Journal of Applied Research in Science and Humanities

Improving Preparatory Stage Students' Reading Comprehension Skills through Computer–Based Language Learning (CBLL)

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Abstract

The current study aims to investigate the extent to which computer-based language learning can develop preparatory stage students' reading comprehension skills. The study adopted the pre-experimental one group pre-post administration design. The study was applied to a voluntary group (N = 31) from preparatory stage students in Saray El-Kobba Governmental school. Reading comprehension skills pre-posttest was administered to determine the participants' most needed comprehension skills. The sessions of the unit were developed based on students' most needed reading comprehension skills "skimming and scanning". The unit was administered to participants in a two-week practicum block following the blended learning model (online and on-site teaching). Paired t-test was used to measure the effect of the unit on the students' skimming and scanning skills. Results revealed that the unit was effective in developing students' skimming and scanning skills as there were statistically significant differences between the pre and post administrations of the test in favour of the post administration.

Keywords: *computer-based language learning; reading comprehension; skimming; scanning; EFL classroom; preparatory stage students.*

Introduction

Are learners able to understand a written text even if they are not able to read it? Naturally, no. Reading is an essential aspect of learning. It is a skill that some students pick up quickly and effortlessly, but certain students require more assistance with reading comprehension to be able to understand the text they are reading. Students who struggle to read each word in a sentence find it far more difficult to comprehend the full statement. As Slow, single-word reading causes poor reading comprehension and irritation (Terry, 2023). To read effectively and comprehensively, English as a Foreign Language (EFL) students need to be equipped with reading comprehension skills. As understanding is the aim of communication,

"Comprehension is considered as the essence of reading as it accounts for the process that supports effective extraction of meaning from a written passage" (Alghonaim, A. 2020). The ability to read and comprehend a text's and its subtext's meaning is known as reading comprehension. Understanding, interpreting, analyzing, and drawing conclusions from written material are all demonstrated through reading comprehension. Your degree of reading comprehension reflects several other crucial and in-demand abilities on the job. To help students who have difficulty understanding texts or what they read, they need to develop their literacy skills, such as decoding words, vocabulary acquisition, and reading fluency.

According to Andrew (2023), some individuals believe that reading is a simple skill to learn. Reading is a difficult procedure that requires a wide range of skills, such as decoding words, vocabulary acquisition, and reading fluency. When combined, these skills result in reading comprehension, or the ability to understand what has been read. The first skill is decoding words, which is an essential part of reading. Using this skill, students can sound out words they've heard before but never seen written down. Decoding depends on phonemic awareness, an early linguistic skill. Most students naturally acquire a wide range of phonological awareness through exposure to rhymes, books, songs, and cartoons. Additionally, it enables children to "play" with sounds at the syllable and word levels (Andrew, A. M. I. 2023). The precision and speed of reading without paying conscious attention to the mechanics of reading are known as reading fluency. It is also known as the capacity to read rapidly and accurately (Terry, 2023).

Vocabulary acquisition is an important part of the science of reading since it is essential for reading comprehension. As (Leon, 2023) stated, vocabulary in reading is the expanding set of words that readers need to understand complex texts.

To comprehend what they are reading, children must be able to understand the words in a text. Strong vocabulary is essential to this knowledge, and strong vocabulary fosters effective reading comprehension, whether from what they hear on the radio, television, or internet, or from what their friends and relatives say .

The best way to read quickly is by skimming and scanning. Scanning is a method through which we can extract basic information and important ideas, such as facts, events, or names. It involves quick reading, such as moving eyes over words or sentences to understand the general idea or to answer a question, and it may take about 5 to 10 minutes (Ways, M., 2022).

Skimming is an essential reading skill that focuses on a quick glance at ideas and concepts. Readers do not read every word or sentence, but only what is important to them. Skimming is like browsing a magazine, book, or map. Readers can discover pictures or read specific titles or prominent information. Through this technique, readers' brains comprehend and remember the given information in the text faster (Ways, M., 2022).

The reason why skimming and scanning are familiar to EFL learners in the Egyptian context is that they directly use them unconsciously while using social media, reading e-books, or surfing the internet for a specific piece of information. The reading strategies promoted throughout mastering skimming and scanning help students understand the basics, read long and complex passages, and understand the main idea and specific details of a given reading passage (Reza, R., 2021).

