were (a) differentiating the content, (b) differentiating the process/ activities, and (c) differentiating the product. Therefore, to meet the individual need of each student in the classroom, the

teacher can provide differentiated learning by providing choice in either or all of the areas listed above.

Differentiating the Content. One of the three areas to differentiate instruction is through adjusting and changing the content. The content of the lesson refers to the curriculum that is taught. Tomlinson (2001) regarded this as the input of the teaching/learning process. Differentiating the content asks teachers to either change or adapt how they give their students the opportunity to access the material they want students to learn.

The teacher can differentiate the content by designing activities for groups of students that cover various levels of Bloom's Taxonomy ranging from lower-order thinking skills to higher-order thinking skills. The six levels are: remembering, understanding, applying, analyzing, evaluating and creating. Students who are unfamiliar with a lesson may be asked to complete tasks on the lower levels: remembering and understanding. Students with some mastery may be asked to apply and analyze the content, and students who have high levels of mastery may be asked to complete tasks in the areas of evaluating and creating.

Differentiating the Process/Activities. Differentiating the process/ activities incorporates learning activities or strategies that provide appropriate methods for students to explore ideas and concepts of the content. Tomlinson (2001) called this procedure as the sense-making. The process is differentiated not only by how the teacher teaches, but also by the strategies the teacher has the students use to help them explore the content that is taught. In order to differentiate the process, Tomlinson (2001) said that the activities should be of interest to the students, allow them to think on a higher level, and allow them to use major skills to understand the main ideas in the reading text. She also asserted that the activities should be intellectually demanding.

Differentiating the Product. The product refers to what students develop to show their understanding of the content that was taught. Differentiating the product requires students to demonstrate what they have learned in a wide variety of ways that reflect knowledge and ability to manipulate an idea skilfully. This phase of differentiating is identified as the evaluation phase (Tomlinson, 2003). Differentiating the product allows students to self-select a way to show their understanding of the content. They normally choose a way that provides them with success that coincides with their own learning need(s).

Park and Lee (2022) examined the effects of differentiated instruction on vocabulary acquisition and motivation in English as a Foreign

Language (EFL) classrooms. Participants were 120 high school EFL students in South Korea and 4 EFL teachers. The study adopted a Mixed-methods approach. Dara was collected using Pre and post-tests on vocabulary knowledge (receptive and productive). This study provides evidence for the positive impact of differentiated instruction on both vocabulary acquisition and student motivation in EFL contexts, offering insights into effective strategies for addressing learner diversity in language classrooms.

Deunk et al. (2018) conducted a meta-analysis of research on differentiated instruction in reading education. The analysis included 21 empirical studies on differentiated instruction in reading. Results suggests that different approaches to differentiation may be more effective for different reading skills. This meta-analysis provides a comprehensive overview of the effectiveness of differentiated instruction in reading education, offering insights into which approaches may be most beneficial and under what circumstances.

Multiple Intelligences Activities-Based Differentiated Instruction (MIABDI)

Multiple intelligences activities formed a base for differentiated instruction throughout this research. This suggested the question; how is differentiated instruction used in conjunction with multiple intelligences?

Guignon (2010) stated that two of the best ways to implement multiple intelligences into the classroom is to design lessons that allow the students to use more than one intelligence and to create assessments in which they can show their mastery of the content in different ways. That would be most applicable to their intelligence.

Ellis, Huemann, and Stolarik (2007), found that when students were given a choice of assignments and when they were allowed to use different intelligences, students were more engaged in the activities. This study separated the use of differentiation in which the three-tiered approach was used from designing lessons where the students could use one or more of Gardner's multiple intelligences.

Edybum (2004) stated that while this approach, differentiated instruction, is new and challenging to some general teachers, there is much to embrace. Ultimately, the goal of a teacher is to help students succeed in life. A little extra work can go a long way in helping students achieve those higher levels of learning. Teachers who acknowledge Gardner's theory of multiple intelligences, and are willing to differentiate lessons, activities and learning, will be able to target a much greater number of students.

