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**Using multiple intelligences activities in improving dyslexic sixth graders'
reading comprehension skills**

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Abstract

This study aimed at investigating the effectiveness of using activities based on Multiple Intelligences (MI) Theory to improve some English reading comprehension skills for dyslexic primary-six pupils. Ten sixth graders in Al-Hourria Primary School were randomly chosen as the study participants. The researcher used the one- group quasi-experimental design. To assess pupils' improvement in the specified skills before and after using the activities, a reading comprehension pre-posttest was designed along with a reading comprehension skills checklist. The data were analysed and demonstrated that there was a statistically significant difference at 0.05 level between the mean scores of research groups in the pre-post administration of the reading comprehension skills test in favour of the post administration. Using the activities based on Multiple Intelligences Theory achieved a high effectiveness (Black's Modified Gain Rank < 1.2) on improving reading comprehension skills of dyslexic primary-six pupils. Thus, the research hypothesis was verified (confirmed) that pupils' reading comprehension skills were significantly improved as a result of being taught by using activities based on Multiple Intelligences Theory. The study concluded that using activities based on Multiple Intelligences Theory proved to be effective and has considerable contributions in improving reading comprehension skills of dyslexic primary-six pupils. These results are evidence of the educational value of integrating Multiple Intelligences Theory with the content of the curriculum. Future research should focus on integrating multiple Intelligences theory into the other skills such as listening, speaking, and writing.

Keywords: Multiple Intelligences, reading comprehension skills, dyslexia.

المستخلص

هدف البحث الحالي إلى استقصاء مدى فاعلية استخدام بعض الأنشطة القائمة على نظرية الذكاءات المتعددة لتحسين بعض مهارات الفهم القرائي للغة الإنجليزية لدى التلاميذ الذين يعانون من الديسلكسيا (صعوبات القراءة) في المرحلة الابتدائية بالصف السادس. تم اختيار مجموعة البحث (10) تلاميذ من مدرسة الحرية الابتدائية محل عمل الباحث. استخدم الباحث المنهج التجريبي ذي التصميم شبه التجريبي القائم على المجموعة الواحدة. قام الباحث بإعداد اختبار قبلي- بعدي للفهم القرائي لتقييم أداء التلاميذ في مهارات الفهم القرائي قبل وبعد استخدام الأنشطة بالإضافة إلى إعداد قائمة بمهارات الفهم القرائي. وقد توصلت الدراسة الحالية لوجود فروق ذات دلالة إحصائية عند مستوى (0.05) بين متوسطات درجات التلاميذ ذوي الديسلكسيا في الاختبار القبلي البعدي لمهارات الفهم القرائي لصالح الاختبار البعدي. يُحقق استخدام الأنشطة القائمة على نظرية الذكاءات المتعددة فاعلية مرتفعة (نسبة الكسب المعدل لبلاك > 1.2) في تحسين مهارات الفهم القرائي لدى تلاميذ الديسلكسيا بالمرحلة الابتدائية بالصف السادس. ولذلك تم التحقق من فرض البحث الخاص بتحسين مهارات الفهم القرائي التي تم تدريسها باستخدام الأنشطة القائمة على نظرية الذكاءات المتعددة. وخلصت الدراسة إلى أن استخدام الأنشطة القائمة على نظرية الذكاءات المتعددة قد أثبتت فعاليتها ولها مساهمات كبيرة في تحسين مهارات الفهم القرائي لدى التلاميذ الصف السادس الذين يعانون من الديسلكسيا (عسر القراءة). وتعد هذه النتائج هي دليل على القيمة التعليمية لدمج نظرية الذكاءات المتعددة في محتوى المناهج الدراسية. أوصت الدراسة بضرورة إجراء البحث على أهمية توظيف الذكاءات المتعددة في المنهج والمحتوى التعليمي وكذلك البحث في تأثيرها على المهارات الأخرى كالاستماع، والكتابة، والتحدث.

الكلمات المفتاحية: الذكاءات المتعددة، مهارات الفهم القرائي، الديسلكسيا

Introduction

Language is significant in the lives of people nowadays. A foreign language aids a person to understand other thoughts and ideas that may be different from the person's own culture. It has the power to construct society's identity. A person can recognize customs and the way people interact in a given society. Language is an important tool to forge cultural ties. It does not only assist preserve cultures but also permits us to recognize others and spread ideas quickly. It is an integral part of human communication. Learning a new language reshapes a person's life and perception. It represents a communication channel for the knowledge of the whole world. It greatly profiles a person's identity and heightens self-awareness. Learning any language requires mastering certain skills as they are the base of acquiring any language. These skills are listening, speaking, reading and writing. Reading is the key process for learning any language. It is a skill that learners perform for achieving various purposes such as pleasure, getting specific information, and learning a new skill.

