



The Effect of Interactive PowerPoint Presentations on Primary Stage Students' Reading Comprehension

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أثر العروض التقديمية التفاعلية على الفهم القرائي لدى طلاب الصف الخامس الابتدائي

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مستخلص البحث.

هدفت هذه الدراسة إلى قياس أثر العروض التقديمية التفاعلية على الفهم القرائي لدى تلاميذ الحلقة الأولى من مرحلة التعليم الأساسي. تم استخدام تصميم بحثي قائم على تطبيق اختبار قبلي/بعدي على مجموعة ضابطة وأخرى تجريبية لجمع البيانات الكمية ومعالجتها إحصائياً، كما استخدمت أيضاً الملاحظات المسرودة عن سلوك الطلاب كمصدر لجمع البيانات الكيفية وتحليلها. ولقد شارك ثمانية وعشرون تلميذاً وتلميذة من تلاميذ الصف الخامس بالحلقة الأولى من التعليم الأساسي بمدرسة النجوم الابتدائية المشتركة – إدارة مصر الجديدة التعليمية بالقاهرة – في التطبيق الميداني للدراسة، والذي تم إجراؤه في الفصل الدراسي الثاني من العام الجامعي ٢٠٢٣-٢٠٢٤. تم تقسيم الطلاب بالتساوي أي مجموعتين ضابطة وتجريبية، حيث درست المجموعة التجريبية مهام الفهم القرائي باستخدام العروض التقديمية التفاعلية بينما درست المجموعة الضابطة بالطرق المعتادة. تضمنت أدوات الدراسة اختبار الفهم القرائي القبلي والبعدي لقياس مهارات تخمين معاني الكلمات غير المألوفة من السياق، وتحديد الفكرة العامة للنص، وإظهار فهم تفاصيل محددة من خلال وصف العلاقات بين الأفكار (مثل السبب والنتيجة)، وتلخيص فقرة في جملة واحدة. تم استهداف تطوير هذه المهارات من خلال عروض PowerPoint التقديمية التفاعلية. أظهرت نتائج الدراسة وجود فروق ذات دلالة إحصائية بين متوسطي درجات المجموعتين التجريبية والضابطة في اختبار الفهم القرائي ككل وفي كل مهارة على حدة، لصالح المجموعة التجريبية، مما يدل على الأثر الإيجابي للبرنامج المقترح. تم ذكر التوصيات والاقتراحات لمزيد من البحث.

الكلمات المفتاحية: العروض التقديمية التفاعلية، الفهم القرائي، تلاميذ المرحلة الابتدائية.



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ABSTRACT

The current study aimed at investigating the effects of Interactive PowerPoint Presentations on primary stage students' reading comprehension. The control/ experimental groups, pre/posttest design was used to obtain quantitative data, and anecdotal records of students' behavior were written for a qualitative analysis of data. Twenty-eight students enrolled in the 5th year of the primary stage at El Nogoum Primary Mixed School, Heliopolis, Cairo, were equally and randomly assigned to a control group and an experimental group. While the experimental group was instructed in the reading comprehension tasks using the Interactive PowerPoint Presentations, the control group was instructed conventionally. The instruments of the study included a pre/post reading comprehension test measuring the skills of guessing meanings of unfamiliar words from context, identifying the general idea of a text, demonstrating understanding of specific details through describing the relationships between ideas (e.g. cause and effect), and summarizing a paragraph in one sentence. The development of these skills was targeted by the Interactive PowerPoint Presentations. Findings of the study showed statistically significant differences between the mean scores of the experimental and control groups in the post reading comprehension test as a whole and in each separate skill, favoring the experimental group, which indicates the positive effect of the proposed program. Recommendations and suggestions for further research are stated.

Keywords: interactive PowerPoint presentations, reading comprehension, primary stage students.

1. Introduction

In a context in which EFL instruction is basically delivered through reading and writing at most public and formal schools, like the Egyptian context, EFL reading comprehension can play a crucial role in the development of other language skills, as well as overall language proficiency. EFL reading comprehension can be the gate to the improvement of various language areas, as it builds a linguistic construct and provides for a repertoire of lexis and structures that learners can reflect on and draw from while speaking, writing or even listening.

The importance of EFL reading comprehension is apparent at all educational levels, as it contributes to academic success and enhances language achievement. Therefore, several researchers have been motivated to develop reading comprehension skills at various educational stages. Examples include Adel & Rajab (2015) at the primary stage, AbdelAziz (2023) and Mostafa, Dadour & Qoura (2019) at the preparatory stage, Elmansi (2023), Khalifa (2023), Hamed (2020) and Elghotmy (2018) at the secondary stage, and Ashraf (2021) and El Naggar (2020) at college level.

Reading Comprehension is particularly essential to EFL primary stage students, as it represents their initial exposure to the linguistic system and culture of a foreign language. Moreover, it is foundational to a successful education in all content areas (Mississippi College Online Programs, 2021). This includes language acquisition (Vocabulary, grammar and syntax enhancement), cognitive development (critical thinking, problem solving, memory and concentration), academic achievement (content learning and assessments/exams), and personal growth and social development (cultural awareness and communication skills) (Higgins, 2024; Pratiwi & Priyana, 2024; Rochman, 2018).

Despite the importance of EFL reading comprehension, an investigation of the educational status-quo at the Egyptian public schools and a review of related research reveal that Egyptian EFL primary stage students lack essential skills of reading comprehension. This view is evidenced by researchers, such as Elnagar (2023) who found that EFL primary stage students had some difficulty in reading comprehension skills including skimming for general ideas, guessing meanings of unfamiliar words, making inferences, scanning for details and identifying opinions and sequence of events.



Alsaman (2024) and Matter (2022) have also documented primary school students' weakness in reading comprehension skills, which resulted from their inability to decode, recognize or understand words.

These reading comprehension challenges that face EFL Egyptian learners may be due to the limited time of English classes, so reading tasks are not usually completed. In addition, reading lessons are changed into vocabulary or grammar lessons by frequently explaining grammatical rules and meanings of new words (McIlwraith & Fortune, 2016).

In the same line, Alqomoul (2021) claimed that the real situation of teaching reading in the Arab schools is limited to recognizing and pronouncing words, without actual interest in teaching meaning and comprehension. He attributed primary stage students' weakness in EFL reading to learners' lack of analytical and critical reading skills, poor ability to generate meaning from the text, difficulty to infer meanings of words from the context, failure to distinguish between facts and opinions and surface understanding of linguistic structures. Therefore, he recommended that these challenges can be handled by an interactive teacher who can raise students' motivation and help them overcome the misconception that English is a boring or difficult subject. He added that interesting reading material which is accompanied by attractive features can also enhance students' reading comprehension.

Researchers have suggested and implemented a variety of solutions to enhance EFL learners' reading comprehension, including teaching reading comprehension strategies and text structure (e.g. Bonganciso, 2022; Hammad, 2020; Mertosono, Erniwati, Hastini, & Arid, 2020; Gilakjani & Sabouri, 2016), digital storytelling (e.g. El Koshiry & Hegazy, 2024), multimedia tools (e.g. Nada, 2020; Papatga & Ersoy, 2016), shadow reading and collaborative reading (e.g. Babapour, Ahangari & Ahour, 2018), scaffolding reading comprehension (e.g. Mostafa, Dadour & Qoura, 2019; Salem, 2017), project-based learning (e.g. Seifdeen & Diyyab, 2023; Ali & Hasan, 2022; Lumanauw, Liando & Andries, 2022), and flipped classrooms (Abusaaleek, 2020; Hamzavi, 2017), among others.

In spite of the efficiency of the previously proposed interventions, a link to learners' motivation and interaction in reading

comprehension enhancement programs seems to be crucial to the success of these programs.