Summarizing is another reading skill that helps readers gather important information chunks from the text and put them in their own words. Summarizing is important because it facilitates reading and the ability to remember important events or information easily and makes the reader able to connect and organize ideas (Texas Educational Agency, 2002).

The process of summarization provides focus on the main points of the texts. It enhanced memory for texts and content, making it easier to learn how to read. Summarizing facilitates the learning process and creates foundations for correct knowledge and important concepts (Khoshsima, H. 2014).

Prediction is a method wherein readers use facts from textual content (which include headings, titles, pictures, and diagrams) and their personal, non-public studies to count on what comes next. A reader concerned with making predictions is cantered to the textual content at hand, continuously wondering beforehand and additionally refining, revising, and verifying his or her predictions. This method additionally enables college students to make connections among their previous expertise and textual content. Students may like to predict fictional stories more than realistic text, and students tend to learn to read through simple narration rather than real texts (Fries, J., 2011).

Readers are predicted to relate their existing experiences to new ways and facts from the text to understand what they read and its meaning. Before reading, they may have information about the writer to predict his writing style and the subject of the text. Through prediction, students can understand new events and predict what will happen in the text or the proofs that will be in the text, and this facilitates reading for students (Texas Educational Agency, 2002).

Computers have a critical and vital effect on education, especially in language, not only in imitating content but also in computer-based language learning (CBLL). CBLL converts language to the utility and benefits of modern studies and the innovation of technology, which gives language learners a chance to reconsider old ideas, proceed with modern studies, and avoid firm thoughts. This shows that CBLL continuously presents variation in the educational process (Beatty, K., 2013). There are three major additives in addition to CBLL: the learner, the instructor, and the computer. While they complement each other, each aspect has its own personal traits and tales of roles.

The computer: The benefits of computer generation are that it has given CALL customers several alternatives for selecting

hardware and software programs, and it is very important for the trainer to select software program applications suitable for his or her teaching situations. After the choice of software program application, it must be checked; if they are connected to the computer, then we should organize them. This shows that software and hardware programs should constantly come together to make CALL work.

The teacher-trainer usually has a major effect as a facilitator, and his major role is to observe the latest CALL activities, be aware of the kinds of CALL substances, and construct simple competencies to cope with CALL software programs that fit with college students, their desires, and their abilities.

The learner: they can understand how CALL works for his or her gaining knowledge of Jamieson and Chappelle (1988) talk about five learner variables that need to be taken into consideration when we judge the effectiveness of CALL, such as age, background, and cognitive abilities, because those aspects influence mastering techniques in CALL (Son, J., 2002).

Hundreds of pieces of virtual schooling equipment were created with the motive of teaching students how to depend on themselves, how to collaborate with others, and facilitating conversation among instructions. These tools are:

Socrative: designed by a collection of marketers obsessed with education Socrative is a device that lets instructors create physical activities and video games that the student can do on their mobile phone, laptop, or any device. As a result, these teachers can adjust the following classes.

Thing Link: This application lets educators make interactive snap shots with music, sounds, text, and photographs. These may be shared on different websites or on networks like Facebook and Twitter, and this application gives the opportunity for instructors to use different methods of learning to attract students' curiosity and increase their information.

Edmodo is an academic device; students and instructors can use it, and it is connected to a social network so instructors can make online groups for students to work with each other and provide academic materials to them. It also allows teachers to judge students' performance.

Animoto is a virtual device that lets you create extraordinary motion pictures in a quick time and from any cellular device to encourage students and enhance instructional lessons. It also permits instructors to create suitable materials for students to meet their needs and abilities.

Microsoft Team is another famous device, and it has numerous packages for instructors and learners. You may create meetings through this application; teachers can specify character notebooks for

students and offer them real-time feedback; and you, as a teacher, can use it to do quizzes without effort. It's a tremendous device that guarantees powerful training online (Chauhan, A., 2021, Jindal, N., 2023).

WhatsApp is a free messaging app for smartphones. It uses the internet to send messages, images, audio, or video, like text messaging services. Because it uses the internet, WhatsApp is much cheaper than traditional text messaging. You can also use WhatsApp on your desktop by downloading it for Mac or Windows. It's popular among teenagers for features like group chat, voice messages, and location sharing (Aideen, 2024).

