

Integrating Multimodal Learning Strategies to Improve Reading Comprehension among Iraqi EFL Preparatory School Students

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دمج استراتيجيات التعلم متعدد الوسائط لتحسين الفهم القرائي لدى طلبة المدارس الإعدادية العراقيين

دارسي اللغة الإنجليزية لغة أجنبية

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المستخلص

هدفت هذه الدراسة إلى التعرف على أثر دمج استراتيجيات التعلم متعدد الوسائط في تنمية الفهم القرائي لدى طالبات المرحلة الإعدادية العراقيات الدارسات للغة الإنجليزية بوصفها لغة أجنبية. اعتمدت الدراسة تصميماً شبه تجريبي يتضمن مجموعتين واختبارين قبلياً وبعدياً. تكونت العينة من 60 طالبة من إعدادية النور للبنات، وزعن بالتساوي على مجموعة تجريبية وأخرى ضابطة. درست المجموعة التجريبية باستعمال استراتيجيات التعلم متعدد الوسائط مدة ثمانية أسابيع، بينما درست المجموعة الضابطة بالطريقة التقليدية. وتضمن البرنامج نصوصاً مكتوبة، وصوراً، ومواد صوتية، ومخططات، ومنظمات بيانية، وتظليل الكلمات المهمة، والمناقشة الصفية، والتمثيلات البصرية التي تنتجها الطالبات. استعمل اختبار الفهم القرائي من إعداد الباحثة، وتكون من 30 فقرة من نوع الاختيار من متعدد، وطُبق قبلياً وبعدياً. قاس الاختبار الفهم القرائي الكلي وثلاث مهارات فرعية هي: تحديد الأفكار الرئيسية، وفهم التفاصيل الداعمة، والاستدلال. وحُللت البيانات باستعمال الإحصاءات الوصفية، والاختبار التائي لعينتين مستقلتين، والاختبار التائي لعينتين مترابطتين، ومقاييس حجم الأثر. أظهرت النتائج عدم وجود فروق دالة إحصائية بين المجموعتين قبل التجربة. إلا أن المجموعة التجريبية حققت في الاختبار البعدي متوسطاً أعلى بصورة دالة إحصائية من المجموعة الضابطة، كما تحسن أدائها بصورة دالة من الاختبار القبلي إلى الاختبار البعدي. كذلك تفوقت المجموعة التجريبية في مهارات تحديد الأفكار الرئيسية، وفهم التفاصيل، والاستدلال، وكانت أحجام الأثر كبيرة إلى كبيرة جداً. وخلصت الدراسة إلى أن الدمج المنظم للوسائط النصية والبصرية والسمعية والتفاعلية يسهم في تحسين الفهم القرائي.

الكلمات المفتاحية: التعلم متعدد الوسائط، الفهم القرائي، اللغة الإنجليزية، الأفكار الرئيسية، التفاصيل الداعمة، الاستدلال.

Abstract

The purpose of this study was to investigate the effect of blending multi-modal learning strategies on reading comprehension among Iraqi EFL preparatory-school learners. A quasi-experimental pre-test–post-test control-group design was employed. A total sample of 60 female students were taken from Al-Mutafawiqat Preparatory School for Girls, Baghdad/ Iraq Preparatory School for Girls, Baghdad/ Iraq, which included control and

experimental groups (30 each). The experimental group learned by using multimodal learning strategies over an eight week period, while the control group was taught using traditional reading instruction. This multimodal programme incorporated written texts, pictures, audio materials, diagrams, graphic organisers, highlighting in different colours for different purposes (e.g., key ideas), classroom discussion of the texts and graphic records generated by students themselves to illustrate material from their readings. Before and after receiving the treatment, a reading-comprehension test with 30 multiple-choice items was designed by a researcher. The test assessed overall reading ability and three subskills: main idea identification, comprehension of supporting details, and inference-making. Descriptive statistics, independent-samples t-tests, paired-samples t-tests and Cohen's effect-size measures were used to analyse the data. Results indicated no between-group differences at baseline in a statistically significant manner. Nevertheless, in the post-test it was evident that the mean score of the experimental group was much higher than the control group. The experimental group also made significant improvement from the pre-test to the post-test. In addition, it did better than the "control group" on all three reading-compre-hen-sion subskills. Effect sizes were medium to large to very large. The conclusion of the study was that intentional combination of text, visual, auditory and interaction can make reading comprehension better for students. Incorporating relevant multimodal resources into EFL reading lessons and keeping the written text in the middle of instruction was proposed as a result. Keywords: multimodal learning, reading comprehension, EFL students, main ideas, supporting details, inferences.