Chen (2019) explained that adopting an appropriate teaching method which fosters EFL learners' motivation can help them effectively cope with the difficulties they may face in reading comprehension. In the same vein, Ibrahim (2020) concluded that the participants' improvement in EFL reading comprehension skills via using digital reading can be mainly attributed to their engagement with the digital texts which allowed for high levels of interaction with these texts.

Complex interaction between the reader and text is one of the key cognitive and linguistic processes contributing to text decoding and facilitating reading comprehension (Pickren, Stacy & Tufo, 2022; Habók, Magyar & Hui, 2019); and therefore, it is recommended that EFL instructors use adequate reading strategies to keep learners highly motivated and engaged with the text. Such interaction between learners and reading material increases the extent of comprehension in reading (Lo, Wen & Lin, 2021; Alghonaim, 2020; Ali, 2020).

Drawing on the previous point, interactive PowerPoint presentations (IPPP) can be an effective instructional tool to promote primary stage students' EFL reading comprehension. In today's world where attention spans are getting shorter, traditional PowerPoint presentations often struggle to hold the engagement and the interaction of the learners; thus, the need appears to embed interactivity in these presentations (Chew, 2024). Several researchers documented the effectiveness of dynamic, multimodal PowerPoint presentations in improving language learners' skills in English for academic and professional purposes (Miguel, 2022), vocabulary (Farahnia & Khodi, 2017), use of cohesive devices in advanced writing (Rajabi & Ketabi, 2012), and speaking (Angkarini, 2022).

Dynamic PowerPoint Presentations also proved effective in increasing learners' involvement, achievement and comprehension in subject areas such as Biology (Adonu, Nwagbo, Ugwuanyi & Okeke, 2021), electrochemistry (Nakiboğlu & Nakiboğlu, 2021), medicine (Bhattacharjee, Tarafder, Chatterjee, Chakraborti, 2019), technical drawing (Gambari, Yusuf, Balogun, 2015), Geography (Onivehu & Ohawuiro, 2018), mathematics (Putri, Permana, Damariswara, 2023; Anwar, Kahar, Rawi, Nurjannah, Suaib & Rosalina, 2020), Geometry (Aryani, Alim, Witri, Hermita, Fendrik, 2022), and Science (Ptriana,



Nellitawati, Bentri, Alwi, 2022; Tembang, Purwanty, Palobo, Kabrahanubun, 2020).

A common factor in the findings of these studies is students' satisfaction, engagement and high levels of interaction. Such factors are highly recommended to increase students' development in different language and content areas, including reading comprehension.

Elements of interactivity and dynamics are what distinguishes IPPP from traditional PowerPoint presentations. While traditional presentations usually fall flat on learners, interactive ones have positive effects on learners' understanding of concepts and engagement (Shatri & Shala, 2022). Interactive features include hyperlinks, animations, multimedia, graphs, videos, games and polls, among others.

Using interactive PowerPoint presentations to improve EFL learners' reading comprehension is a highly effective strategy due to their ability to engage multiple senses and learning styles simultaneously. These presentations incorporate visual aids, audio support, and interactive elements like quizzes and clickable links, which can significantly enhance understanding and retention of reading material. By providing immediate feedback and allowing self-paced learning, they cater for individual learning needs and help manage cognitive load, making complex texts more accessible. Additionally, the engaging and dynamic nature of interactive presentations can boost motivation and participation, fostering a more immersive and effective learning experience that directly supports the development of reading comprehension skills.

Research in educational technology suggests that the use of multimedia and interactive elements can enhance cognitive engagement, which in turn can lead to better comprehension and retention of reading material (Tang, Zainal & Li, 2023; Noetel, Griffith, Delaney, Harris, Sanders, Parker, Del Pozo Cruz & Lonsdale, 2022; Abdulrahman, Faruk, Oloyede, Surajudeen-Bakinde, Abiodun, Mejabi, Imam-fulani, Fahm, & Azeez, 2020; Samat & Aziz, 2020). Therefore, this study is grounded in the potential benefits of the multimedia and interactivity features of interactive PowerPoint presentations to enhance EFL learners' reading comprehension. To the best of the researcher's knowledge, no previous study attempted to investigate the relationship between these variables in the Egyptian

schools. By exploring the effects of interactive PowerPoint presentations on EFL reading comprehension in the Egyptian context, the study seeks to contribute to the development of more effective teaching strategies that can be integrated into modern EFL curricula, and thus, a need for the current study arises.

1.1. Context of the Problem

On supervising a group of EFL prospective teachers during their practicum, the researcher held some professional learning community meetings with them to discuss the problems and challenges they met with their students. One complaint that they made was concerned with reading instruction in the primary stage. They reported that they could not approach teaching reading tasks properly because their students frequently asked about meanings of words, so they found themselves obliged to teach a lot of vocabulary which took most of the time at the expense of more engaging reading activities. Students usually asked them to read and translate word by word avoiding trying to guess meanings of unfamiliar words. When asked to identify general ideas of a text, they always stated the title of the text or copied the first introductory sentence of a paragraph without trying to formulate a sentence representing their own understanding. They also had difficulty summarizing a paragraph in one sentence, which is an essential skill in their curriculum. They would usually copy the concluding sentence or the title of the passage. Although those prospective teachers were enthusiastic about implementing interactive reading strategies that they learnt about in their microteaching or methods of teaching courses, they could not do this in actuality, as they found the status quo of teaching at classrooms different than what they thought, and they had to align to their students' expectations.

As in-service teachers confirmed the problems faced by prospective teachers, some interviews were conducted with a group of students from the primary stage to get more insights into these challenges. The students were interviewed in Arabic and were explicitly asked to reflect on the reading tasks they had to accomplish during English classes and on some types of reading comprehension questions that they found in reading tasks or exams, such as identifying the main ideas of a text, guessing meanings of unfamiliar words or summarizing a paragraph. The following were some of their reflections:

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- “Reading a passage! This is very boring; it takes a lot of time, and I feel bored!”
 - “I find many words that I don’t know their meanings in Arabic. I should understand the meaning of all these words, otherwise I wouldn’t be able to understand the passage.”
 - “Most passages are not accompanied by pictures. You find a lot of English written on the page and I have the feeling it would be difficult to understand. I couldn’t read all this English!”
 - “In the test. I’m asked to guess the meaning of a word that I don’t know. How can I do this, since I haven’t studied it before?”
 - “The most difficult question is about summarizing a paragraph. I cannot say all this stuff in one sentence!”
 - “When I am asked about the general idea, I choose the sentence closest to the title of the passage. I don’t think of the other choices.”
 - “I don’t like this reading passage question in exams; all the choices sound possible!” (the multiple-choice questions)
 - “How can I mention the main idea of a passage while it contains many paragraphs? Which paragraph should I focus on?”
 - “Reading a whole passage is very boring! You have to spend such a long time trying to understand all this English stuff! This is difficult!”

Drawing on primary stage students’ expectations in English classes, as reported by teachers, and their reflections during the interviews, the following observations can be elicited:

- Students feel bored and demotivated while reading; this may be due to lack of multimodal features of a text, such as pictures, colors or others.
- The big number of written words presented in the passage, without other interactive media elements, gives the students the impression that the passage would be long, difficult, boring and containing “a lot of English stuff”.
- Skills like summarizing a paragraph or mentioning the general idea of a passage exert a cognitive burden on students’ minds, who find it difficult to identify relationships between ideas or establish a link between the different paragraphs in one passage. Consequently, they generally copy the introductory sentence or the title of the

passage when asked about the main idea, and the concluding sentence when asked about the summary of a paragraph.

- Some students believe that the most important part about reading is to understand meanings of all unfamiliar words. Thus, they expect the teacher to translate word by word and do not pay attention to other reading strategies.

- Students cannot infer meanings of unfamiliar words; this may be due to their lack of knowledge of contextual clues, such as affixes, or because they got accustomed to translating such words into Arabic, so they do not want to bother themselves and make the effort of guessing meanings.