Rahman and Akhter (2023) investigated the effects of combining multiple intelligences (MI) theory with differentiated instruction (DI) on English as a Foreign Language (EFL) writing skills among secondary school students. Participants were 120 ninth-grade EFL students from 4 secondary schools in Bangladesh. The study adopted quasi experimental design. Data was collected using pre and post-tests on EFL writing skills and Multiple intelligences assessments. This study provides evidence for the positive impact of integrating multiple intelligences theory with differentiated instruction in EFL writing classrooms. It demonstrates improvements in writing quality, self-efficacy, and engagement, while also highlighting the potential of this approach to create more inclusive and effective EFL writing instruction.

Nguyen and Watanabe (2022) explored the effectiveness of combining multiple intelligences (MI) theory with differentiated instruction (DI) strategies to improve vocabulary acquisition among English as a Second Language (ESL) learners. Participants were 150 intermediate-level adult ESL learners from diverse linguistic backgrounds. The study adopted a quasi-experimental design. This study provides evidence for the positive impact of integrating multiple intelligences theory with differentiated instruction in ESL vocabulary teaching. It demonstrates improvements in vocabulary acquisition, retention, and learner engagement, while also highlighting the potential of this approach to address diverse learning needs in multilingual classrooms.

Thompson and Doyle (2020) investigated the effectiveness of combining multiple intelligences theory with differentiated instruction strategies in high school English Language Arts (ELA) classes. Participants were 180 tenth-grade students from diverse backgrounds and 6 ELA teachers from 3 different high schools. The study adopted Mixed-methods approach for 16 weeks. Data was collected using pre-post-tests. This study provided evidence for the positive impact of integrating multiple intelligences theory with differentiated instruction in secondary ELA classrooms, demonstrating improvements in academic performance, engagement, and students' awareness of their own learning processes.

The idea of looking at students having multiple intelligences, leads to the idea of using differentiation as a technique to teach to those intelligences. Differentiation allowed students to be more appropriately challenged to their ability level and generally increased students' motivations and attitudes to learn. As a result, this study suggests a cyclical process of finding out about the learner and responding by differentiating.

Background of the problem

A pilot study was conducted to assess the first year secondary stage students' EFL critical reading skills (identifying the main point of view, detecting author's purpose and tone, distinguishing facts from opinions, evaluating arguments and evidence, making inferences and drawing conclusion). A Critical Reading Test (CRT) was designed and applied to a group of the participants (N=40). The test consisted of a text with (6) question items; the maximum score of each item was (10) marks. Results of the pilot study are presented in table (1):

Table (1): Students Score on the Critical Reading Test (CRT)

Critical Reading Skills	Mean	percentage
Identifying the main point of view	0.7	7%
Detecting author's purpose and tone	1.3	13%
Distinguishing facts from opinions	2.5	25%
Evaluating arguments and evidence	3.0	30%
Making inferences	4.3	43%
Drawing conclusion	4.8	48%
Total	16.6	27.7%

Results of the Critical Reading Test indicated that the participants had a relatively low level in the critical reading skills.

Statement of the problem

Based on the results of the pilot study and the review of related literature, it was noticed that first year secondary students need to improve their critical reading skills. Students face some difficulties related to critical reading skills such as identifying the main point of view, detecting author's purpose and tone; distinguishing facts from opinions; evaluating arguments and evidence; making inferences and drawing conclusion. They need to improve their ability to analyze and evaluate the reading text; their ability to think about the implications and conclusions of what is being read; their ability to understand the text critically and reading between and beyond lines and reading for deeper meaning. Thus, the current research used Multiple Intelligences Activities-Based Differentiated Instruction to develop second year secondary students' EFL Critical Reading Skills.

Questions of the research

This research answered the following main question:

What is the impact of Multiple Intelligences Activities-Based Differentiated Instruction on developing first year secondary students' EFL Critical Reading Skills?