Section One: Introduction

١.1 The Problem of the study and its significance

Reading comprehension is regarded as one of the basic skills in an L2 (second language) because it helps students learn to make sense of written information, expand their lexical resources, identify grammatical rules and structures in order to effectively engage with academic practices (Grabe & Yamashita, 2022). Traditional reading pedagogy often includes strategies such as oral reading, vocabulary clarification, sentence rendering and teacher controlled questions. While these steps serve the purpose of making students aware of some linguistic features of passage, there are at times not ample opportunities that facilitate prediction, interpretation, discussion and independent compilation. If teachers always explain difficult words and sentences to students, they will not develop strategies to understand unfamiliar texts. Thus, other active and instructional strategies which include pre-reading steps are expected to be involved more in EFL reading instruction (Dehham et al., 2022; Yawiloeng, 2022). Similar results have been found by research in the Iraqi context. The discrete and integrated forms of written context, images, audio and video comprehension were used by Sherwani and Harchegani (2022) which make orientation to crowd on Iraqi EFL learners reading comprehension development. In parallel, some studies have also reported that Iraqi preparatory-school students seemed to have a poor level of reading comprehension (Ati and Kamil 2023). Such a result "suggests [the] need for wider implementation of more effective intervention schemes" to aid students in their comprehension of texts, the overall understanding and conversations about these texts, and release them from overdependence on translating each word literally. Consequently, this study examines employing multimodal learning approaches to enhance reading comprehension of Iraqi EFL preparatory-school students. It investigates whether a combined written, visual, auditory and interactive resource enables learner to comprehend text more effectively than ordinary reading instruction.

1.2 Objectives of the Study

The present study aims to:

1. Identify the effect of integrating multimodal learning strategies on the reading comprehension of Iraqi EFL preparatory-school students.
2. Compare the reading-comprehension performance of students taught through multimodal learning strategies with that of students taught through the traditional method.
3. Examine the extent to which multimodal learning strategies enhance students' ability to identify main ideas, understand supporting details, and make inferences from English reading texts.

1.3 Hypotheses of the Study

The present study is based on the following null hypotheses:

1. There is no statistically significant difference at the level of significance (0.05) between the mean reading-comprehension scores of the experimental group taught through multimodal learning strategies and those of the control group taught through the traditional method.

2. There is no statistically significant difference at the level of significance (0.05) between the mean pre-test and post-test reading-comprehension scores of the experimental group taught through multimodal learning strategies.

3. There are no statistically significant differences at the level of significance (0.05) between the mean scores of the experimental and control groups in the reading-comprehension subskills of identifying main ideas, understanding supporting details, and making inferences.

1.4 Limits of the Research

The current study is limited to the following:

1.As for the present study it only limited (60) of Iraqi female EFL preparatory-school students at Al-Mutafawiqat Preparatory School for Girls, Baghdad/ Iraq Preparatory School for Girls. The students were then randomly assigned to one of two groups: the experimental ($n = 30$) or control group ($n = 30$).

2.The experiment included eight weeks of instruction (not including pre-test and post-test);

3.This study uses a combination of learning strategies only on multimodal such as text written (that is used in all science lessons), pictures/illustrations/audio with diagrams and graphic organisers, highlighting and teamwork Classroom Activity.

4.A pillar of this study has general understanding and is measured in determining students' reading comprehension skills with three skill-subskills of identifying main ideas, recalling supporting details and making inferences.

5.The teaching materials limited strictly to the supplementary reading passages featured in the official Iraqi Ministry of Education incorporated English-language curriculum for lower-secondary-level (preparatory-school level) students.