Reading provides us with new information that increases our knowledge and enlightens our minds. It is a receptive process in which a pupil receives new information. It is the main path to other cultures. Reading is a complex process that requires comprehension since reading without understanding is nonsense. Therefore, comprehension plays a central role in the success of the reading process. Good comprehenders vary in using reading strategies to engage deeply in the text, evaluate critically, and utilize their new knowledge to solve problems (Snow, 2002). Accordingly, reading is a source of development and pleasure. Scruggs and Mastropieri (2010) delineated that the primary skills to comprehend any written text are the capacity to recognize the words and sentences and the ability to infer the author's message of the text.

Through working in classrooms, teachers notice that some pupils used to face difficulties with comprehending texts. They cannot manage to use the skills, which influence the expected outcomes of reading a text. This problem prompts researchers to seek the reasons; whether it is because of an inappropriate instructional system or the pupil himself/herself.

After reviewing literature related to language learning difficulties, reading difficulties were found to be the most prevalent educational difficulties, and the centrality of reading in schooling makes it particularly problematic. Several studies (e.g. Campbell, 2013; Lyytinen

& Erskine, 2006; Medjahdi, 2015; O'Connor, 2018) stated that there is a kind of learning disability that pupils face difficulties with reading which is labelled dyslexia, in which pupils found difficulty in various reading skills as an inability to perceive new concepts, difficulty with identifying facts from opinions. Also, they encounter trouble with sequencing the events in a text, identifying the main idea, and summarizing the content. Thus, they cannot manage to comprehend the message of the author of the text. These studies highlight challenges that teachers face in teaching reading to those learners.

Saskatchewan Learning organization (2004) stated that dyslexia is one of the common learning disabilities, especially in the elementary stage. In the same context, Alexander-Passe (2017:1-4) mentioned that dyslexia combines a gamete of difficulties. Therefore, it is Pandora's box of learning disabilities. The main symptom of dyslexia is the disparity between oral and written work. This disparity is due to difficulties with organizing thoughts into coherent sentences, difficulty remembering the right spelling, and difficulty with the instrument of writing. Dyslexic pupils have amazing ideas but they forget them easily as a result of memory difficulties they suffer from (working memory and sequencing information).

The term 'dyslexia' was primarily coined by Rudolf Berlin in 1887 (IDA, 2010), and in 1892, it was first used to discern difficulties with reading, writing and spelling, despite receiving conventional education. It is derived from the Greek, "Dys" meaning difficulty and "lexica" meaning poor language (Alexander-Passe, 2017; Rief & Stern, 2010). Nearly everyone thinks that dyslexia is an aspect of a learning disability, but in fact, a learning disability is only one face of dyslexia (Davis & Braun, 1997). It is therefore important to demystify dyslexia to construct proper ways and strategies to help dyslexic pupils learn effectively and succeed in their lives.

Mclean & Smith (2017:3) adopted the International Dyslexia Association (IDA) definition as follows:

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities.

Dyslexia is not a disease, and therefore there is no cure for it (Marogna, 2013). It is a reading deficiency which is due to a defect in the brain processing of graphic symbols, which

changes the way the brain identifies and organizes written materials (Integra, 2009). The bottom line of dyslexia is now thought to be an impairment of the sounds in words (phonological awareness). In other terms, dyslexia hinders reading system from becoming efficacious and automatized. Accordingly, a dyslexic pupil is as smart as an ordinary pupil. All the matter is related to the underlying ways they use to process information which is different from those used by other pupils in the class: i.e. "They think outside the box" and that enables them to handle the information creatively. As an evidence of their abilities, many celebrities have dyslexia, including Nobel Prize winner Albert Einstein, Leonardo da Vinci, Gorge Washington- the first president of the United States-, Walt Disney, Agatha Christie, Thomas Edison, Pablo Picasso, and Abhishek Bachchan (an actor) (Chakraborty, 2010).

Accordingly, a dyslexic pupil is not a disabled pupil that cannot learn; he can learn upon his abilities. A pupil with dyslexia processes information differently. Hence, teachers need to use proper methods to help them and fit their abilities. Therefore, the new trend in education directs toward changing the traditional way to adopt theories that put into account the pupils' differences and abilities. One of these theories is the Multiple Intelligences Theory which shed the light on the abilities of learners whether abled or disabled.

Kirk et al. (2009) stated that supporting pupils with appropriate services has given away the belief that pupils' potential was fixed at birth, and therefore, we can significantly improve outcomes for pupils who are at risk. Accordingly, intelligence is different from IQ because it has to do with productivity and creativity (Trau, 2014).

Gardner (1983) defined intelligence as one's ability to seek out and decipher problems and create valuable products in one's culture. Also, Gardner (1993) states that humans have some distinct intelligences beyond verbal and logical skills that are measured on traditional instruments. He thinks these intelligences appear in different skills and abilities. All human beings employ these intelligences to solve problems. His concept that celebrates individual differences is the theory of Multiple Intelligences.