Based on the aforementioned points, it can be concluded that the primary stage students demonstrate a lack of interest and engagement in reading comprehension and have significant difficulties in handling reading comprehension tasks.

1.2. Statement of the Problem

The problem of this study is that Egyptian EFL primary school students struggle with fundamental comprehension skills. They are unable to identify the central ideas of a passage, establish connections among sub ideas, summarize a paragraph or guess meanings of unfamiliar words. Factors contributing to these difficulties include inadequate interactive teaching strategies and a lack of engaging and relevant reading materials. These problems underscore the need for an improved and interactive instructional tool to enhance reading comprehension among those students. Thus, the current study handled the following main question:

What is the effect of interactive PowerPoint presentations on primary stage students' reading comprehension?

In answering this main question, the following sub-questions were also answered:

- What are the reading comprehension skills that the 5th year primary stage students should have?

- What are the reading comprehension skills that those students already have?

- How can interactive PowerPoint Presentations be designed and used to improve those students' reading comprehension?

- What is the effect of the proposed interactive PowerPoint presentations on those students' reading comprehension?



1.3. Hypotheses of the Study

The current study attempted to verify the hypotheses below.

- There is a statistically significant difference between the average ranks of the grades of students of the experimental and control groups in the post-application of the reading comprehension test in the total score and in the score of each sub-skill, in favor of the experimental group.
- There is a statistically significant difference between the average ranks of the grades of the experimental group students in the pre- and post-applications of the reading comprehension test in the total score and in the score of each sub-skill, in favor of the post-application.

1.4. Purpose of the Study

The main purpose of the current study was to explore how far the proposed interactive PowerPoint presentations could enhance the 5th year, primary stage students' reading comprehension skills. Additionally, it also sought to observe how far the students were motivated by these presentations.

1.5. Significance of the Study

This study may be of significance to:

- **EFL students:** The study could benefit students by providing engaging learning tools that make learning English more interactive and accessible, thereby improving their reading comprehension skills.
- **EFL teachers:** This study could provide valuable insights into effective teaching tools and strategies. By understanding how interactive PowerPoint presentations can enhance reading comprehension, teachers might adopt or refine their methods to improve student outcomes.
- **Curriculum developers and designers:** Those responsible for designing EFL curricula could use the findings of the study to integrate interactive PowerPoint presentations into content and teaching materials, potentially making the curriculum more engaging and effective.
- **EFL researchers:** The study could contribute to the broader academic literature on EFL teaching

methods and technology integration, offering a basis for further research in this area.

- **Educational Technologists:** Professionals developing educational tools and resources might find this study significant as it could inform the design of interactive features within PowerPoint or similar tools tailored for language learning.

By addressing the needs and interests of these groups, the study has the potential to make a significant impact on EFL education.

1.6. Delimitations of the Study

The study was delimited to:

- A group of 28 students enrolled in the 5th year, the primary stage, at El Nogoum Primary Mixed School, Heliopolis, Cairo, in the academic year 2023-2024. They were divided into a control group and an experimental group.
- Four reading comprehension skills prescribed in the 5th year, primary stage EFL curriculum and measured by the pre/post test.
- Eight reading comprehension passages prescribed in units 7, 8, and 9 in CONNECT, Primary 5, Student's Book, Term 2.
- The second semester of the academic year 2023-2024.

1.7. Definitions of Terms

Reading Comprehension

According to Loi & Thanh (2022), reading comprehension is the capacity for understanding information from a text accurately, which in practice, requires efficient coordination of a set of mental, cognitive, strategic and linguistic processes necessary for text interpretation.

Bruggink, Swart, Van der Lee & Segers (2022), on the other hand, claim that reading comprehension is a constructive and interactive process, resulting as a product of the interaction between multiple factors related to the reader and the text; therefore, it requires a certain level of the reader's skills and background knowledge.

In this study, reading comprehension is defined as the primary stage students' ability to construct meaning, identify general and specific relationships between ideas and demonstrate understanding of a text through fully engaging and interacting with various multimodal and interactive features embedded in the reading material.



Interactive PowerPoint Presentation

Chew (2024) states that Interactive PowerPoint presentations are simply PowerPoint presentations that are made interactive to convey information in a more dynamic and engaging manner.

In the current study, an interactive PowerPoint Presentation is a presentation with a high level of interactivity, which includes triggers and multimodal elements that enable learners to explore and analyze a text comprehensively in order to build meaning and enhance comprehension of its content.

2. Review of Literature

2.1. Reading Comprehension

Reading comprehension is the process of constructing meaning from a text to understand it. To this end, the reader has to interact with the text, engaging in a complex array of cognitive processes and incorporating both systemic (language) and schematic (content) knowledge. Kusumarasdyati (2023) asserted that meaning is cognitively and socially constructed by readers, instead of simply extracted (p. 783). In this respect, schema theory, which suggests that comprehension is based on the reader's existing knowledge, and transactional theory, which views reading as an interactive process between the reader and the text, can both serve as theoretical foundations of reading comprehension (e.g. Cartwright, 2023; Lee, 2023; McMaster & Kendeou, 2023; Duke, Ward & Pearson, 2021; Hutton, 2018; Kim, 2017).

Thus, the argument that reading is a receptive skill, by its conventional definition, is no longer valid, as a unique representation of the text can be produced by each individual reader, requiring the reader to get fully engaged in creating and validating meaningful assumptions.

An interesting characteristic of reading comprehension is its relevance to critical thinking (Mohamed, Ismail & AbdelAziz, 2022). That is, in order for the reader to be able to practice analysis, evaluation, interpretation and synthesis of a text, as essential critical thinking and reading skills, s/he has to attain a very high level of comprehension of written material. Other characteristics of reading comprehension also include constructing a coherent mental representation of the information in a text, decoding words and recognizing vocabulary, understanding the relationship between words and their context, analyzing and making sense of the text, drawing

inferences, identifying main ideas, activating background knowledge, visualizing the content and justifying credibility (Kiili, Strømsø, Bråten, Ruotsalainen, & Rääkkönen, 2024; McDonnell, 2023; Hessel & Schroeder, 2020).

Many models of teaching reading comprehension may not represent all readers across various reading skills levels, due to individual differences in reading comprehension (Butterfuss, Kim, Kendeou, 2020); thus, a multi-layered representation of a single text, similar to that one offered by IPPP may be helpful. This view posed a challenge for traditional models of reading comprehension and urged researchers to call for multiple text processing from multiple sources (Britt & Rouet, 2012), based on the assumption that a text which triggers the learners' interaction is more likely to foster reading comprehension.

A review of recent research on EFL reading comprehension revealed three main trends in this area, i.e., strategy training, text-based instruction, and technological and computer-assisted instruction.

Reading comprehension strategy instruction improves elementary and middle school students' reading comprehension, and it is particularly effective for weak and struggling readers (Dewitz & Graves, 2024; Ghafournia, 2023; Gilakjani & Sabouri, 2016). Questioning strategy instruction, for example, supports learners in making inferences while reading, which assists reading comprehension (Rice, Wijekumar, Lambright & Stack, 2024). In the same vein, metacognitive strategy training (e.g., Bonganciso, 2022), engaging reading strategy training (e.g. Abdelhalim, 2017), SQ4R strategy, i.e., Scan, Question, Read, Recite, Reflect, Review (e.g. Mohamed, 2020), POSSE strategy, i.e., Predict, Organize, Search, Summarize, Evaluate (e.g. Ahmed, 2022) have all proved effective in developing learners' reading comprehension.