WhatsApp is a free app owned by Meta (formerly Facebook). WhatsApp also supports location and photo sharing. The service is primarily used on mobile phones, requiring a mobile phone number for registration, but the platform can also be accessed through the computer's internet browser (Martin, R., 2023).

At its core, WhatsApp is simply a chat application for exchanging messages with friends, not much different from the built-in SMS on most mobile phones. However, WhatsApp aimed to replace the limitations of traditional carrier-based messaging services, such as SMS and MMS. SMS and, still, MMS, are stuck in the dark ages of technology with their 160-character limit and no support for anything beyond plain text. Its younger sibling, MMS, allows for exchanging small bits of media (Hollington, J., 2023).

WhatsApp benefits teachers and learners, as teachers use it to present a small topic to students. Because most students and teachers use WhatsApp, learning their lessons through it will be an easy tool. The WhatsApp application is free for everyone, easy to access, and facilitates communication between the teacher and student, as there are students who stay in places far from the teacher, and it makes it easy for students to access their lessons at any time. WhatsApp is not only an application for people to communicate with each other; it is also used for educational purposes and to strengthen students' skills and knowledge. WhatsApp enables teachers to easily submit amendments and evaluations by sending a message, voice, or video, and students can send their assignments through an image, voice, or any other method (Vikhe, A., 2023).

Through WhatsApp, they can run their lessons, achieve their educational goals, and help them, and this ensures that students are able to learn even if schools are closed. They can answer their homework at home under the supervision of their parents and submit it to the teacher. This increases the depth of learning and creates better results, easier learning, and greater knowledge. Teachers can provide lectures, videos, pictures, audio clips, corrections, and other methods to make the student able to continue the educational

process. WhatsApp enables the teacher to follow up on his students and explain to them individually, as there are students who are later than their friends in class, and there are students who are shy to talk to the teacher in class in front of the students, so this facilitates communication, creates self-confidence, and improves the educational process (Disha, 2023).

Zoom: Founded by former WebEx executive Eric Yuan in 2011 and officially launched in 2013, Zoom aims to simplify video conferencing. The platform provides video services for businesses, consumers, and educators, with its relatively simple setup (compared to competitors) propelling it to unicorn status in 2017 and an IPO in 2019.

When global work-from-home demands surged in March, Yuan stated that his company would support those affected by the pandemic. With the app's increasing popularity, Zoom found itself in unexpected places, becoming, for instance, the preferred platform for the UK government. (British Prime Minister Boris Johnson made history by holding the first-ever cabinet meeting via Zoom, although he was promptly criticized for sharing a screenshot of the meeting on Twitter, clearly displaying the meeting ID.) (Parnell, L., 2023).

Zoom's meeting features are designed to be easily accessible and intuitive. Hosts can mute or unmute participants, stop screen sharing, promote others to co-hosts, and rename attendees. Users can also zoom in or out for privacy when sharing individual desktop windows instead of the entire screen. For non-hosts, Zoom offers a wide range of sharing tools, including a whiteboard, a chat frame for group or individual messages, a "raise hand" option for silent feedback, and reactions for silent commentary using basic emoticons (Trueman, C., 2020).

In classroom reading sessions, students may have individual reading groups where the teacher works with multiple students on reading skills. In elementary school, each group may have a different reading level, and assignments may vary. Sometimes, a reading lesson is designed to suit the entire class.

Teaching through zooming in or out can be challenging as students may have different needs. However, teachers can do their best to represent reading instruction in the classroom through zooming. One of the biggest obstacles teachers may face is keeping children actively engaged.

Zoom-in reading lessons may focus on immersive activities and attempt to keep the lesson as visual as possible. For example, teachers can use educational cards or other visual cues to assist in teaching phonics or letter recognition (Gryffin, 2022).

ReadWorks is one of the best tools that manifest the features of CBLL; it is a free online source that provides a collection of reading materials and comprehension tools scientifically researched to help students and teachers achieve their goals.

ReadWorks consistently studies how different methods impact reading comprehension and applies this learning to its offerings. They have developed various types of reading, from article-a-Day presentations to step-reads, all designed to help students progress beyond their natural level. With plenty of resources available, it's beneficial for teachers to distribute the work, aiding students in finding their appropriate level. The website also includes assessment tools that allow teachers to work with and monitor students, enabling them to continue progressing at a suitable pace (Edwards, L., 2023).