For research purposes, this main question was subdivided into the following questions:

(1) What are the most important Critical Reading Skills needed for the first year secondary stage students?

(2) What are the common Multiple Intelligences among EFL first year secondary school students?

(3) To what extent can the proposed approach enhance first year secondary stage students critical reading skills?

The Purpose

The main purpose of this research was to improve first year secondary students' EFL critical reading skills through using Multiple Intelligences Activities-Based Differentiated Instruction (MIABDI) strategies.

Hypotheses

The present research tested the following hypotheses: -

1. There is a statistically significant difference at 0.01 between the mean scores of the experimental group students and those of the control group students on the post-administration of the Critical Reading Test in favor of the experimental group.

2. There is a statistically significant difference at 0.01 between the mean score of the pre and post administration of the Critical Reading Test of the experimental group students in favor of the post administration.

Significance

The research derived its significance from the following considerations:

(1) It suggests an effective approach to the teaching of critical reading through using MIABDI strategies.

(2) It provides the teacher and curriculum designer with an attempt to integrate multiple intelligences activities within the textbook materials.

(3) It provides empirical evidence on the utility of the MIABDI strategies in teaching English.

(4) It is expected that it will contribute to increasing teachers' awareness of teaching the types of multiple intelligences of their students, and benefiting from this knowledge in designing their learning / teaching activities.

(5) It may assist students themselves through raising their awareness of the types of intelligences they have, their strengths, and weaknesses, to develop themselves.

(6) It may help curriculum designers and researchers to consider MIABDI approach in redesigning learning/teaching materials.

Delimitations of the study
The study was delimited to:
1- A sample of first year secondary stage students in Talkha Secondary School.
2- First year secondary stage textbooks.
3- Some Critical Reading Skills (identifying the main point of view, detecting author's purpose and tone, distinguishing facts from opinions, evaluating arguments and evidence, making inferences and drawing conclusion) necessary for EFL first year secondary stage students.
4- The most common Multiple Intelligences of the target students.

Methodology
Participants

The participants of the study were a group of EFL first year secondary stage students. Those students were selected from Talkha Secondary School. Two classes were used where the experimental group (N=40) was trained according to the MIABDI strategies. On the other hand, the control group (N=40) was trained using the regular ways of teaching critical reading skills.

Design

The study adopted the quasi- experimental design in terms of dividing the participants of the study into two groups: experimental and control. The experimental group was trained using the proposed training model, MIBDI strategies, while the other group used the regular method. The adopted quasi- experimental design (see figure 1) in this study (pre/post-test) was as follows: -

Figure (1): MIABDI - Experimental Design
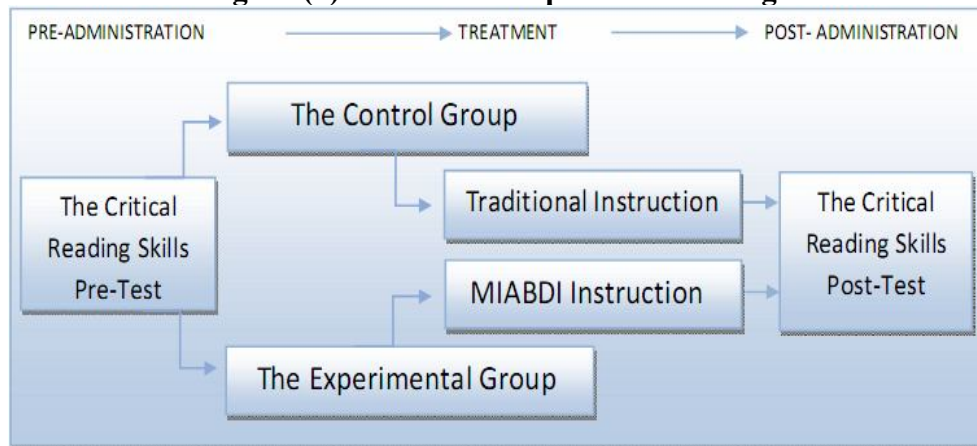
Instruments
The present study employed the following instruments:
  1- A Critical Reading skills Checklist (CRSC) prepared by the researcher to identify which of the critical reading skills are needed for EFL first year secondary stage students.
  2- A Multiple Intelligences Inventory (MII) adopted from Walter McKenzie (1999, 2017) to identify the common intelligences among EFL first year secondary stage students.
  3- A Pre-Post Critical Reading Test (CRT) prepared by the researcher for assessing EFL first year secondary stage students' critical reading skills.