In this regard, Multiple Intelligences Theory can be very promising for pupils with learning disabilities (Andreou, Vlachos, & Stavroussi, 2013). Many educational administrators have changed their attitudes towards the education system. They have changed the instructional/ learning style from teachers and curriculum-centred to individual learners-centred as there is an appreciation of each pupil's unique combination of intelligences (Kezar,

2001). In this regard, Multiple Intelligences Theory opens the gate to a broad range of activities that can help educators enhance neglected intelligences, activate under-developed or paralyzed intelligences, and bring well-developed intelligences to even higher levels of proficiency (Armstrong, 2009).

Gardne (2011) thinks that providing instruction based on their strengths and abilities increases their motivation and self-confidence. The prime demerits are the challenges that teachers experience to plan lessons for pupils based on various individual intelligences, particularly in large classes and with multiple disabilities pupils. Thus, no one method or resource will fit all pupils. The idea is that the more the teachers use a variety of instructional methods and/or techniques, the more probable pupils will accomplish educationally. Consequently, any individual can improve any intelligence to a rationally high level with motivation and encouragement, and specific environments (AkÇin, 2009).

Reem (2011) proved the successful impact of using Multiple Intelligences Theory in improving oral communication difficulties of primary students with learning difficulties. Also, khalid (2016) aimed through his study to assess the impact of teaching a suggested unit based on Multiple Intelligences Theory to remedy mathematics disabilities, develop mathematics achievement and reduce math anxiety for second-grade primary school pupils. The results revealed a positive impact on improving students' mathematics disabilities, mathematics achievement and math anxiety.

Based on reviewing the related studies, the researcher seeks to use Multiple Intelligences Theory in teaching English to enhance primary dyslexic pupils reading comprehension skills.

Statement of the Problem

Through working as a primary school language teacher, the researcher observed that six-grade pupils used to encounter difficulties with reading comprehension such as difficulties in assembling words and linking them together to form a correct sentence, the ability to understand phrases, sentences and paragraphs as a coherent unit, difficulty inferring the meaning of words, difficulty distinguishing the main ideas and supporting ones.

To verify the existence of the problem, the researcher has conducted a pilot study. The researcher administered a reading comprehension test. The test included the sub-skills of

reading comprehension skills. This test was administered to 30 primary-six pupils in Al-Hourria School. The results of the test revealed that some pupils have difficulties in reading comprehension skills. Accordingly, the researcher assured of the existence of dyslexic pupils who suffer from reading disabilities.

After reviewing the related studies and results of the reading comprehension test, the research problem can be defined as follows: there are pupils in the primary stage with dyslexia who experience difficulty with reading comprehension skills. The researcher suggested using activities based on Multiple Intelligences Theory to improve dyslexic primary pupils' English reading comprehension skills.

Research Question

The study tried to answer the following question:

- What is the effectiveness of using Multiple Intelligence activities-based programme in teaching English to improve reading comprehension skills for dyslexic pupils in the primary stage?

Research Hypothesis

The present study attempted to test the following hypothesis:

There is a statistically significant difference at 0.05 level between the mean score of the research group before and after administering the suggested programme in the reading comprehension skills test.

Definitions of Terms

Dyslexia

Rose (2009) defined dyslexia is a specific learning difficulty that mainly affects the skills involved in accurate and fluent word reading and spelling. It is characterized by difficulties in phonological awareness, verbal memory and verbal processing speed.

For the purposes of the current research study, the researcher defines dyslexia as a reading disorder characterized by trouble with reading despite normal intelligence and conventional classroom experience. It causes difficulty in understanding what they read. it

causes a deficiency in differentiating the main idea from its supporting details. It hinders their ability to draw a conclusion from the text.

Multiple Intelligences Theory

It is a theory by Howard Gardner who gives importance to the different intelligences in people. He classified these intelligences into: Linguistic/Verbal Intelligence, logical/Mathematical Intelligence, Musical/Rhythmic Intelligence, Visual/Spatial Intelligence, Bodily/Kinaesthetic Intelligence, Interpersonal/Social Intelligence, Intrapersonal/Lutrospective Intelligence, and Naturalist Intelligence (Gardner, 2011).

For the purposes of the current research study, the researcher defines Multiple Intelligences Theory as a theory of intellect that assumes the existence of many intelligences (at least eight intelligences) in every individual as Linguistic/Verbal Intelligence, Visual/Spatial Intelligence, Interpersonal Intelligence, Intrapersonal Intelligence, Bodily/Kinaesthetic Intelligence, logical/Mathematical Intelligence, Musical Intelligence. Hence each one manages to address the same content in a uniquely different way.

Reading Comprehension Skills

Reading comprehension skills are the skills that enable pupils to extract the meaning of words both in isolation and in a context, and thus gain the meaning from the text (Mercer & Pullen, 2005). Comprehension skills emphasize the meaning a pupil derives from the text influenced by his/ her knowledge, experience and perceived purpose of reading (Rice, 2006).