Readworks enables students to read at a high level, which makes them able to develop reading skills through different content and different possibilities and enhances students' knowledge of reading strategies and words. Teachers are able to create educational classes on the website and have their students join the classes. The student can log in using a Google account through the class code that the teacher gives them, and the teacher can organize his students and organize reading that suits their age (Kharbach, M., 2023).

On ReadWorks, texts vary from fiction to non-fiction and range from passages to e-books. Teachers can customize readings for students and share them easily through links or class codes. They can also modify tasks and questions to align with standards, providing short-answer and multiple-choice options that can be automatically graded. Teachers can assess students, display highlights, provide immediate feedback, and track progress using the measurement dashboard.

ReadWorks is a comprehensive assignment and assessment tool with a teacher dashboard for monitoring student and group progress. When assigning work, teachers can filter texts by grade level, topic, content type, activity type, and vocabulary level. Content types include Step Reads, which offer simplified versions of original passages while retaining vocabulary and knowledge, making them accessible to students who may struggle with reading at that grade level.

Article-A-Day is another feature providing a daily 10-minute routine to significantly increase background knowledge, reading ability, and vocabulary for students. Question sets are helpful as they are text-based questions with clear and inferential types to help build a deeper level of understanding. Users can also access vocabulary helpers, text pairing, a book studies section, e-books with picture support, and student tools allowing text resizing, split-screen viewing, highlighting, and commenting (Edwards, L., 2023).

In order for students to benefit and develop their reading skills, they must read four or five texts each week and organize a specific time for reading each week. There are articles suitable for students and their ages and suitable for everyone, whether you are a proficient student or a student just beginning to read (Kharbach, M., 2023).

2. The Theoretical Framework

The theoretical underpinnings of the current study are connectivism and constructivism.

2.1. Connectivism

It is a relatively new way of learning in which students should integrate ideas, theories, and general knowledge in an effective way. It acknowledges that technology plays a significant role in education and that staying connected all the time allows us to make decisions about how we learn. Additionally, it encourages group discussion and participation, allowing for a variety of opinions and points of view when it comes to making decisions, solving problems, and interpreting data (Downes, S., 2024)

Connectivism encourages learning through individual channels, including blogs, social media, internet networks, and information databases (Downes, S., 2024). According to connectivism, learning involves more than just assimilating facts; rather, learning also includes accessing resources via outside networks. In connectivism, students are viewed as "nodes" within a network. A node is any object that may link to other things, such as a book, webpage, person, etc. The assumption that people learn by making connections, or "links," between various "nodes" of information forms the basis of connectivism. Knowledge is produced through this process of connection building and maintenance (Downes, S., 2024).

The current study represents the principles of connectivism for researchers used a free website called ReadWorks, which provides materials and research-based practices for varied reading education passages with a focus on comprehension. A variety of passages, including fiction and nonfiction, exercises, exams, and an online platform were available for researchers, which enables them to monitor the advancement of the study participants.

George Siemens established Connectivism Learning Theory by outlining his eight guiding principles (Siemens, G., & Downes, S., 2004). Connectivism indicates that technology is altering what, how, and where we learn by building on pre-existing principles. One of these principals says that a variety of perspectives is the foundation of learning and understanding. This indicates that multiple points of view through the internet and digital learning broaden and enhance our students' comprehension.

Learning is a connected process. We provide ourselves access to new knowledge, perspectives, and ideas that we might not otherwise have when we establish relationships with our co-workers. Non-human devices might be capable of learning. Students may digitally retain material in the form of videos, social media posts, or apps. In a similar vein, a community of learners might keep data in a forum or database. This study adopted connectivism in the classroom by using social media tools like WhatsApp groups, Zoom, and videos to share knowledge, engage in discussions, and share homework assignments. These can help increase class participation and open authentic discussion between learners and teachers. Sustaining relationships is essential to promoting lifelong learning. People come together through collaborative social contact, which also creates a long-term learning environment. Seeing links between thoughts, ideas, and fields is a fundamental skill.