Procedures
To answer the study questions, the researcher conducted the following procedures: -
  1- Reviewing the relevant literature and the previous studies related to the variables of the study.
  2- Designing the checklist of EFL critical reading skills to determine the most important skills for the target participants.
  3- Preparing a Multiple Intelligences Inventory to identify the common intelligences among the target participants.
  4- Preparing the Critical Reading Skills Test.
  5- Establishing the validity and the reliability of the test.
  6- Designing the proposed training based on MIABDI strategies.
  7- Selecting the participants of the study from secondary stage students
  8- Administering the Critical Reading Pre-Test.
  9- Administering the proposed training based on the MIABDI strategies for the participants of the experimental group.
  10- Administering the Critical Reading Post-test.
  11- Administering the Evaluation Questionnaire (EQ) to evaluate the training from the students' point of view.
  12- Analyzing the data statistically.
  13- Reporting results, making conclusions, and suggesting recommendations.

Definition of terms
1- Critical reading
      Pirozzi (2003) defined critical reading as a very high-level comprehension of written materials that requires interpretation and evaluation skills. It entails using reference to go beyond what is stated explicitly, filling in informational gaps, and coming to logical conclusions.

It emphasizes the active nature of reading where the readers are not simply receiving the facts and knowledge in the text but try to form their own opinions and viewpoints about what they read from the texts.

Critical reading is operationally defined as an active process of comprehending, questioning and evaluating the printed material. It is the careful, active, reflective, analytic reading which involves reflecting on the validity of what one has read in light of his past knowledge and understanding. It involves the ability to identify the author's point of view, inferencing, identifying purpose, evaluating the text, drawing conclusion and analyzing argument.

2- Differentiated instruction

Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001).

Differentiated instruction is a process to teaching and learning for students of differing abilities in the same class. The intent of differentiating instruction is to maximize students' growth and individual success by meeting each student where he or she is, and assisting in the learning process.

Differentiated Instruction is operationally defined as responding to students' diverse needs by providing varied reading tasks and activities and grading those tasks to suit students' multiple intelligences and to maintain that students learn at their own pace.

3- Multiple Intelligences

Gardner (2006) defined intelligence as a computational capacity- a capacity to process a certain kind of information. An intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting.

Multiple Intelligences is operationally defined as the different mental abilities that can be addressed to engage different levels of learning in order to maximize educational success and enthusiasm for learning among diverse learners. Addressing such multiple areas of intelligences can be met through providing appropriate learning activities in classrooms that accommodate the multiple intelligences. According to the present study, Verbal/Linguistic intelligence, Logical/Mathematical intelligence, Musical intelligence, Bodily/ Kinesthetic intelligence, and Visual/Spatial intelligence will be the basis of differentiated instruction.

Statistical Analysis and Results

The results of the research are discussed in light of the statistical analysis of each instrument. A discussion of the results is provided after each statistical analysis as well as a discussion of the overall results.