Section Two: Literature Review

2.1 Theoretical Background and Related Previous Study

2.1.1 The Concept of Multimodality

Multimodality is the social semiotic resource of more than one mode of communication being used and interacting in the construction and interpretation of meaning. They can be made up of written language, spoken language, pictures, diagrams, colours, sounds (audio), gestures and videos (videos also convey spatial arrangements), spatial arrangements and digital interactive elements. From this perspective, meaning is not realised only through language; it emerges from the relation established to among available modes in a particular social and educational environment (Kress, 2010)In bilingual education, multimodality becomes especially relevant since learners might thus engage in expository reading as when comprehending for new vocabulary and grammatical structures since they cannot always rely on contextual knowledge to negotiate an unfamiliar concept. Beyond the written word, an image, conversation, graphic organizer or short video may present further hints of how the new language connects with what is already known. Thus, multimodal instruction can support learners in comprehending English input instead of substituting learners from immediate contact with the written language (Pellicer-Sánchez et al., 2020).

2.1.2 Multimodal Learning

Multimodal learning is an instructional approach in which the readers learn through linguistics, visual, auditory, spatial, gestural and digital modes. It conceptualizes learning as an active process of choosing information, organizing it into structured forms that have meaning and linking them to existing knowledge. Hence, they are not passive receivers of verbal explanations but active interpreters of various meaning-making resources (Mayer & Fiorella, 2021)Multimodal learning in language classrooms may consist of a writing passage, workout images related to the topic, audio variants (listening), video context (short), (chart/data processororg), spoken or visual summary. They should be centered around the same instructional objective & not simply as two different forms of classroom entertainment. They focus on helping students analyze the content from different angles to reinforce understanding (Carcamo & Pino, 2025).

2.1.3 Multimodal Literacy

Multimodal reading is defined as the ability to access, comprehend, interpret, evaluate meaning and communicating content material through multiple modes. A multimodally literate learner does not look at the printed text in a vacuum but sees how words, images, sounds, and layout work together. This kind of literacy is becoming necessary now more than ever, as students are exposed to information in the form of websites, digital textbooks, advertisements, videos, social media (Facebook/Twitter/Instagram), infographics and other multimodal contexts (The New London Group 1996).

2.1.4 The Cognitive Theory of Multimedia Learning

An important reason that multimodal instruction may be beneficial is provided by the Cognitive Theory of Multimedia Learning. This theory states that people process information through at least partially independent channels for verbal and visual material. But of course, there is only so much information one channel can process. According to Mayer (2021), meaningful learning happens when students choose relevant information, organize it into verbal and visual representations and integrate that representation with their prior knowledge.

2.1.5 Reading Comprehension

Reading comprehension was defined as an active cognitive-linguistic process that readers engage in to construct meaning of written language. Recognizing words, parsing sentences, making connections between ideas and concepts, drawing inferences, activating back ground knowledge and monitoring comprehension all play a part. As a result, successful reading cannot be explained simply as correct pronunciation or the translation of single words (Grabe & Stoller, 2020). Vocabulary knowledge, grammatical awareness, background knowledge, reading fluency, strategic competence and motivation are all few interrelated factors affecting EFL reading comprehension. When students focus too much on decoding unfamiliar words, less cognitive space will be available for synthesising concepts and building the overall meaning of the text. This means that instruction must also facilitate language processing, as well as higher-order comprehension. (Grabe & Stoller, 2020).

Therefore, a general reading comprehension includes literal, inferential and evaluative levels. Literal comprehension is related to directly stated information — names, places, events and facts. Inferential refers to the understanding of a reader applying prior knowledge with textual evidence to determine implied meanings, causes and effects, or relationships. Evaluative Text Comprehension is making judgments about ideas, acknowledgement of the writer's purpose, differentiating between fact and opinion and evaluating the credibility/ significance (Serafini, 2014).