2.2. Constructivism

Constructivism learning theory has its roots in the research conducted in the 20th century by Jean Piaget. He proposed that humans construct their own knowledge through assimilation processes (Cloke, H., 2022). According to the constructivism idea, students actively create knowledge rather than merely absorbing it. People create their own representations of the world and integrate new information into their prior knowledge when they observe it and think back on it. The process of incorporating new information into an already-existing schema is referred to as assimilation. The term "accommodation" describes the process of updating and developing a current schema with new knowledge (Baviskar, Hartle, & Whitney., 2024). Acknowledging the previous knowledge and experiences of learners is a cornerstone of constructivism. When students expand their own conceptual frameworks, they are better able to absorb new knowledge and ideas.

Constructivism's emphasis on student-centered learning is one of its main uses in education (Sarabia, R. C., 2023). So through discovery-based learning, researchers of the current study took on the role of facilitators and guided their students; this is instead of the traditional teacher-dominated method. The students took charge of their learning process when the researchers encouraged them to experiment and ask questions; this results in a greater understanding of the new skills.

Moreover, constructivism supports technology integration because it allows students to access large amounts of knowledge and resources, encouraging independent learning (Sarabia, R. C., 2023). While administering the intervention of the current study, researchers employed discussions, group work, and multimedia presentations to enhance the learning process.

In conclusion, the primary tenet of the theory is that learners "construct" their own understanding of subjects by drawing on prior information and experiences. As a result, their ability to recall information is based on how they personally interpret it. So that our prior experiences, abilities, and knowledge serve as the foundation upon which we might build new insights. Children expand on the knowledge they learned in nursery, kindergarten, or through informal real-world learning experiences when they enter school. Naturally, based on their upbringing or culture, they will draw their own conclusions. This implies that the norm will be learner-led activities, personalization, and open access to training materials. After all, there is a higher expectation that students will take responsibility for their education.

Moreover, constructivist learning theory is excellent for increasing students' motivation. They will feel more in control now because they have been given the freedom to manage their own education. The social constructivist approach, as previously said, places learning in a more cooperative framework. It is evident from many social constructivist models that student

collaboration is crucial. As a result, using collaborative tools in an online learning environment is highly advantageous (Cloke, H., 2022).

3.Methods of the study and Instruments

3.1. Participants and instruments

A total of 31 English as Foreign Language (EFL) preparatory stage students participated in this study. The participants were Egyptian girls from EFL learners with an age range of 11 to 14. The participation was voluntary and they had already enrolled in the practicum school (Saray Elkobba Preparatory school for girls). Participants' language level is pre-intermediate. Their first language is Arabic.

The hypothesis of the current study is that *"there would be a statistically significant difference between the mean scores of the study participants on the pre and post administration of the test in reading comprehension skills in favor of the post administration"*. To verify the study hypothesis, the same pre-posttest was used in skimming and scanning. The test comprised 16 questions divided into 4 questions for skimming and 9 questions for scanning.

3.2. Design and procedures

The study followed the pre-experimental one group pre-post administration design.
The same test that included 16 questions was administered before and after the intervention with the same group of students.

A short intervention of three sessions was administered for 16 days to the 32 students. Two sessions were made online and two sessions were made on-site. Each online session took 90 minutes and each physical session took two hours. All sessions covered the following reading comprehension skills:

- Skimming
- Scanning
- Making predictions
- Making Summary

4. Results of the study

Results of the current study are reported based on the study hypothesis. The hypothesis of this study is that "*there would be a statistically significant difference between the mean scores of the study participants on the pre and post administration of the test in reading comprehension skills in favor of the post administration". To test the validity of this hypothesis, a paired t-test was used to compare the participants' total mean scores on the pre-post administration of the test".*

Table (4.1): t-test results comparing the obtained data for overall pre-posttest of the study participants:

(**N** = 31), **Degree of Freedom** (df= 30)

Components	Mean		Std. Deviation		t- test value	Sig.	Effect size ($\eta^{2)}$
	Pre	Post	Pre	post			
Overall score of reading comprehension skills	**11.68**	**41.54**	**7.21**	**6.87**	**18.672**	**0.000**	**0.921**

Table (4.1) above indicates that the total mean scores of the study participants on the post-administration of the test (*M.*41.54, *SD.* 6.87) is higher than their total mean scores on the pre-administration of the test (*M.* 11.68, *SD.* 7.21).