For the specific purposes of the research, the researcher defines reading comprehension skills as the building up of meaning out of the text; extracting the main idea, linking the relation among concepts of the text, identifying synonyms and antonyms of the word, linking new information with the pupils' prior knowledge, and concluding the appropriate meaning of the word from the context, which helps the dyslexic pupils at primary school to understand a written text.

Objectives of the Research

This research study aims at improving dyslexic pupils' English reading comprehension skills in the primary stage using Multiple Intelligences activities.

Significance of the Research

The present study is expected to be significant in many ways:

1. It may shed the light on a specific category of learners (dyslexic primary learners) and their characteristics in primary stage classrooms.
2. It may offer the primary teachers the proper ways to overcome some obstacles experienced in teaching reading to dyslexic primary pupils.
3. It highlights the importance of Multiple Intelligences Theory to help primary teachers with their teaching method depending on reading activities based on multiple intelligences Theory.
4. It offers a training program that can be applied to similar learning disabilities.
5. It may help to open new research horizons for researchers to conduct further studies to develop reading and other skills using the Multiple Intelligences Theory as a basis for designing the instructional programme in different disciplines in different educational stages.

Research Delimitations

The present study was delimited to:

1. Ten primary-sixth pupils were selected in Al Hourria Primary School, Assiut Directorate, Assiut.
2. Some reading comprehension skills as (word recognition, guessing the meaning, distinguishing facts from opinions, distinguishing between the main idea and proper supporting details, and identifying synonyms and antonyms).

Instruments of the Research

The researcher prepared the following instruments:

1. Reading comprehension skills list suitable for primary dyslexic pupils.
2. A programme using Multiple Intelligences activities in teaching English to improve primary dyslexic pupils' reading comprehension skills. The programme includes the teacher's guide and the pupil's book.
3. A reading comprehension skill pre-posttest.

Research Procedures

To accomplish the research objective and answer the question of this research study, the following procedures were followed:

1. Reviewing the literature related to Multiple Intelligence Theory, dyslexia and reading comprehension skills.
2. Preparing a list of the reading comprehension skills needed by primary dyslexic pupils and submitting them to the jury members.
3. Making the appropriate adjustments according to the opinions of the jury members to reach the final form of the list of reading comprehension skills.
4. Preparing the suggested programme using Multiple Intelligences activities in teaching English to improve primary dyslexic pupils' reading comprehension skills which include:
 - A- Objectives of the programme
 - B- Content of the programme
 - C- Identifying teaching strategies, which will guide the proposed Multiple Intelligences activities.
 - D- Selecting appropriate teaching aids during the implementation of the programme.
 - E- Selecting appropriate evaluation methods for the programme.
5. Submitting the programme to the jury members to ensure its validity, consistency and applicability.
6. Preparing the final form of the programme after conducting any modifications made by the jury members.
7. Preparing the reading comprehension pre-post test and submitting it to some jury members then modifying it according to the jury members' feedback.
8. Piloting the tools of the research study.
9. Selecting the group of the study from among sixth year dyslexic primary pupils based on two instruments: An observation card and a dyslexia screen test.
10. Pre-testing the reading comprehension test.
11. Implementing the programme using Multiple Intelligences activities to the research group of the study.

12. Post-testing the reading comprehension test after teaching the programme to investigate its effectiveness.
13. Analysing and interpreting the data using appropriate statistical methods.
14. Discussing the results.
15. Providing a summary of the research, conclusion, recommendations and suggestions for further research.

Research Participants

The Participants chosen for the current study were 10 male and female pupils with dyslexia enrolled in the sixth year at Al Hourria Primary School in Assiut. Their age ranged from twelve to thirteen years old. They all have been a 5-year experience of learning English. Participants came from almost similar economic, social and cultural background.

Research Design

For the purposes of the present research study, the quasi-experimental research design was adopted to investigate the effect of the employed programme as an intervention for improving the reading comprehension skills of dyslexic primary pupils in Al-Hourria Primary School. The one-group pre-post-test design was chosen. The participants were first pretested using a reading comprehension test. After implementing the programme, they were post-tested using the same instrument.

The Reading Comprehension Pre-Post Test

• The objective of the Test

The main aim of the reading comprehension test was to measure the improvement of dyslexic primary pupils' English reading comprehension skills by administrating the test before and after being exposed to the programme based on Multiple Intelligences activities and hence assess the effectiveness of that programme.

• **Construction of the Test**

The test was designed based on the following steps:

- a. reviewing literature related to reading comprehension skills and some tests;
- b. writing down the preliminary draft of the test;
- c. submitting the test to some jury members to verify the validity of the test, its suitability for the population of dyslexic learners, and the grade and the accuracy of items and recommendations to improve it;
- d. Modifying the test according to the feedback obtained from the jury members; and
- e. deciding on the validity and reliability of the test.

• **Validity of the Test**

The test was submitted to some jury members. Some jury members objected to the form of the ninth question of prediction. They asked to change it from a multiple choice question to a completion one. The items of the test were modified according to the jury's opinions and recommendations. The jury members agreed that the final form of the test was generally valid. The test was accepted by some jury members.