Text-based instruction, on the other hand, is another approach to enhancing reading comprehension. Loi & Thanh (2022), for example, adopted a text-driven approach to engage EFL learners in reading and improve their reading comprehension. This approach aims to develop activities around a cognitively and affectively engaging text which is relevant to learners' lives and experiences and has an appropriate level of challenge (Al-Mousawi, 2020). Multimodal texts are another dimension of text-based instruction. They are texts which combine various modes of communication, such as text, image, sound and movement (Danielsson & Selander, 2021). Such texts have a positive



effect on learners' reading comprehension (e.g. Nursyahbani, 2023; Falth, Brkovic, Kerestes, Svensson, Hjelmquist & Tjus, 2022; Yawiloeng, 2022; El Naggar, 2020). Another text-based instruction is related to text structure. Text structure can be used to support reading comprehension, and consequently, improve overall reading proficiency (Yeari, Ivi, Rasouly-balfer & Shalev, 2023; Hudson, Owens, Moore, Lambright & Wijekumar, 2021; Hazenberg, Vermeul, & Bergh, 2020).

Technological and computer-assisted tools are also used to promote EFL reading comprehension. Examples include online and web-based programs (e.g. Ali, 2022; Azizi, Namaziandost, Rezai, 2022; Farag, 2022; Manowong, 2017), electronic and digital reading programs (e.g. Dejulio, Iammert, Hiebert, Avalos, Cagle, Dean, Good & Tice, 2024; De-la-Pena, Chaves-Yuste, Luque-Rojas, 2024; Koshiry & Hegazy, 2024; Rochanaphapayon, 2023; Ali, 2021; Ibrahim, 2020; Abdel-Haq, Zahran, Mohammed & Zaza, 2019; Papatga & Ersoy, 2016), digital posters (e.g. Ahmad, 2019), and multimedia programs (e.g. Vidal, 2022; Nada, 2021; Majeed & Hameed, 2020).

What distinguishes digital and computer-assisted instruction from traditional technological tools, such as tape recorders and film projectors, is its interactivity. Computers urge learners to interact with what they learn and get the individualized learning they need, which makes them an essential medium for language teaching and learning (Abdelrahman, 2024). IPPT is one of those computer-assisted language learning (CALL) tools that can positively influence students' reading comprehension.

Assessment of reading comprehension is not an easy task, due to its complexity and multi-faceted nature. Contextualized measures considering the complex interactions between reader, text and task should be developed, not only to assess underlying reading comprehension skills, but also to identify the reading comprehension difficulties students have (Elleman & Oslund, 2019). A global integrated scenario-based assessment can serve this purpose and shed light on learners' deeper comprehension processes, as it requires readers to integrate and synthesize information from multiple texts depending on their background knowledge to form coherent mental representations of what they read. The reading tasks are performed in digital environments which offer realistic and interactive scenarios

that require students to apply their reading comprehension skills in context (Sabatini, O' Reilly, Halderman & Bruce, 2014).

This type of assessment corresponds to performance-based assessment in that they share characteristics such as authenticity, contextuality, variation and integration to learning (Heydarnejad, Tagavipour, Patra & Khafaga, 2022).

A relatively new trend in assessing reading comprehension is dynamic assessment. In dynamic assessment procedures, assessment and instruction are two sides of one coin, or actually a single activity in which students' learning is assessed through scaffolding and repairing mistakes, i.e., teaching is an inherent part of all assessments. In this context, learners' developed, as well as still emerging abilities can be diagnosed (Poehner, Davin & Lantolf, 2017).

Researchers who employed dynamic assessment in their studies documented that it enabled both teachers and learners to identify potential problems and difficulties that may hinder text comprehension, contributed to the improvement of reading comprehension and fostered learners' motivation (Zadkhast, Rezvani & Lotfi, 2023; Al-Dawoody, Ramadan, Heji & Robso, 2022; Zare, Barjesteh & Biria, 2021; Kazemi, Bagheri & Rassaei, 2020; Nikmard & Tavassoli, 2019).

2.2. Interactive PowerPoint Presentations

The increased use of technological devices and applications is a characteristic of modern society. Such applications offer a high level of interactivity to users, which results in high levels of engagement. The discipline of language learning is not an exception. Therefore, educational researchers have started to adopt a variety of interactive multimedia environments to engage language learners and develop their language skills (e.g. Putri, Sari & Tambunan, 2024; Jalaluddin, 2023; Ali, 2022; Mahdi, 2022; Yulian, Ruhama & Utami, 2022; Alobaid, 2020).

The rationale for this research is grounded in the Cognitive Theory of Multimedia Learning, which offers an evidence-based description of how people learn from multimedia instructional content and accounts for how meaningful learning and comprehension can be maximized (Mayer, 2024, 2022).

Interactive PowerPoint Presentation is an educational tool that embraces significantly interactive multimedia features. PowerPoint is an application of Microsoft Office which continues to improve throughout its versions to allow users to experience additional features



with regard to user interface, graphics, animations, sounds and slide effects. Other attractive learning materials can also be inserted, such as questions and answers and games, which make the slides motivational.

PowerPoint Presentation remains a cornerstone in different educational programs because of its simplicity and versatility (Hasan, 2023). Its software is regularly updated to cope with educational technology demands and maintain to be popular and user-friendly; hence, it can be the foundation of powerful e-learning courses (Adnan, 2024; Alina, 2022; Erwee, 2019).

IPPP are PowerPoint presentations that are made interactive to convey information in a more dynamic and engaging manner. The type of interaction involved may be interaction with the slide content through data visualization (e.g. 3D animations, hyperlinks, transition, zoom, etc.) or interaction with learners (e.g. quizzes, polls, games, questions and answers, etc.), thus enabling both student-centered and teacher-guided contexts (Chew, 2024).

IPPP can also be converted to SCORM (i.e., Shareable Content Object Reference Model), an international standard for e learning courses, to enhance the IPPT usability and maintain its interactivity so that it can be hosted on a Learning Management System (LMS) for an efficient delivery of content and a potential to work across different instructional modules (Prasad, 2023).

The benefits of utilizing IPPT in the EFL classroom are myriad. First, the multi-modal content engages and brings together different types of learners, including auditory and visual students. Second, due to its interactivity, it fosters learners' motivation and increases their participation. Moreover, the various features used to present, explain, exemplify and elaborate on the content increase comprehensibility and retention.

Studies have offered empirical evidence of these benefits. Nawale & Nawale (2022), for example, concluded that the use of interactive and multiple modalities of IPPP enhances students' sense of pleasure and commitment and creates a dynamic environment for teaching and learning which facilitates comprehension of topics and boosts learners' attention.

In Ravi & Waswanl's study (2020), students believed that IPPP helped them to grasp the content easily. It was also observed that the instructional atmosphere became more interesting and engaging as the

use of images, animations, videos and sounds promoted students' attentivity and participation.

In a similar study, Ledy & Syafradin (2023) combined quantitative and qualitative methods to investigate students' perceptions of using IPPP as an e-learning medium. Students believed that IPPP enabled them to improve their learning, motivate themselves and enhance their language competency. The researchers concluded that when students interact with IPPP, they get more engaged, inspired and eager to study English.

IPPP has the potential to develop language skills as proved by previous relevant studies. It can enhance learners' comprehension, language performance and general language proficiency (e.g. Angkarini, 2022; Aziz & Dewi, 2020; Hassan, 2020; Rofi'I & Nurhidayat, 2020; Gordani & Khajavi, 2019; Ngoc, 2018; Jalali & Talebi, 2014), reading comprehension (e.g. Zahara & Jupri, 2022; Holakopour, Azizifar & Gowhari, 2014), listening comprehension (e.g. Khodabandehlou, 2017), academic writing (e.g. Rajabi & Ketabi, 2012), and it generally has a positive impact on the attendance and enthusiasm of EFL students (Al-Obaydi, 2017).

Since the role of the teacher is crucial in instruction, IPPP can be a successful choice to enhance EFL teaching, considering its feasibility and availability compared to other computer-assisted or e-learning tools. Teachers are recommended to incorporate interactive and more appealing PowerPoint presentations in their teaching to develop their students' EFL content and skills (Ledy & Syafradin, 2023; Angkarini, 2022; Nwangwu, Obichukwu, Uzuagu & Omeh, 2021; Madhavan, 2018). Learning how to utilize IPPP does not require teachers to attend specific training sessions or master any complicated technological capabilities. It can be simply done as an autonomous professional development practice, especially that there are numerous online training packages that offer teachers step-by-step guides to design IPPP (e.g. Chew, 2024; Hasan, 2023; Klimenko, 2018).