Therefore, there is a statistically significant difference between the study participants' mean scores on the pre-posttest administration of the reading comprehension skills test in favour of the administration. Thus, the study hypothesis is proven statistically valid.

The following chart clarifies the difference between the total mean scores of the study participants on the pre and post-administration of the reading comprehension test.

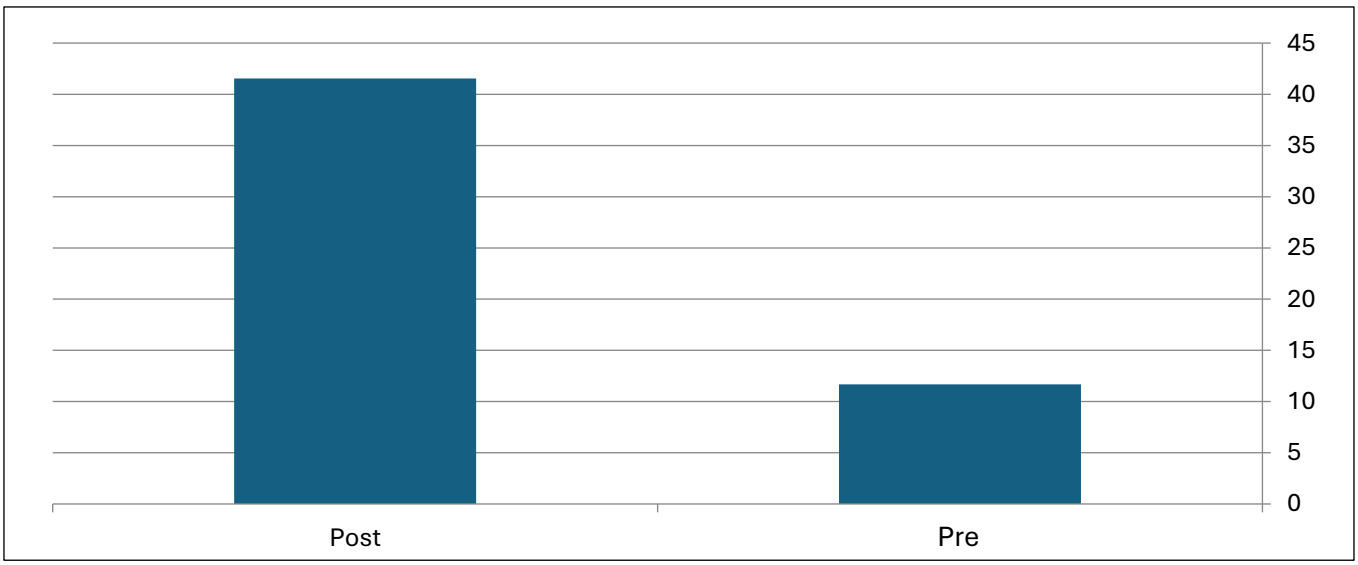

Figure (4.1.) the difference between the mean scores of the study participants on the pre and post-administration of the reading comprehension test

To measure the total effect size of the computer-based language learning unit developing the overall reading comprehension skills, Eta square (η2) value was calculated. The following equation was used:

Effect size (η2) = t2 / (t2 +df)

While
df = degree of freedom
t = t value

As clarified in the previous table, Eta square (η2) = 0.921 > 0.232. The value of (η2) indicates that the suggested computer-based language learning unit has a large effect on developing the overall reading comprehension skills of the preparatory stage students.

The following chart clarifies the difference between students' individual marks in the pre and post-administration of the reading comprehension test.