Establishing the homogeneity of the groups

To establish the homogeneity of both the experimental and the control group, a pre (t) test for critical reading was administered. Table (2) shows the results of the pre (t) test concerning critical reading skills:

Table (2): Comparing the mean scores of students' Performance in the Critical Reading Skills Pre-Test in both Groups

Skills	Groups	N	Mean	Std. Deviation	T-test for Equality of Means		
					t	df	Sig.
Identifying the main point of view	Experimental	40	0.90	0.30	-1.28		not sig.
	Control	40	1.00	0.39		78	
Detecting author's purpose and tone	Experimental	40	0.65	0.62			not sig.
	Control	40	0.45	0.64	1.42	78	
Distinguishing facts from opinions	Experimental	40	0.43	0.50			not sig.
	Control	40	0.30	0.46	1.16	78	
Evaluating arguments and evidence	Experimental	40	0.43	0.55			not sig.
	Control	40	0.35	0.53	0.65	78	
Making inferences	Experimental	40	0.43	0.50			not sig.
	Control	40	0.40	0.55	0.21	78	
Drawing conclusion	Experimental	40	0.28	0.45			not sig.
	Control	40	0.25	0.49	0.24	78	
Total	Experimental	40	3.10	0.87		78	not sig.
	Control	40	2.75	1.17	1.516		

Table (2) indicates that T-values are not statistically significant at the 0.01 level. This means that there are no significant differences between the mean scores of both experimental and control groups in critical reading skills test before conducting the experiment. In other words, the two groups are equivalent in their knowledge of the targeted critical reading skills test before applying the experimental treatment. Thus, homogeneity between the two groups was established. Therefore, any differences on posttest will be attributed to the experimental treatment.

Results of the Statistical Treatment

To investigate the change fostered by the implementation of the proposed approach employing Multiple Intelligences Activities-Based Differentiated Instruction on the participants' performance in the critical reading skills test, the hypotheses of the research were tested. The following section tests each hypothesis individually.

Testing the Hypotheses
Hypothesis One

"*There is a statistically significant difference at (0.01) between the mean scores of the experimental group students and those of the control group students on the post administration of the critical reading test in favor of the experimental group*"

To investigate the change fostered by the implementation of the proposed learning approach employing MIABDI on the experimental students' performance in critical reading skills and to compare their post level of skill performance developed by the proposed learning approach, a *t*-test for the paired sample was used to determine any statistical differences between the students' mean scores on the post test. These findings are presented in table (3).

Table (3): Comparing the mean score of students' Performance in the critical Reading Skills Post Test in both groups

Skills	Groups	N	Mean	S. D	t-test for Equality of Means		
					t	df	Sig.
Identifying the main point of view	Experimental	40	1.88	0.34	10.45	78	0.01
	Control	40	1.08	0.35			
Detecting author's purpose and tone	Experimental	40	1.85	0.36	10.53	78	0.01
	Control	40	0.58	0.68			
Distinguishing facts from opinions	Experimental	40	1.58	0.55	8.77	78	0.01
	Control	40	0.45	0.60			
Evaluating arguments and evidence	Experimental	40	1.25	0.49	7.83	78	0.01
	Control	40	0.35	0.53			
Making inferences	Experimental	40	1.45	0.64	7.24	78	0.01
	Control	40	0.45	0.60			
Drawing Conclusion	Experimental	40	1.80	0.41	12.45	78	0.01
	Control	40	0.53	0.51			
Total	Experimental	40	9.80	1.16	24.91	78	0.01
	Control	40	3.43	1.13			

Table (3) show that there are statistically significant differences between the mean scores of the experimental and control groups in all skills of the critical reading skills test and the overall score of the test in the post administration in favor of the experimental group (Mean = 9.8). All the values of (*t*) were statistically significant at 0.01 level. These results agree to the first hypothesis and confirm its validity. The researcher attributes these differences to the proposed approach.

Hypothesis Two

"*There is a statistically significant difference at (0.01) between the mean scores of the pre and post administration of the critical reading test in favor of the post-test*"

To investigate the change fostered by implementing the proposed learning approach employing MIABDI on the experimental students' performance in critical reading skills and to compare their post level of skill performance developed by the proposed learning approach, a *t*-test for the paired sample was used to determine any statistical differences between the students' mean scores on the pre-post test. These findings are presented in table (4).