2.3. Integrating interactive PowerPoint Presentations to enhance EFL reading comprehension

Interactive PowerPoint Presentations (IPPP) can seamlessly integrate a diverse array of reading comprehension skills and strategies, ensuring an immersive and versatile learning environment that engages students and facilitates their reading comprehension. IPPP may be an effective tool in that it can address the reading

comprehension challenges that primary stage students may encounter. This will be discussed in the following section.

EFL learners usually lose motivation and engagement during reading activities, especially if the reading material is dense or boring. Studies have confirmed IPPP contribution to *the engagement and motivation of learners* (Nawale & Nawale, 2022). IPPP can make reading activities more enjoyable and dynamic, encouraging students to participate more and stay focused. Elements like gamification can highly motivate students while teaching them the reading material (Miguel, 2022). Personalized interface, such as colors and layouts of slides can also entertain learners and give them the feeling of having authority of their learning.

IPPP can change *students' beliefs about the difficulty and complexity* of EFL tasks. Many researchers were keen on investigating their students' opinions and perceptions of utilizing IPPP, and they indicated the positive impact that such presentations had on their students (e.g. Ledy & Syafryadin, 2023; Ravi & Waswani, 2020). By facilitating the students' processing of the text, IPPP can lessen the cognitive burden on students' minds while reading, leading them to believe that the reading comprehension tasks are approachable and manageable. This can be done, for example, through visualization. Dynamic data display, in the form of pictures, charts or highlights, can *aid students' visualization of the content* (Roles, Baeten & Signer, 2017).

Li, Wu & Liu (2023) argued that context is an essential variable that can account for students' success of failure in reading comprehension. They found that when students are not familiar with the context of the reading content, their comprehension is hindered. In this regard, IPPP includes multimedia elements that can *provide context* through additional resources, which helps students better grasp the context or main theme of a text through activating their prior knowledge and enabling them to make connections between sub ideas.

Limited vocabulary is another issue in EFL reading comprehension (Firman, Haerazi & Dehghani, 2021). IPPP can include interactive glossaries or vocabulary exercises. For instance, clicking on a difficult word might reveal its definition, pronunciation, or use in a sentence, helping students to *build their vocabulary in context*.

IPPP can also cater for *differential learning*, as it can connect with different types of learners who have different learning styles (Microsoft 365, 2022)¹. Giving users control over navigation through the presentation, for example, can make their learning more personalized in that they can explore specific sections that add extra information to the text, or click on sections that elaborate on specific pieces of information, rather than following a linear path. Designing IPPP with differentiated pathways helps less proficient students to increase their comprehension and more proficient students to accelerate their learning and gain additional details of the topic.

Retaining information from reading passages can be difficult, especially when students are exposed to large amounts of new language at once. IPPP can include repetition and review activities to help learners review key concepts and vocabulary. Such interactive features can make this review process more engaging, which reinforces students' learning.

Add to this, IPPP match recent trends in reading comprehension assessment. Instead of just placing comprehension questions after a reading text, *customized assessment* that offers implicit and explicit guidance to learners during their reading can be embedded in IPPP through quizzes and polls, which facilitates immediate feedback (Liu, 2023). Hence, teachers can know what to attend to, enhance, model or modify.

Having the potentials to overcome such reading comprehension difficulties and promote diverse reading comprehension skills, as explained above, IPPP can be successfully integrated into reading comprehension instruction to facilitate EFL students' comprehension and arouse their motivation.

3. Method

This section covers the methods adopted in the current study, including the design, participants and instruments of the study.

3.1. Design of the study

This study adopts a mixed research approach. On one hand, it used the experimental/ control groups design. One class of 28 students enrolled in the 5th year at the primary stage was randomly assigned into a control group and an experimental group. The control group

¹ : **Creating Presentations to Connect with Each Type of Learner: How to Craft Presentations that Connect with Different Types of Learners**

At: [Presentations for Each Type of Learner – Microsoft 365](#)



received regular instruction, while the experimental group received instruction using IPPP.

Qualitative data analysis, on the other hand, was done on the basis of the anecdotal records of the experimental group's observed behaviors during the IPPP instruction.

3.2. Participants

The participants of the current study were 28 fifth year, primary stage students who were enrolled in El Nogoum Primary Mixed school, Heliopolis, Cairo, in the second semester of the academic year 2023-2024. They were equally and randomly divided into a control and an experimental group. They studied one English Student's Book, i.e., CONNECT Primary 5.

3.3. Instruments and data collection techniques

3.3.1. The Reading Comprehension Test

Purpose

The Reading Comprehension Test was a pre/post reading comprehension test that aimed at testing the control and experimental groups students' reading comprehension skills before and after the proposed instruction. It was compiled and adapted by the researcher based on CONNECT 5 Student's Book.

Description

The test consisted of two reading comprehension texts. Each text contained two paragraphs and was about eight lines. Each text was followed by four reading comprehension questions: two multiple choice questions (about the general idea of the text and the meaning of an underlined word), a Wh-question about a cause-effect relationship between ideas, and a summarizing question requiring students to summarize one of the two paragraphs in one sentence.

Table (1): Table of specification of the reading comprehension test

Skill	Numbers of Questions	Mark	% to the full mark
•Guessing meanings of unfamiliar words out of context	Q 2 Q 6	10	25%
•Identifying the general idea of a text	Q 1 Q 5	10	25%
•Demonstrating understanding of specific details through describing the relationships between ideas (e.g. cause and effect)	Q 3 Q 7	10	25%
•Summarizing a paragraph in one sentence	Q 4 Q 8	10	25%

Piloting the test

To pilot the test, it was administered prior to teaching the IPPP program to a group of 14 students in the 5th year of the primary stage, who did not participate in the study. The purpose of that piloting procedure was to:

- Determine the appropriate duration of answering the questions;
- Establish the reliability of the test;
- Ensure the validity of the test; and,
- Check the suitability of the test to the participants regarding the clarity of the questions and the appropriateness of their phrasing.

The timing of the test was determined by calculating the average time that the students who took the test spent to answer all the questions. Forty minutes was found to be an appropriate duration of the test.

The SPSS (version 27) statistical program for social science was used to calculate the validity and reliability procedures of the test as follows:

Internal consistency validity:

To ensure the internal consistency of the skills of the reading comprehension test, the correlation coefficients between the score of each skill and the total score of the test were calculated, and the following table (Table 2) shows the correlation coefficients.

Table (2): Values of correlations between the score of each individual skill and the overall test score

Skill	Correlation
General idea	0.70**
Cause and effect	0.73**
Guessing meanings of words	0.68**
Summarizing	0.71**

**significant at 0.01 level, where $n = 14$, and the correlation coefficient ≥ 0.63 .

The table above shows the statistically significant correlations between all the skills of the test and the total score, thus indicating the internal consistency of the test skills.

To ensure the internal consistency of the reading comprehension test items, the correlation coefficients between the score of each



individual test item and the total score of the test were calculated as shown in the following table.

Table (3): Values of correlations between the score of each individual item and the overall test score

Item	Correlation
1	0.66**
2	0.65**
3	0.68**
4	0.64**
5	0.٦٧**
6	0.٦٥**
7	0.6٤**
8	0.6٩**

**significant at 0.01 level, where $n = 14$, and the correlation coefficient ≥ 0.63 .

The table above shows the statistically significant correlations between all the items of the test and the total score, thus indicating the test internal consistency of the test items.

Content Validity

To confirm the validity of the test content, a number of EFL experts were consulted in regard to the phrasing of the test items, their clarity and their suitability to the target participants. All the questions and their phrasing were believed to be appropriate.