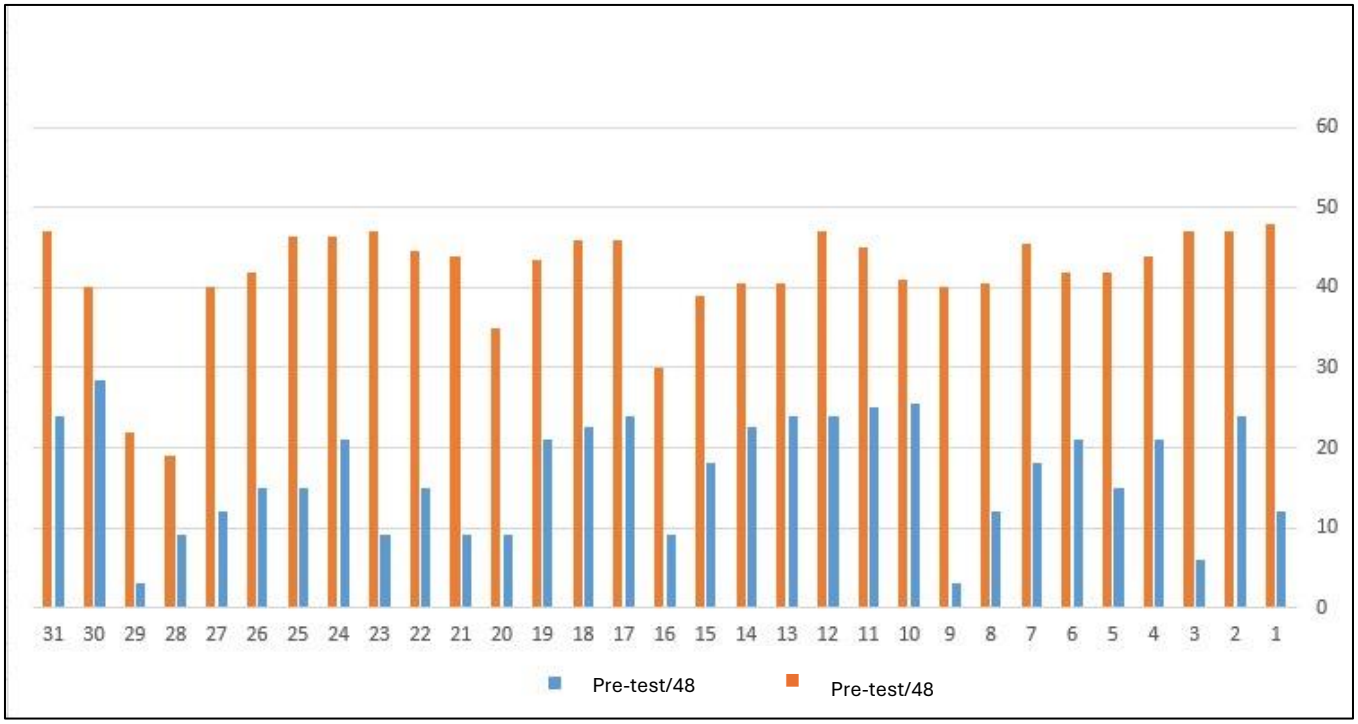

Figure (4.2) the difference between students' individual marks in the pre and post-administration of the reading comprehension test.

5. Interpretation of Results

The present study was conducted with the aim of investigating the effect of a unit based on computer-based language earning on developing some reading comprehension skills of the preparatory stage students.

Results of the present study showed that there is a statistically significant difference between the mean scores of the study participants on the pre and post administration of the test in overall reading comprehension skills in favor of the post administration. Thus, the computer-based language learning unit helped to develop the participants' reading comprehension skills. This might be attributed to the variety of computer-based language learning tools that catered for the study participants' differentiated language levels, needs, interests, and learning styles.

The study results might also be attributed the engaging learning environment that enabled the participants to express themselves freely in a communicative context that made them confident and open for participation using the target language. This result is consistent with many studies conducted by Yee and Abidin (2014).

6. Recommendations

For further research on improving preparatory stage students' reading comprehension skills, it is recommended that upcoming research explore:

- the effectiveness of different CBLL tools;
- the impact of personalized CBLL learning on the long-term retention of skills gained through CBLL interventions.
- the effectiveness of digital tools, and interactive learning platforms on reading comprehension skills.

7. Conclusions

The current study aimed at investigating the effectiveness of using computer-based language learning base developing preparatory stage students reading comprehension skills. To investigate the effectiveness of the unit administered, the researchers implemented several instruments to the study. As results indicated, the implemented unit was proven to be effective in developing preparatory stage students' reading comprehension skills. Drawing on the previously mentioned results, it can be concluded that computer-based language learning is proved effective in developing preparatory stage students reading comprehension skills. It is worth mentioning that the intervention can be more effective if applied for a longer period.

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