2.1.6 Multimodal Learning Strategies for Teaching Reading

2.1.6.1 Visual Prediction

Visual prediction starts with showing students a title, photograph, sketch or purposeful visual prompt prior to reading the text. Using textual cues, learners forecast what the kind of writing will be: the subject matter, where it takes place, events that likely unfold or vocabulary words they might encounter. Has a function to be activated prior knowledge, given a roadmap of reading purpose and encourage learners confirm the predictions while reading (Mayer, 2021). Prediction differs from the idea of random guessing. Students should explain the visual evidence on which their expectations are based, and later compare their predictions with what is actually in them. It promotes intentional reading, where learners actively seek information to examine their initial ideals for those that confirm, adjust or reject (Grabe & Stoller 2020).

2.1.6.2 Text–Image Mapping

Text–image mapping: The process of linking the words with their corresponding pictures. They could link up paragraphs with an image, figure out which sentence explains a diagram, or match up details in the visual that supports an idea expressed in textual language. This strategy builds up a skill to process information holistically, instead of treating each mode separately (Pellicer-Sánchez et al., 2020).

2.1.6.3 Audio-Supported Reading

Audio-supported reading presents a written text that accompanies an audio version that is moderated at a suitable rate. Printed text which student trace when they listen — so they focus on pronunciation, phrasing, stress and sentence boundaries. This kind of support could enable learners to connect words and more rapidly process units of meaningful language (Pellicer-Sánchez et al., 2020).

2.1.6.4 Captioned Videos

This is a short captioned video introducing the setting, topic or cultural context of an oral reading passage. They merge audio and visual language, moving pictures, and written words which can assist users in associating new vocabulary with our visible words or representations of motion. As revealed by meta-analytic research; Mayer & Fiorella (2021), videos work best when they are short, focused and then very quickly followed with a narrowly-focused reading task.

2.1.6.5 Graphic Organizers

Graphic organizers display literary data in visual structuring devices like story maps, timelines, sequence charts, comparison tables, cause and effect diagrams and concept maps. They assists students in differentiating between main ideas and supporting particulars, as well as recognizing relationships that stretch over multiple sentences or paragraphs (Grabe & Stoller, 2020).

2.1.6.6 Digital Storytelling

It blends textual narration with images, audio, and sometimes movement or interactivity. For reading many students digitally read a story, comparing it to its print counterpart, sequenced events, analyzed characters or created short multimodal retellings. These include narrative writing tasks that may help build background knowledge and are designed to support students in mastering sequence, setting, reasoning behind characters actions, and causal relationships (Hidayat et al., 2024).

2.2 Related Previous Studies

2.2.1 Wardani and Kurniasih's Study (2023)

Wardani, et al. (2023) Multimodal Texts: Do They Really Support the Comprehension of Narrative Texts? This study explored the use of multimodal texts in narrative reading and their potential for assisting Indonesian EFL students in comprehending narrative passages.

Researchers used a qualitative research design. Participants included one English teacher and 32 pupils. Data collection occurred through classroom observation and standardized reading task results.

The results indicated acceptable student performance and the groups typically produced summaries with evidence of understanding what is conveyed in the narratives as opposed to reproducing original text

2.2.2 Hidayat et al. (2024)

Hidayat et al. Study titled EFL Reading Comprehension through Digital Storytelling in Multimodal Digital Literacy by (2024).

Researchers used purposeful sampling in a qualitative field-study design. The study covered ten learners from a grade 12 EFL classroom.

Data were collected using four instruments: classroom observation, think-aloud protocol, questionnaire, and interviews.

The results showed that students were able to understand the textual material through digital storytelling.

2.2.3 Daulay and Dewi's Study (2025)

Daulay and Dewi (2025) conducted a study entitled Reading Comprehension through Multimodal Literacy Approach for English Education. Its purpose was to investigate the effectiveness of multimodal instruction in improving the reading comprehension of Indonesian high-school students.

The researchers adopted a mixed-methods design involving 120 high-school students. The quantitative component used a quasi-experimental pretest–posttest design, while classroom observations and interviews were used to collect qualitative evidence. The results showed that the experimental group achieved significantly higher reading comprehension scores than the control group.