Reliability of the test

Cronbach's alpha coefficient was calculated to establish the test reliability, and its value was (0.84) which is an acceptable and high value and generally indicates the accuracy and stability of the test as a means of measurement and therefore it is reliable.

Inter-rater reliability was also calculated. The test was corrected by two teachers and the correlation coefficient between the scores of the two corrections was found to be (0.98), which is a high value indicating a very strong correlation. This confirms the accuracy and stability of the test as a reliable means of measurement.

Scoring the test

Based on the aforementioned table of specification, five marks were assigned to each correct answer to the multiple-choice questions and a score range from 1 to five was assigned to each correct question of cause/effect and summarizing questions. The total final full mark for all the questions was (40) marks.

3.3.2. Anecdotal Records

Anecdotal records, i.e., records of students' observed behaviors, can shed light on their ways of thinking, their learning strategies, their interactions and their levels of involvement and satisfaction. Through reflecting on anecdotal records, teachers can trace and get insights into their students' development and challenges, and thereby, scaffold their learning.

Anecdotal records were used in this study as a tool for documenting and observing students' behaviors and reactions while working with the IPPP. The two teachers who co-taught the IPPP program wrote these records alternately.

There was no specific prescribed template for writing these records, but since they are inherently contextual, the teachers described the situations in which students' behaviors were observed.

3.4. The interactive PowerPoint presentations program Aim

The overall aim of the IPPP program was to develop the fifth year, primary stage students' reading comprehension. **The following four reading comprehension skills were addressed:**

- Guessing meanings of unfamiliar words out of context,
- Identifying the general idea of a text,
- Demonstrating understanding of specific details through describing the relationships between ideas (e.g. cause and effect), and,
- Summarizing a paragraph in one sentence.

These skills were selected to be in alignment with the specifications of the reading comprehension question in those students' examination paper, which are prescribed by the Ministry of Education.

In addition to the development of the previously stated reading comprehension skills, enhancing students' involvement was also sought. The main purpose of the IPPP program, after all, was to increase students' motivation and engagement through the interactive features of the presentations, which, in turn, would promote their reading comprehension.

The following sub-aims were thereupon identified:

- Teaching students pronunciations of unfamiliar words.
- Encouraging students to do extra extensive readings on the assigned topics.
- Familiarizing students with online quizzes in a less-pressurized atmosphere.



• Providing students with instant feedback on their reading comprehension.

• Giving students authority over their own learning while reading a text, by which they can decide on what to repeat, relearn or investigate to increase their understanding.

• Combining fun and learning through instructional games.

• Integrating reading into other language skills (e.g. listening and writing), through watching the videos and writing responses to polls or quizzes.

Instructional materials

The eight interactive PowerPoint presentations were all what was needed for teaching the reading comprehension passages prescribed in the student's book. These presentations were used to teach the experimental group students the reading comprehension passages, while the control group students received regular instruction in these passages using their CONNECT Primary 5 Student's Books.

Content

The participants of the current study studied one English Student's Book, i.e., CONNECT Primary 5, Term 2. The book is divided into two themes, each containing three units. Each unit has its content of vocabulary, language structures, language skills (reading, listening, speaking and writing), phonics, life skills, values, issues and challenges and integrated cross-cultural topics. The IPPP program tackled the reading comprehension passages of the first theme. They were eight passages.

The eight reading comprehension passages prescribed in the Student's Book were the main content of the IPPP. They were as follows:

- Story about a dangerous experience in the jungle
- Text about homes in Ancient Egypt
- Blog about unusual homes
- Text about a hospital in India
- Presentation about staying healthy
- Online chat about a day at a wildlife park
- Aesop's The travelers and the tree
- Email about an unusual animal

Each IPPP included at least one of each of the following interactive features:

- **A poll** which collects students' responses or answers to a question and is shared by a link. Students' responses are concurrently written and appearing on the screen so that they can be seen by everyone in the class. This was often done as a warming up question before they started reading the text, and it also aimed at activating the students' prior knowledge of the topic.

- **Hyperlinks** which allow navigation to websites presenting additional content relevant to that of the text. The purpose of these hyperlinks was to establish context to the topic of the text and also to satisfy the needs of motivated students who wanted to read more about the topic.

- **Hyperlinked words** which are unfamiliar to the students. By clicking on these words, the students can move to other slides containing synonyms, antonyms, explanations, examples, and/or high-quality images clarifying the meanings of these words.

- **Action buttons** that can trigger specific actions, such as moving to slides or playing sounds (e.g. sounds of howler monkeys, or pronunciation of new words).

- **Embedded multimedia**, which included the integration of videos relevant to the topic of the text and animated pictures.

- **An interactive educational game** closer to the end of each text. These games are designed by the PowerPoint application itself or imported from other sites via clickable links.

- **An interactive quiz** at the end of each presentation. These quizzes are designed either by the *insert form* options in PowerPoint or by Kahoot. Instant feedback on the correctness of students' answers is delivered once they write the answers to the questions. After correct answers, there are sound effects of clapping; and after wrong answers there are warning sound effects and vibrations of the questions.

- **Animations and transitions** within slides. These are visual effects that occur when moving between slides or within slide elements.

- **Backgrounds of slides and highlighted text.** Interesting backgrounds which are relevant to the topics of the texts are added; and specific parts of the text are highlighted to show cause-effect relationships.



Implementation

Prior to the teaching of the IPPP program to the experimental group, the pre test was administered to the experimental and control groups in the 1st week of the second semester of the academic year 2023-2024. This procedure was done to guarantee the equivalence between the two groups before they received different instructions. The equivalence of the two groups was calculated through the statistical treatment of the pre-post results using Mann-Whitney Test to investigate whether there were differences between the two groups. Table (4) shows the results.

Table (4): The significance of the differences between the average ranks of the scores of the control and experimental groups in the pre-application of the reading comprehension test.*

skill	group	Number (N)	Mean Rank	Sum of Ranks	Z-value	Sig.
General idea	Experiment	14	14.50	203.00	0.699	0.489
	Control	14	14.50	203.00		
Cause & effect	Experiment	14	15.00	210.00	0.600	0.549
	Control	14	14.00	196.00		
Guessing meanings of words	Experiment	14	13.54	189.50	0.607	0.541
	Control	14	15.46	216.50		
summarizing	Experiment	14	15.64	219.00	0.783	0.434
	Control	14	13.36	187.00		
Overall reading comprehension	Experiment	14	15.07	211.00	0.374	0.709
	Control	14	13.93	195.00		

*(As N=14 and df= 12)

As shown by the previous table, the value of the level of significance between the average ranks of the experimental and control groups' scores in the total reading comprehension test scores and in the separate scores of each skill, is greater than (0.05), indicating no statistically significant differences before teaching the interactive presentations to students of the experimental group. This means that the students of the experimental and control groups were equivalent in reading comprehension as a whole and as separated skills before receiving any instruction.

The two groups received regular instruction following conventional methods in their regular English classes, then they were separated during the reading time: while the control group continued learning the regular way in their classrooms, the experimental group received the IPPP instruction in the computer lab. This was done to

guarantee that the two groups had common instruction with regard to all the content and linguistic areas except for the reading comprehension part.

The sessions were co-taught by two teachers, exchanging roles of teaching and writing observational notes to be kept in anecdotal records. They also guided the students to run and handle the IPPP by themselves. The students had the freedom to change the backgrounds and colors of the slides and text to suit their own tastes.

Duration of the IPPP instruction

The course lasted for (6) weeks in the 2nd semester of the academic year 2023-2024. The experimental group was instructed (12) sessions, about 30 minutes each. The control group had the same number of sessions being taught the conventional way in the same weeks.