• **Reliability of the Test**

The researcher conducted a pilot study about a month before the implementation of the programme to estimate the validity and reliability. A group of 30 pupils enrolled not included in the study group were selected randomly in the sixth grade. In the pilot study, the researcher administered the test and part of the programme to sixth dyslexic primary pupils. The test was administered again to the same group after 30 days. The reliability of the test was determined by the test-retest method. The Correlations between examinees' scores were computed. Using the SPSS programme (Cronbach's Alpha), the reliability of the test was computed and proved to be reliable at (0.841) and significant at (0.05), which means that the test is reliable and valid for administration.

Data Analysis

The data analysis reveals the outcomes regarding the study questions and hypothesis. Having administered the instruments of the study, quantitative and qualitative data were collected and discussed. The researcher depended mainly on comparing the mean scores of the participants using the Wilcoxon Signed-Rank Test.

Results

The question of the research was "What is the effectiveness of using Multiple-Intelligences activities –based programme in teaching English to improve reading comprehension skills for dyslexic pupils in the primary stage?"

To answer this question, the researcher hypothesizes researcher expected that "There is a statistically significant difference between the mean scores of the research group in the pre-post administration of the reading comprehension test favouring post-administration."

Table 1: "Z" value, standard deviations and means of scores of reading comprehension pre-post test

The Test		Descriptive Statistics			Effect Size			Z value*
		N	Mean	Std. Deviation	Cohen's d	r	Black Modifies Gain Ratio	
Reading comprehension skills	Pre	10	14.4	5.97	10.32	0.627	1.46	2.803
	post	10	74.3	5.64				

Table 1 showed that there is a statistically significant difference between means of scores obtained by subjects in the reading comprehension pre –post-test in favour of post-testing. The research group got a higher mean (74.3) in post-testing than that obtained by pretesting (14.4). The result of the z-test shows that the z-value is (2.803) which is a statistically significant value at the level of 0.05. This proves the hypothesis of the research and confirms that pupils' reading comprehension skills were improved as a result of being

taught by using activities based on Multiple Intelligences Theory to improve pupils' reading comprehension skills. In the light of the results of table 1, figure 1 illustrates the results.

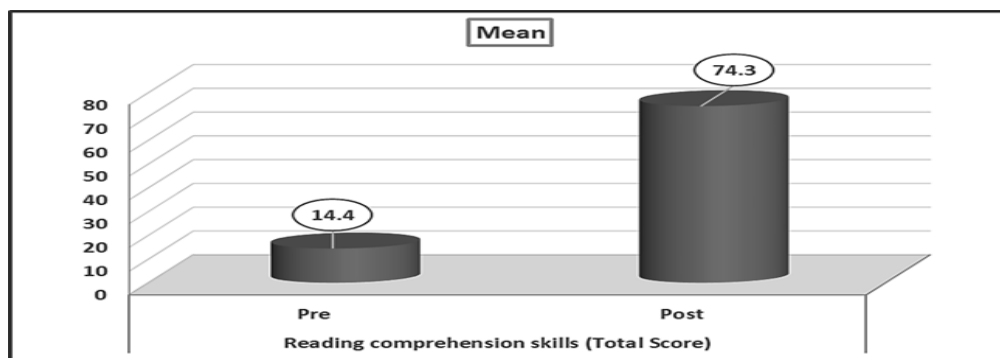


Figure1: The differences between pre and post of reading comprehension test

Hence, it can be concluded that the suggested programme highly influenced reading comprehension sub skills as shown in the tables & figures below.

• Word Recognition

Table 2: "Z" value, standard deviations and means of scores of word recognition sub-skill test

Sub skill	Test	N	Mean	Std. Deviation	Cohen's d	r	Blake Modifies Gain Ratio	Z value
Word recognition	Pre-test	10	2.4	1.43	3.49	0.631	1.24	2.820
	Post-test	10	6.5	0.84				

Table 2 showed that there is a statistically significant difference between the means of the participants' scores on the pre-post word recognition skill test as the "z" value (2.820) was significant at 0.05 level. The mean scores of word recognition skill in the post-administration was 6.5 which is higher than the mean scores of the pre-administration which was 2.4; this indicated statistically significant differences between the mean scores, in favour of the post-administration. Also, the effect size values were: Cohen's d=3.49, r=0.631, and BMG=1.24, which indicated a significant impact of using the programme. By comparing the response of the participants in the pre-test with their response in the post-test in the pre-post

reading comprehension test, the researcher found that the pupils were gradually able to use words to express the situations properly more easily than before teaching the programme. When the researcher asked the participants some questions about real-life situations to motivate them to use words meaningfully, their responses were limited. After teaching the programme, their responses were significantly different. They became able to express and use words appropriately. In the light of the results of table 2, figure 2 illustrates the results.