2.2.4 Comparison of the Previous Studies

The three studies agreed that multimodal instruction can support EFL reading comprehension. Wardani and Kurniasih (2023) found that written, visual, and other semiotic modes facilitated narrative comprehension. Hidayat et al. (2024) showed that digital storytelling provided contextual and representational support. Daulay and Dewi (2025) offered quantitative evidence that students receiving multimodal instruction outperformed those receiving conventional text-based instruction.

The participants varied in number and educational level. The first study included 32 students, the second involved ten twelfth-grade learners, and the third included 120 high-school students while the present study consist of 60 preparatory school students divided into two groups.

Section Three: Methodology

3.1 Research Design

The study adopted a quasi-experimental pre-test–post-test control-group design. This design was considered appropriate because the participants were selected from intact classes in an existing school setting. Individual students could not be randomly reassigned to newly formed classes; therefore, two existing classes were selected and randomly assigned to the experimental and control conditions. The experimental group received instruction through multimodal learning strategies, whereas the control group was taught the same reading content through the traditional teaching method. Both groups completed a reading-comprehension pre-test before the experiment and a post-test after the completion of the instructional period. The experimental design is illustrated in Table 3.1

Table 3.1

Experimental Design of the Study

Group	Pre-test	Instructional Method	Post-test
Experimental group	Reading-comprehension test	Multimodal learning strategies	Reading-comprehension test
Control group	Reading-comprehension test	Traditional teaching method	Reading-comprehension test

3.2 Population of the Study

The population of the study consisted of Iraqi female EFL students enrolled in the fifth preparatory grade at Al-Mutafawiqat Preparatory School for Girls, Baghdad/ Iraq Preparatory School for Girls during the academic year 2025 .

3.3 Sample of the Study

The sample consisted of 60 female students selected from two intact classes at Al-Mutafawiqat Preparatory School for Girls. One class was randomly assigned as the experimental group, while the other was assigned as the control group.

Each group included 30 students, as presented in Table 3.2.

Table3.2

Distribution of the Study Sample

Groups	Teaching Method	Number of Students
Experimental group	Multimodal learning strategies	30
Control group	Traditional teaching method	30
Total		60

3.4 Research Instrument

To measure the dependent variables, the researcher developed a reading-comprehension achievement test. The test was used as both a pre-test and a post-test and was designed according to the objectives of the study and the reading-comprehension skills included in the hypotheses.

3.5 Construction of the Reading-Comprehension Test

The test consisted of 30 objective items. Ten items measured the ability to identify main ideas, ten measured the understanding of supporting details, and ten measured inferential comprehension. Multiple-choice items were used because they provided an objective and consistent scoring procedure.

The items were distributed as shown in Table 3.3.

Table

3.3

Distribution of the Reading-Comprehension Test Items

Reading-Comprehension Skill	Number of Items	Percentage
Identifying main ideas	10	33.33%
Understanding supporting details	10	33.33%
Making inferences	10	33.33%
Total	30	100%

Each item included one correct answer and three plausible distractors. The vocabulary, sentence structure, and length of the passages were selected to suit the students' expected level of English proficiency.

3.6 Scoring Scheme

The reading-comprehension test was scored objectively. One mark was awarded for each correct response, while zero was awarded for each incorrect or unanswered item. Therefore, the total possible test score ranged from zero to 30.

The scores for the reading-comprehension subskills were calculated as follows:

- Main-idea score: 10 marks.

- Supporting-details score: 10 marks.
- Inference score: 10 marks.
- Overall reading-comprehension score: 30 marks.

An answer key was prepared before administering the test to ensure consistency and accuracy in scoring.

3.7 Test Validity

Validity refers to the extent to which an instrument measures the ability it is intended to measure. The validity of the reading-comprehension test was examined through face validity and content validity.

3.7.1 Face Validity

The first form of the test was sent to a panel of experts in the fields of English-language teaching, applied linguistics, teaching method and educational assessment. The specialists were asked to assess:

- How clear the instructions are.
- The appropriateness of reading passages.
- Linguistic correctness of the items.
- The validity of the distractors.
- The relevance of each item to the specific subskill targeted.
- The appropriateness of the test for prep-school children.

What was unclear or did not fit had been rewritten, substituted, or removed based on the comments and recommendations of the specialists.