4. Data Collection and Procedures

The current study was conducted following the procedures below:

- The pre reading comprehension test was administered to all the students.
- The students were equally and randomly assigned to a control group and an experimental group.
- The two groups received common, conventional instruction in all aspects of their English classes, except in regard with reading comprehension tasks when they were separated. The control group students continued their conventional learning, whereas the experimental group students learnt through the IPPP.
- Anecdotal records were written by teachers while they were teaching the IPPP.
- The post reading comprehension test was administered to the two groups.
- Findings of the pre/post tests were statistically compared and analyzed.
- Anecdotal records were qualitatively discussed.
- Recommendations and suggestions for further research were made.



5. Findings of the study

5.1. Testing the validity of the first hypothesis

The 1st hypothesis states that, “There is a statistically significant difference between the average ranks of the grades of students of the experimental and control groups in the post-application of the reading comprehension test in the total score and in the score of each sub-skill, in favor of the experimental group”. To verify the validity of this hypothesis, the researcher compared the average ranks of the scores of the experimental group members with the average ranks of the scores of the control group members in the post application of the reading comprehension test. The Mann - Whitney Test was used to detect the significance of the differences between the two groups. The following table shows the results reached in this regard:

Table (5): The significance of the differences between the average ranks of the scores of the control and experimental groups in the post application of the reading comprehension test (where n=14 and df=12)

skill	group	Number (N)	Mean Rank	Sum of Ranks	Z-value	Sig.	Rank biserial correlation (rrb)
General idea	Experiment	14	18.00	252.00	3.000	0.003	0.50
	Control	14	11.00	154.00			
Cause & effect	Experiment	14	18.50	259.00	3.098	0.002	0.57
	Control	14	10.50	147.00			
Guessing meanings of words	Experiment	14	20.25	283.50	3.852	0.000	0.82
	Control	14	8.75	122.50			
summarizing	Experiment	14	20.79	291.00	4.186	0.000	0.90
	Control	14	8.21	115.00			
Overall reading comprehension	Experiment	14	21.39	299.50	4.483	0.000	0.98
	Control	14	7.61	106.50			

As Table (5) shows, the significance level of differences between the average ranks of the scores of the experimental group members and the control group members in the post application of the reading comprehension test as a whole and in each skill is less than (0.01). This means that there is a statistically significant difference between the control and experimental groups in the post application of the reading comprehension test at the significance level of (0.01) in favor of the experimental group; and therefore, the first hypothesis is accepted.

The effect size of the proposed IPPP program on the experimental group was calculated according to Ezzat Abdel Hamid (2016, pp: 279-285)¹, who found that when using the Mann-Whitney Test to determine the significance of differences between the average rank scores of two independent groups, and when statistically significant differences are found, the strength of the relationship between the dependant and independent variables can be determined using the rank biserial correlation (r_{rb}) through the following equation:

$$r_{rb} = \frac{2(MR_1 - MR_2)}{(N_1 + N_2)}$$

MR_1 = the average rank of the 1st group (the experimental group)

MR_2 = the average rank of the 2nd group (the control group)

N_1 = the number of the 1st group members (the experimental group)

N_2 = the number of the 2nd group members (the control group)

r_{rb} can be interpreted as follows:

$r_{rb} < 0.4$ (weak effect size)

$0.4 \leq r_{rb} < 0.7$ (medium effect size)

$0.7 \leq r_{rb} < 0.9$ (large effect size)

$r_{rb} \geq 0.9$ (very large effect size)

On calculating the effect size (r_{rb}) in light of Table (5), it is found that the effect size in the two skills *general idea* and *cause and effect* is between 0.4 and 0.7, which indicates a medium effect size. In addition, the effect size of the skill *guessing meanings of words* is between 0.7 and 0.9, which indicates a large effect size. Finally, the effect size of the skill *summarizing*, as well as the *overall reading comprehension* is ≥ 0.9 , which indicates that their effect size is very large. This means that the proposed IPPP program has a large effect on the experimental group members' reading comprehension; thus, the study question, *What is the effect of using the IPPP on the 5th year primary stage students' reading comprehension?*, is answered.

5.2. Testing the validity of the second hypothesis

The second hypothesis states that, "There is a statistically significant difference between the average ranks of the grades of the experimental group students in the pre- and post-applications of the reading comprehension test in the total degree and in the degree of each sub-skill, in favor of the post-application". To verify this

¹. Ezzat Abdel Hamid Mohammed Hasan, (2016). Psychological and Educational Statistics using the SPSS 18 Program, Dar Al Fikr Al Arabi, Cairo.



hypothesis, the average rank scores of the experimental group members in reading comprehension as a whole and in each reading comprehension skill before and after teaching the IPPP program were compared. Wilcoxon Test was used to detect the significance of differences between the students' rank scores in the pre and post test applications. Table (6) shows the results.

Table (6): Significance of differences between the average rank scores of the experimental group in the pre and post applications of the reading comprehension test (n=14 and df = 13)

SKIL	Ranks	Number (N)	Mean Rank	Sum of Ranks	mean		Std. Deviation		Z - value	Sig.
					PRE	POST	PRE	POST		
General idea	Negative Ranks	0	0.00	0.00						
	Positive Ranks	12	6.50	78.00	١,٤٢	٩,٥٠	١,٨٢	٠,٣٣	3.464	0.001
	Ties	2	0.00	0.00						
Cause & effect	Positive Ranks	0	0.00	0.00						
	Negative Ranks	11	6.00	66.00	١,٤٢	٩,٤٥	١,٠٥	١,٣٤	3.317	0.001
	Ties	3	0.00	0.00						
Guessing meanings of words	Positive Ranks	0	0.00	0.00						
	Negative Ranks	14	7.50	105.00	٣,٥٨	٨,١٤	١,١٠	٠,٧٣	3.336	0.001
	Ties	0	0.00	0.00						
summarizin g	Positive Ranks	0	0.00	0.00						
	Negative Ranks	13	7.00	91.00	٣,٥٨	٨,٣٧	١,١٩	٠,٧٦	3.189	0.001
	Ties	11	0.00	0.00						
Overall reading comprehen sion	Positive Ranks	0	0.00	0.00						
	Negative Ranks	14	7.50	105.00	١٠	٣٥,٢٨	٣,٣١	١,١٧	3.315	0.001
	Ties	0	0.00	0.00						

As shown in Table (6), the average of rank scores of the experimental group students in the reading comprehension test post application (as a whole reading comprehension performance and in each reading comprehension separate skill) is larger than their average rank scores in the pre application of the test. This means that their reading comprehension performance became higher after using the

IPPP. In addition, the standard deviation in the post administration of the test is less than that of the pre administration, indicating a convergence in the levels of the students in the experimental group in reading comprehension skills after being taught using the IPPP.

According to Table (6), the following findings are concluded:

For the skill of *General idea*, there were 12 positive ranks, 2 tied ranks, and zero negative ranks. This indicates that the scores of 12 students improved in the post-application compared to the pre-application, while the scores of 2 students remained the same in both applications, and no students had decreased scores in the post-application.

For the skills of *Cause & Effect* and *Summarizing*, there were 11 positive ranks, 3 tied ranks, and zero negative ranks. This indicates that the scores of 11 students improved in the post-application compared to the pre-application, while the scores of 3 students remained the same in both applications, and no students had decreased scores in the post-application.

For the skills of *Guessing Meanings of Words*, as well as *the Overall Reading Comprehension*, there were 14 positive ranks, 0 tied ranks, and zero negative ranks. This indicates that the scores of all 14 students (the entire experimental group) improved in the post-application compared to the pre-application, with no students showing equal or decreased scores in the *Guessing meanings of words* skill and the *overall reading comprehension* performance across both applications.

The significance level (Sig.) for reading comprehension, both as an overall score and for sub-skills, is less than 0.01. This indicates that there are significant differences between the pre- and post-applications of the reading comprehension test, both for the overall score and for each sub-skill, at a significance level of 0.01. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted.