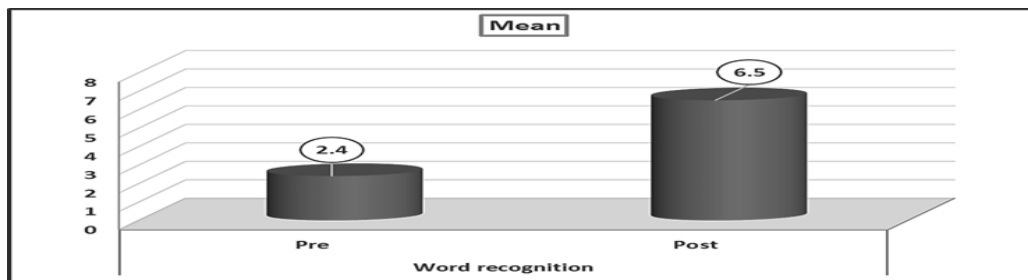


Figure 2: The differences between pre and post of word recognition sub-skill

• Guessing the Meaning

Table 3: "Z" value, standard deviations and means of scores of guessing the meaning sub-skill test

Sub skill	Test	N	Mean	Std. Deviation	Cohen's d	r	Blake Modifies Gain Ratio	Z value
Guessing the meaning	Pre-test	10	1.2	1.03	3.04	0.653	1.58	2.919
	Post-test	10	3.8	0.63				

Table 3 showed that there is a statistically significant difference between the means of the participants' scores on the pre-post guessing the meaning skill test as the "z" value (2.919) was significant at 0.05 level. The results of comparing the mean scores of the administration of pre-posttest in guessing the meaning skill revealed that there were statistically significant differences between reading comprehension test, in favour of the post-administration. The post-test mean scores were 3.8 on the post-administration of reading comprehension test, which was higher than their mean scores of 1.2 on the pre-administration. The effect size values were: Cohen's d = 3.04, r = 0.653, and BMG = 1.58. It is noted that all the values of the effect size were high, which indicates a significant effect of using the programme based

on multiple intelligences in improving guessing the meaning skill of the participants in the study. This effectiveness may be due to the impact of using the relevant activities and strategies based on Multiple Intelligences Theory. At the beginning of teaching the programme using pupils' intelligences to guess the meaning of the words through texts, they were confused, and therefore, some of them were unwilling and hesitated to share. But after the researcher explained the activities and strategies which were designed upon their intelligences and abilities to facilitate learning and help them deduce the meaning of unfamiliar words, pupils became enthusiastic about deriving the meaning of words through funny and interesting tasks and puzzles after some instructional activities. Accordingly, using Multiple Intelligences Theory has an effective role to help pupils with dyslexia to process information in an appropriate way which estimates them to be able to guess the meaning of unfamiliar words. In the light of the results of table 3, figure 3 illustrates the results.

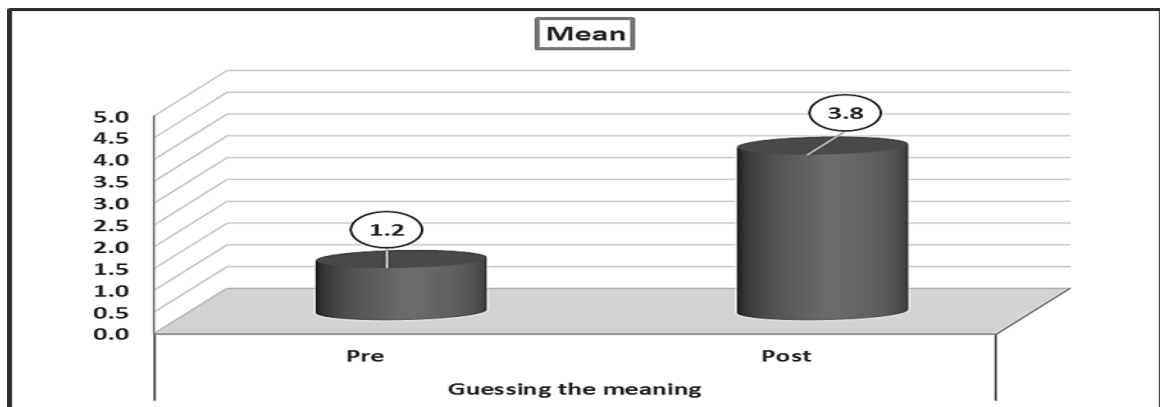


Figure 3: The differences between pre and post of guessing the meaning skill

• **Distinguishing Synonyms from Antonyms**

Table 4: "Z" value, standard deviations and means of scores of distinguishing synonyms from antonyms sub-skill test.