Table (4): Comparing the mean score of the Experimental Group Students' Performance in the Critical Reading Skills Pre/Post Test

Skills	Groups	N	Mean	S. D	t.	df	Sig.(2-tailed)
Identifying the main point of view	Pre	40	0.90	0.30	-12.85	39	0.01
	Post	40	1.88	0.34			
Detecting author's purpose and tone	Pre	40	0.65	0.62	-11.70	39	0.01
	Post	40	1.85	0.36			
Distinguishing facts from opinions	Pre	40	0.43	0.50	-10.98	39	0.01
	Post	40	1.58	0.55			
Evaluating arguments and evidence	Pre	40	0.43	0.50	-8.78	39	0.01
	Post	40	1.25	0.49			
Making inferences	Pre	40	0.43	0.50	-8.10	39	0.01
	Post	40	1.45	0.64			
Drawing Conclusion	Pre	40	0.28	0.45	-14.21	39	0.01
	Post	40	1.80	0.41			
Total	Pre	40	3.10	0.87	-29.51	39	0.01
	Post	40	9.80	1.52			

Findings in the previous table indicate that there is a statistically significant difference at 0.01 level between the mean scores of the experimental group on the pre and post administration of the critical reading skills test and the overall score in favour of the post one where all the values of (*t*) are statistically significant at a level of significance (0.01) and a degree of freedom (39). These results are consistent with the second hypothesis and confirm its validity. The researcher attributes these differences to the MIABDI approach. This proves that the proposed learning approach was effective in developing the identified critical reading skills.

Estimating the Effect Size (η^2)

To calculate the effect size, the researcher used the effect size scale (η2) as shown in table (5).

Table (5): Values of (η^2) and the effect size of the treatment on the critical reading skills

Skills	η2	Effect size
Identifying the main point of view	0.81	High
Detecting author's purpose and tone	0.78	High
Distinguishing facts from opinions	0.76	High
Evaluating arguments and evidence	0.66	Medium
Making inferences	0.63	Medium
Drawing Conclusion	0.84	High
Total Test	0.98	High

The table above shows the effectiveness of the proposed learning approach on the overall score for testing critical reading skills and its sub-skills, where the values of (η^2) ranged from (63%) for the sub skill (Making inferences) to (84%) for the sub skill (Drawing Conclusion). Results also show that the effect size of the proposed approach on the students' performance in the critical reading skills test and its components is high (98%). These results indicate that the total variance in the critical reading skills and the total test can be attributed to using MIABDI and this indicates the effectiveness of the proposed approach.

It is obvious that the students have achieved greater improvement in the targeted skills. This can be attributed to the proposed approach as well as the nature of critical reading skills as productive skills. The overall improvement of students' performance can be attributed to their interest and need to learn these skills for their academic study.

These results indicate high percentages which reflect high variance because they are higher than the minimum limit percentage (80% > 15%). (Abo-Hatab & Sadek, 1991)

Based on the results of the *t*-test shown in the previous tables and the results of the effect size shown in tables (3) and table (4), the hypotheses of the study are consequently accepted.

In addition to the quantitative results, the following qualitative analysis could be revealed:

The clear stages of the application helped the students to follow the teacher and to know what they were required to do in each stage. Students were given a chance to ask questions, get feedback, and use their dominant intelligence the thing that made them behave normally. This, in turn,

provided the opportunity for the researcher to observe the students' behaviour and how they reacted to the various situations. These observations led to the following qualitative results:

- The students of the experimental group paid more attention to the tasks where they worked in teams and confronted new activities. They actively cooperated with their peers. They were more enthusiastic in discussing their activities during the sessions even for low-achievers compared to the control group.
- During the implementation, students shared their points of strength through helping each other and making good use of their potential.
- Students enjoyed being more appropriately challenged to their ability level and generally increased motivations and performance. They became more engaged in learning as they used learning activities that match their strengths.
- Working in groups promoted a setting where cooperation was valued and produced better results.
- On the other hand, it was noticed that almost all of the students of the control group felt bored being seated quietly with no effort to achieve their tasks. This, in turn, resulted in poor performance and a lack of understanding.
- Students of the control group lacked interactivity and cooperation. They had few opportunities to practice group dynamics and teamwork.
- Students of the control group felt that their potentials are not valued by the teacher the thing that resulted in low learning performance and failing the objectives of the lessons.