6. Discussion

6.1. Discussion of the statistical findings

The statistical analysis of the study findings which was clarified in the previous part showed that the first and second hypotheses of the study were verified, which means that the proposed IPPP program was effective in developing the participants' reading comprehension both overall and as separated skills. These findings may be attributed to the following reasons:



The ultimate merit of IPPP is that it can address the issue of monotony in EFL learning through dynamic content delivery. Unlike traditional lecturing or static PowerPoint presentations, IPPP can break up the routine by varying content delivery. This change sparks learners' enthusiasm, so they can be motivated to get involved in the learning process.

The interactive elements incorporated in IPPP free students from feeling frustrated or overwhelmed by the amount of new information, vocabulary and linguistic structures they have to handle at a time. Breaking up all this stuff into manageable pieces makes students feel comfortable learning without pressure.

IPPP touch upon several instructional strategies or techniques recommended by EFL researchers. First, these presentations support *paced learning* by which students are allowed to proceed in learning and internalize reading material at their own paces. Second, they utilize *gamification*, which makes the learning experience exciting and competitive. Third, they draw on *multisensory learning*, so they can cater to different learning styles, thus facilitating comprehension and retention. Fourth, *contextualization* of content that can be provided via contextual backgrounds or supplementary information that supports the reading material can help students better understand the text, the relationships between ideas and meanings of unfamiliar words out of context. Fifth, *customization and personalization* of display and interface features, or even slide images and visuals, give students the flexibility to be responsible for their learning. Sixth, *immediate feedback* provided to students through polls and quizzes in IPPP makes their learning process feel more rewarding and satisfying. Finally, *interactivity*, which is a core component of these presentations, and which can be enhanced through a myriad of features, keeps students motivated and engaged all the time.

The findings of the current study are in agreement with recent research based on the implications of the theory of multimedia learning. Examples include Cavanagh & Kiersch (2022) who argued that instructors should use slide-sharing programs, such as PowerPoint as one of the commonly available technologies, to create interactive features that can be embedded in online multimedia lessons, which reinforces comprehension of the reading material. Similarly, Mahdi (2022) designed an interactive multimedia environment based on PowerPoint presentations to develop EFL students' speaking and

presentation skills, which had a positive impact on their language learning. Gordani & Khajavi (2019) have also documented the effectiveness of multi-modal PowerPoint presentations in improving their EFL students' language comprehension both immediately and in the long run. They recommended designing the PowerPoint slides carefully to attain desirable outcomes.

6.2. Discussion of qualitative data: Reflections on some anecdotal records

This part is a qualitative discussion based on some anecdotal records of the experimental group students' behaviors during the application of IPPP activities.

Some anecdotal records of the experimental group students were alternately written by two teachers, and the following are some reflections that can be elicited from them:

- On the first day of implementing the IPPP program, the first observational note that was written was: "It is difficult to manage all the pupils. Everyone seems to be working on a different slide! No screen is like the other. I'm losing control!". Although the teacher here had the negative feeling that she was "losing control", her observation shows that learners were actually engaged in the IPPP that they started exploring it and working on it by themselves. They were enthusiastic enough to initiate their learning without waiting for the teacher's instructions. Once they saw the attractive elements on one slide, they went forward to look for other interesting points in the following slides, which suggests that IPPP can successfully be used to foster self-learning.

- Another observation was: "N didn't complete reading the second paragraph. She immediately followed the hyperlink to read more about unusual animals. She looked surprised and very interested that she spent a lot of time reading all the additional information in the external web page. She looked at all the photos and started telling her colleague about a strange insect she found at her home. She was describing the insect and said it was an unusual animal". This note clarifies how multimedia features in IPPP can help students connect content to their lives in an authentic way. Knowing that what they learn is not separated from what they live makes learners more engaged and eager to learn. Also, the fact that the girl followed different links to connect her to different sites and online pictures about unusual animals supports the teaching reading comprehension



model that calls for a multi-layered representation of a single text (List & Alexander, 2017, referred to in the review of literature on reading comprehension) to allow multiple text processing from multiple sources, which reinforces reading comprehension.

- Another observational note stated, “Something common today is that all learners played the sounds of the howler monkeys very often. They were laughing”. This note, again, touches on the idea of authenticity, and how sound effects can provide a vivid, authentic and lively learning experience.

- One note was, “The pupils all seemed surprised when they found their responses and their colleagues’ responses appearing on the screen the same time they were writing them. They tried to type faster so that their responses would appear first”. This note shows how the use of polls and interactive online quizzes can challenge students and arouse a sense of competition.

- Expanding on the previous point, the following observation can be considered: “A and M are arguing and shouting because each one of them wants to start playing the *scramble word game*”. Gamification adds fun to the learning situation, giving students the impression that they are not obliged to bother themselves learning items, but they are playing games as they do in their leisure time. By that, they learn implicitly, which enhances comprehension and retention. This note shows how games can be motivating to students.

- Another note was, “While reading the second paragraph today, S said to M, ‘Look, look! I’ve discovered something interesting here! You can click on this word, and it’s explained for you!’. M replied, ‘Oh, you don’t even need an external book to translate it into Arabic!’. This statement sheds light on an important side of students’ beliefs about reading comprehension, i.e., translating words into Arabic is important to understand the text. Considering the time and effort of doing so, they realized the easiness of the hyperlinked words which facilitate this task. As IPPP meets students’ expectations, it is appealing to them, so they willingly adopt it as a learning tool.

- The following observational note was written closer to the end of the IPPP program, “Some students are asking whether and when to start answering the quizzes at the end of the slides. They did so the last two sessions. Today I can see that S and N had already started answering the quiz before I even asked them to do so”. This note shows that quizzes, as a form of assessment, are no longer worrying or

disturbing to students that they take the initiative to answer them willingly. The primary stage students were reported to feel anxious and pressurized by the idea of having tests. But now, with the use of IPPP, they approach quizzes as a normal and integral procedure of daily instruction, which supports the idea of formative assessment as a part of the teaching and learning process, and not a final separate action at the end of a month or a semester. In this sense, IPPP was also successful in familiarizing students with e-assessments.

Similar anecdotal records were reported by the two teachers throughout the IPPP program. The ones analyzed above were selected as exemplars representing all the recorded notes. This analysis is qualitative evidence of the effectiveness of the IPPP program, which supports and enhances the statistical findings.

7. Conclusion

While the conventional chalk and talk method might be tedious for EFL primary stage students, IPPP can bring the content of reading comprehension to life. The quantitative and qualitative findings of the current study showed that the dynamic and vivid features of such presentations appealed to students' senses and positively affected their motivation for and comprehension of the reading comprehension tasks. The students could successfully identify general ideas of the text, use contextual clues to infer meanings of new vocabulary, demonstrate understanding of specific details that clarify cause and effect relationships between ideas, and gain enough understanding of main and sub ideas so that they can summarize a paragraph. These positive effects of IPPP can mainly be attributed to its interactivity which engages students, facilitates their cognitive processing of the text and gives them the impression that working on English reading tasks is smooth and enjoyable.

8. Recommendations

In light of the findings obtained, the researcher recommends the following:

- Interactive PowerPoint Presentations should be integrated into EFL instruction, since they have the potential to motivate EFL learners and provide interactive elements that enhance both linguistic content and skills.
- As traditional classrooms are giving way to smart classrooms, teachers should be trained, guided or advised to learn more about how



to design IPPP as an effective teaching tool that can facilitate their job and stimulate their students' interest.

- Learners should be encouraged to use IPPP independently to enhance their learning, and consequently, build their confidence and autonomy.

- Curriculum designers should consider the importance of interactive multimedia-based strategies and incorporate them into instructional and assessment activities.

9. Suggestions for further research

- Researchers may further investigate the effectiveness of IPPP in other EFL skills in the Egyptian classrooms, such as writing, speaking and listening.

- Further research may utilize IPPP and explore their effect at other educational stages.

- Researchers may study the impact of e-learning courses which are based on IPPP on EFL students' performance.

- Further research may investigate the effect of other interactive media applications or computer-assisted instruction on students' language development.

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