Sub skill	Test	N	Mean	Std. Deviation	Cohen's d	r	Blake Modifies Gain Ratio	Z value
Distinguishing synonyms from antonyms	Pre-test	10	1.2	1.40	3.91	0.631	1.41	2.820
	Post-test	10	9.2	2.53				

Table 4 showed that there is a statistically significant difference between the means of the participants' scores on the pre-post distinguishing synonyms from antonyms skill test

as the “z” value (2.820) was significant at 0.05 level. The results demonstrated that the mean score of the administration in the pre-test was 1.2 and the post-test was 9.2, in favour of the post-test. the effect size values were: Cohen's $d = 3.91$, $r = 0.631$, and $BMG = 1.41$. It is noted that all values of the effect size were high, which indicates a significant effect of using the programme based on Multiple intelligences in developing the skill of distinguishing synonyms and antonyms for the study participants. By comparing the response of the participants in the pre-test with their response in the post-test in the reading comprehension test, the researcher found that teaching lessons depending on the activities –based on the participants’ intelligences were beneficial. When the researcher asked participants to identify the words that give the same meaning of words (synonymous) or determine the words that are the opposite (antonymous), they could identify them easily. They were able to differentiate between the two concepts. Moreover, they became able to rephrase the sentences with their own words. They felt fun and interested with the used puzzles in these lessons. In the light of the results of table 4, figure 4 illustrates the results.

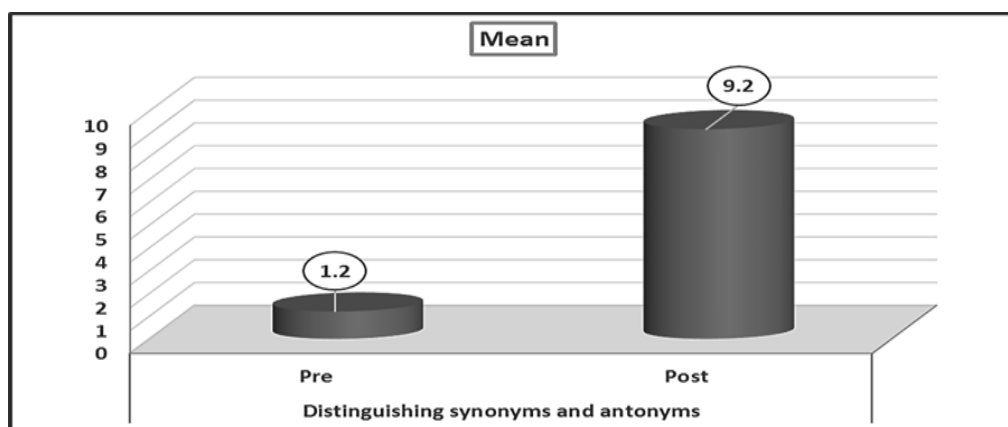


Figure 4: The differences between pre and post of distinguishing synonyms and antonyms

• Classifying Words

Table 5: "Z" value, standard deviations and means of scores of classifying words sub skill test

Sub skill	Test	N	Mean	Std. Deviation	Cohen's d	r	Blake Modifies Gain Ratio	Z value
Classifying Words	Pre-test	10	1.1	1.37	4.70	0.629	1.54	2.814
	Post-test	10	6.8	1.03				

Table 5 showed that there is a statistically significant difference between the means of the participants' scores on the pre-post classifying words skill test as the "z" value (2.814) was significant at 0.05 level. The results revealed that there were statistically significant differences between the mean scores of the pre-test which was 1.1 and the post-test which was 6.8, in favour of the post-test. The effect size values were: Cohen's $d=4.70$, $r=0.629$, and $BMG=1.54$. It is noted that all the effect size values were high, which indicates a significant effect of using the programme based on Multiple Intelligences in developing classifying words skill among the study participants. By comparing the response of the participants in the pre-test with their response in the post-test in the pre-post reading comprehension test, the researcher found that the pupils were capable to classify any group of words. They became able to realize and differentiate the words that have the same features or characteristics such as jobs, fruits, people or places. Moreover, they became able to classify grammatical patterns such as nouns, verbs or adjectives. In the light of the results of table 5, figure 5 illustrates the results.

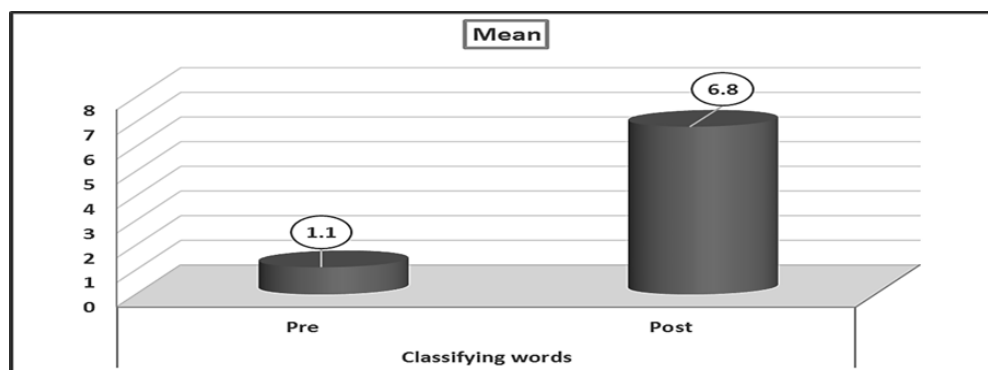


Figure 5: The differences between pre and post of classifying words

• **Distinguishing Comparing from Contrasting**

Table 6: "Z" value, standard deviations and means of scores of distinguishing comparing from contrasting sub-skill test