3.7.2 Test Reliability

The reliability of the reading-comprehension test was intended to be established using the Kuder–Richardson Formula 20 (KR-20) because the test consisted of multiple-choice items scored dichotomously. This method is considered appropriate for measuring the internal consistency of objective tests and is widely recommended in educational research

3.8 Instructional Materials

The resources utilized for instruction relied on reading passages found within the people's edition textbook adopted by the national board of education that was used in the designated preparatory level. All participants were exposed to the same texts, vocabulary and reading topics with common objectives.

The reading materials for the experimental group were rearranged into multimodal lessons that integrated multiple modalities of representation including:

- Written texts.
- Pictures and illustrations.
- Diagrams and graphic organisers.
- Audio recordings.
- Teacher read-aloud activities.
- Key-word highlighting.
- Visual summaries.
- Collaborative discussion.
- Sequencing and matching activities.
- Student-generated concept maps.

The new modes were designed to supplement rather than supplant the printed text as a reading choice. All media resources in the lesson were directly connected to content and instructional goals.

Section Four: Results and data analysis

4.1 Result Related to the First Hypothesis

The first null hypothesis stated that there is no statistically significant difference at the level of significance (0.05) between the mean reading-comprehension scores of the experimental group taught through multimodal learning strategies and those of the control group taught through the traditional method. To test this hypothesis, the overall post-test scores of the two groups were compared by an independent-samples t-test.

Table4.3

Descriptive Statistics of the Overall Reading-Comprehension Post-test

Group	N	Mean	SD	Minimum	Maximum
Experimental group	30	22.10	2.81	17	28
Control group	30	16.47	2.56	10	22

Table 4.3 indicates that the experimental group obtained a mean post-test score of 22.10 with a standard deviation of 2.81, whereas the control group obtained a mean of 16.47 with a standard deviation of 2.56. The observed mean difference was 5.63 points in favour of the experimental group.

Table 4.4

Independent-Samples t-test for the Overall Post-test Scores

Mean difference	SE difference	T	Df	p	95% CI lower	95% CI upper	Cohen's d
5.63	0.69	8.126	58	< .001	4.25	7.02	2.10

Note. The positive mean difference indicates higher performance by the experimental group. Cohen's d of 2.10 represents a very large practical effect.

The independent-samples t-test yielded a statistically significant difference, $t(58) = 8.126$, $p < .001$. The 95% confidence interval for the mean difference ranged between 4.25 and 7.02, not including zero. Thus, the first null hypothesis was discarded. The experimental group showed significantly greater achievements in reading comprehension scores compared to control group. The effect size was ultralarge (Cohen's $d = 2.10$), showing that this difference is not only statistically significant, it is also educationally significant.

4.2 Result Related to the Second Hypothesis

The second null hypothesis stated that there is no statistically significant difference at the level of significance (0.05) between the mean pre-test and post-test reading-comprehension scores of the experimental group taught through multimodal learning strategies. A paired-samples t-test was used because the same students completed both tests.

Table

4.5

Paired-Samples t-test for the Experimental Group's Pre-test and Post-test Scores

N	Pre-test M	Pre-test SD	Post-test M	Post-test SD	Mean gain	SD gain	t	df	p	Cohen's dz
30	14.33	3.23	22.10	2.81	7.77	3.51	12.118	29	< .001	2.21

Note. The 95% confidence interval for the mean gain was 6.46 to 9.08 points. Cohen's dz was calculated from the mean and standard deviation of the paired difference scores.

The mean of experimental group pre-test results was 14.33 that increased to a mean nor 22.10 in post test bounded by a mean gain equal to 7.77 points. A paired-samples analysis revealed this improvement was statistically significant, $t(29) = 12.118$, $p < .001$. The gain confidence interval did not include zero, and the effect size was extremely large (Cohen's $dz = 2.21$). Thus, it rejects the second null hypothesis. After treatment, the experimental students exhibited a substantial improvement in their overall performance

4.3 Result Related to the Third Null Hypothesis

The third null hypothesis stated that there are no statistically significant differences at the level of significance (0.05) between the mean scores of the experimental and control groups in the reading-comprehension subskills of identifying main ideas, understanding supporting details, and making inferences. Independent-samples t-tests were conducted separately for the three post-test subskill scores. Because each subskill was measured by 10 discrete items, minor departures from perfect normality were expected. The two groups were equal in size, the score distributions showed no extreme outliers, and Levene's tests were non-significant for all three subskills. Therefore, the independent-samples t-test was retained as an appropriate and robust analysis.