Discussion of Results

The results discussed above reveal that there is an obvious improvement in the identified critical reading skills of the experimental group on the post administration of the proposed approach; MIABDI which showed that:

1. There is a statistically significant difference at (0.01) level between the mean scores of the experimental group students and those of the control group students on the post-administration of the critical reading test in favor of the experimental group.
2. There is a statistically significant difference at (0.01) level between the mean score of the pre and post administration of the critical reading test of the experimental group students in favor of the post administration.

The effect size measured by square ETA (η2) also showed that there is a high effect size that occurred to the experimental participants' critical reading skills after using the MIABDI learning approach in the context. The results of the study proved that there has been a high development in the targeted skills.

Based on the obtained results, it was concluded that the proposed approach has had appositive effect on developing the critical reading skills of the experimental participants. This was an indication of its effect on developing the experimental participants' targeted skills. In addition, the experimental participants' overall development was satisfactory. For this reason, the study joins and adds to the other studies that have investigated similar approaches for developing various aspects of critical reading and a variety of skills.

Furthermore, results revealed that they are in line with those of many related studies and supported by a certain theoretical background that places more emphasis on the necessity of acquiring critical reading skills in an authentic and constructivist environment.

The results of this study go along with the results of the studies conducted by Rezaei, S., Rahimi, M. A., & Taghizadeh, M. (2022), Zhang, Y., & Li, R. (2022), Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018), Park, J., & Lee, H. (2022), Thompson, K. A., & Doyle, C. L. (2020), Rahman, M. M., & Akhter, N. (2023) and Nguyen, T. H., & Watanabe, Y. (2022) who concluded that MIABDI has a positive effect on enhancing critical reading skills.

Thus, the proposed approach proved to have ahigh positive effect on contextualizing critical reading. Besides, it proved to be effective in making students go beyond the limits of traditional thinking through various activities which enabled them to read critically. Multiple intelligences activities provide the experimental participants with the opportunity to learn according to their own path and to learn by doing through hands-on activities which resulted in improving their imagination, inquiry, criticality and high-level thinking.

To sum up, the previous discussion and interpretation revealed that all hypotheses of this research were accepted and proved that multiple intelligences activities along with differentiated instruction have had a high positive effect on developing the experimental participants' critical reading skills.

Recommendations of the research

With reference to the experimental evidence provided throughout the present research and its conclusions, the following recommendations are suggested:

- It is highly recommended to adopt the MIABDI learning approach for developing the identified critical skills and this can be adopted and/or adapted to develop other English language skills than the identified ones.
- It is also recommended to use MIABDI as a medium for learning to develop English language skills in general.
- It is suggested as well to apply the proposed approach on students studying at other stages rather than secondary stage.
- It is important to enhance and develop the critical reading skills in English. Hence, it is highly recommended to equip students with competencies that would assist them in their academic study and career later on.
- It is of a paramount value to employ MI activities or other equivalent forms of activities in learning English language or other subjects in accordance with the current teaching trends.
- It is also important to apply differentiated instruction approach since it has proved to be efficient in involving students in the learning process.
- It is very necessary to integrate varied activities based on students' varied intelligences in the learning process to help students find personal meaning in their studies and their learning will be greatly enhanced.

Suggestions for Further Research

In the light of the previous recommendation, the following can be considered for future research:

- Further research could use MIABDI to develop other English language skills such as academic writing and reading comprehension for secondary stage students or others.
- The present research focuses on the effect of MI activities on developing students' critical reading skills. Research could dig into using online activities to develop these skills for secondary stage students or others.

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