Sub skill	Test	N	Mean	Std. Deviation	Cohen's d	r	Blake Modifies Gain Ratio	Z value
distinguishing comparing from contrasting	Pre-test	10	0.8	1.93	4.99	0.635	1.52	2.840
	Post-test	10	9.6	1.58				

Table 6 showed that there is a statistically significant difference between the mean of the participants' scores on the pre-post distinguishing comparing from contrasting test as the "z" value (2.840) was significant at 0.05 level. The results indicated that there were statistically significant differences between the mean scores of the pre-test which was 0.8 and the post-test which was 9.6 in the post-administration test, in favour of the post-test. the effect size values were: Cohen's d = 4.99, r = 0.635, and BMG = 1.52; which indicates a significant effect of using the programme based on Multiple Intelligences in distinguishing comparing and contrasting skills among the research participants. At the beginning of teaching this unit, pupils were unfamiliar with the concepts of similarities and differences (e.g., similar to, but), then, after teaching the unit, they became able to figure out the similarities and differences in any text. By concentrating pupils on analyzing pairs of ideas, compare and contrast skill strengthened pupils' ability to remember key content. Moreover, it strengthened the pupils' memories. In the light of the results of table 6, figure 6 illustrates the results.

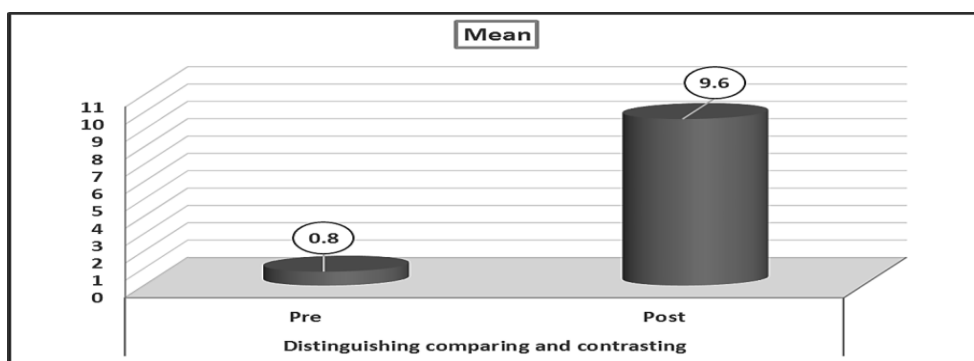


Figure 6. The differences between pre and post of distinguishing comparing from contrasting

Conclusion

To sum up, the study provided significant data on the use of Multiple Intelligences activities. The results of the programme revealed that pupils who do not read well because of irrelevant instructional methods used to educate, can be educated properly by employing their intelligences in the educational process. Moreover, the results indicated that pupils with a reading disability can master the same content and school subjects as normal pupils but in a different way than they used to be educated in our school, thus, we should choose strategies and seek relevant instructional methods that help those pupils and match their strengths. The results of the study provided strong evidence that using Multiple Intelligences-based activities offered pupils opportunities to improve reading skills since these activities make learning more memorable, more fun, and more applicable to real-life scenarios which pupils will encounter in the future. Integrating aspects of intelligence profiles into reading lessons promoted pupils' engagement, particularly emotional engagement as strong indicators of pupils' enjoyment and happiness have been observed.

Recommendations of the Research

The following recommendations are suggested by the researcher in light of the study results:

1. Strengths of pupils, in particular, pupils with learning disabilities need to be identified and integrated with educational aims which should be planned upon them.
2. Teachers need to be trained to be aware of the signs of dyslexia/specific learning difficulties.
3. Constructing MI-based training programmes that address pupils' deficiencies in different language skills.
4. Teachers are advised to use MI-based teaching activities to avoid boredom and create an effective instructional environment.
5. Teachers are advised to use different multiple intelligences activities that coincide with the content of the reading curriculum.
6. Using MI-based Instructions in educating different aspects of the English language, such as listening, speaking, grammar, writing and pronunciation.
7. Educators and curriculum designers are advised to provide the current curriculums with new MI-based training materials.

Suggestions for Future Research

1. Other studies can examine the impact of the remaining intelligences, musical, naturalist, logical, and existential intelligences, on other reading skills.
2. Other studies can investigate the effectiveness of using the Multiple Intelligences Theory for developing the reading of low-achieving pupils.
3. Other studies can examine the effect of using Multiple Intelligences Theory in improving critical thinking for the secondary stage.

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