Table 4.6 Descriptive Statistics of the Post-test Reading-Comprehension Subskills

Subskill	Experimental Mean	Experimental SD	Control Mean	Control SD	Mean difference
Identifying main ideas	7.30	1.39	5.17	1.26	2.13
Understanding supporting details	7.50	1.66	5.90	1.84	1.60
Making inferences	7.30	1.62	5.40	1.57	1.90

Table 4.6 shows that the experimental group achieved higher mean scores in all three reading-comprehension subskills. The largest mean difference appeared in identifying main ideas (2.13 points), followed by making inferences (1.90 points) and understanding supporting details (1.60 points).

Table 4.7 Independent-Samples t-tests for the Post-test Subskill Scores

Subskill	t	Df	p	95% lower CI	95% upper CI	Cohen's d	Effect
Identifying main ideas	6.216	58	< .001	1.45	2.82	1.61	Very large
Understanding supporting details	3.535	58	.001	0.69	2.51	0.91	Large
Making inferences	4.614	58	< .001	1.08	2.72	1.19	Very large

Note. All three comparisons remained significant at $\alpha = .05$. Effect labels are based on the conventional benchmarks of approximately 0.20, 0.50, and 0.80 for small, moderate, and large effects; values well above 0.80 are described here as very large.

The difference was statistically significant, $t(58) = 6.216$, $p < .001$, large effect size ($d = 1.61$). The difference was also significant for comprehending supporting details, $t(58) = 3.535$, $p = .001$, a substantial effect ($d = 0.91$). In an analogous way, the experimental group made significantly more inferences compared to the control group, $t(58) = 4.614$, $p < .001$, and large effect ($d = 1.19$) Probabilities Analysis Since all three probability values were less than .05, the third null hypothesis was rejected for each of the subskills.

4.4 Discussion of Results

The results showed that experimental students who received multimodal learning strategies performed better than those in the control group using more conventional teaching method for reading comprehension. Results indicate that the experimental group had a mean post-test score significantly higher than the control group and significant improvement was found from pre to post-test. Students who received multimodal instruction scored better than those in the control group on main idea identification, support details identification, and inference making. These results could be due to the use of contextual support, active participation, graphic organisation and collaborative interpretation and multimodalisation (integrating written, visual, auditory, and interactive modes)

Therefore the findings lend support for using carefully supervised multimodal learning in EFL reading lessons in the preparatory-school context.

4.5 Conclusion

The conclusions of this study are that combining multimodal inputs virtually alters the conditions for learning using methods which should provide more consistent improvement in reading comprehension compared over current reading instruction. Therefore, our advice is to consider a more mixed methods approach to help Iraqi EFL preparatory school students improve their reading comprehension Leveraging multiple learning modalities like text, visuals, audio, video and interactive activities increases the students understanding skills as well as engagement & motivation. This is also embedded in the different ways of learning,, so it allows students to absorb information better and develop stronger reading skills. Hence integrating multimodal approaches in ESL class rooms can lead to improved learning outcomes and deeper experience of reading.

4.6 Recommendations

1. To prove your understanding and engagement, English teachers need to use multimodal learning strategies in their reading lessons.
2. Provision of technological resources by schools (computers, projectors and internet access) in order to support multimodal instruction.
3. Seek to conduct teacher training workshops that are hands-on, and focused on the practicalities of creating multimodal learning activities.
4. Curriculum developers need to make multimodal materials a part of EFL textbooks and instructional resources.
5. Students can be supported in using blended learning resources to enrich their independent reading and learning with digital or visual materials.
6. Further studies need to focus on the effects of multimodal learning strategies on other English language skills (writing, listening and speaking) in terms of longer duration.

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