The Impact of Using Mentimeter in Enhancing Reading Comprehension Skills of Tenth-Grade Students in Palestine

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***Abstract*—This study aimed to investigate the impact of using Mentimeter on enhancing the reading comprehension skills of tenth-grade students in Palestine. The researcher used an experimental design and the random cluster sampling method, with two groups tested: experimental and control (40 students each). To collect data, a scale of 30 paragraphs was designed to measure students' reading comprehension skills based on Bloom's Taxonomy theory. It includes 30 paragraphs distributed over six dimensions, namely: retention, comprehension, application, analysis, evaluation, and creation. After the students answered the scale, the test was corrected, with each dimension given 10 points, and then the data was analyzed using t-test. The results showed that Mentimeter increased average reading comprehension scores by 28%. Therefore, investing the Mentimeter platform in teaching helps create an interactive educational environment within the classroom and, hence, contributes to enhancing the outcomes of teaching the Arabic language. The researcher recommended more initiatives to draw the attention of Palestinian educational policymakers to the importance of education digitization, particularly in language teaching. Moreover, the researcher recommended conducting further studies with a larger sample size and variations in educational contexts to strengthen the findings of this research.**

***Keywords*—Mentimeter platform, reading comprehension skills, Arabic language, teaching and learning, learners' competencies, enhancement of reading skills, effectiveness of Mentimeter**

I. Introduction

Influenced by the leapfrog on the technology trail and the advanced requirements of education, the learning environment experiences massive changes. This technological revolution has profoundly reconstructed the mechanisms applied to teaching [1–3]. For such an approach, technology must be employed as it addresses these real challenges which alter the teaching design and achieve transformation in the quality of education [4, 5].

According to Noordan *et al*. [6], the incorporation of digital technology generates new methods for educators to enhance education. Furthermore, the availability and integration of sufficient technological resources at schools enable the learning environment to accommodate these changes.

In follow-up, several tools have been built including Mentimeter, Quizlet, Plickers, Go Soap Box, and Poll Everywhere. These tools grant educators' easy access to resources, boosting students' engagement in the learning environments in real-time [7]. Moreover, these rich and diverse technological resources equip educators with the ability to choose the most adequate instruments for specific teaching situations that align with the student's capacities and the subject's nature [8]. In addition, the orientations and interests of the new generation are addressed and integrated in the use of technological tools [9].

Despite the variety of digital platforms and resources, Mentimeter is regarded as an effective educational platform. To that end, Wulan *et al.* [10–12] highlighted that Mentimeter improves student active learning. Research showed that this platform offers diverse functionalities, enabling educators to design engaging and stimulating learning activities. However, the utilization of Mentimeter enhances students' participation in synchronous learning settings. Furthermore, Mentimeter offers instantaneous feedback to learners, and educators can monitor students' comprehension of the content and adjust their instructional strategies and resources to fit students' needs, while learners can also observe their progress over their learning journey [13].

Sari [14] explained that students have positive attitudes towards Mentimeter as an effective instrument for augmenting their learning experiences, stimulating creativity, and facilitating an enjoyable and dynamic environment for writing skill development. Syabilla *et al*. [15] recognized that Word Cloud activity is highly beneficial for assessing students' writing abilities, enhancing classroom engagement, and elevating academic performance.

Ideally, the characteristics of Mentimeter enable educators to teach all subjects, including the Arabic language, as they help students overcome learning problems and increase language acquisition and proficiency levels [16]. Moreover, the Mentimeter platform offers opportunities for convenient access, temporal and spatial flexibility [17], and a variety of learning activities for improving language acquisition [18]. According to Pichardo *et al*. [13, 19] Mentimeter is as an educational instrument that enables educators to design attractive activities such as quizzes and word clouds. These help educators to follow up with the progress made by students concerning material comprehension and amend teaching methods and contents according to the needs of the students. These educational activities transform participation from the traditional approach such as hand-raising, selecting students to answer questions by the teachers themselves, or relying on volunteers click or tap here to enter text to confident participation [20, 21].

As a result of the ongoing shift toward online learning at most schools in Palestine, students seem to be hesitant to participate in different activities, either due to shyness, fear of mockery, or other social factors [22]. According to the Spiral of Silence Theory, all individuals have their perceptions and opinions, yet they do not express these opinions and tend to stay silent, especially if they feel that these opinions oppose

those held by their social peers [23]. As a solution, Mentimeter may stand as a supportive educational scaffold that encourages students to have more participation and engagement in educational contexts. Because it provides practicality, freedom, confidentiality, and security due to anonymity [14, 24].

Research demonstrated that technology-based Arabic language instruction has encountered copious challenges. These include inconsistent content delivery, an absence of social interaction in digital learning environments, student's preference for traditional teaching methods, and insufficient technological proficiency among Arabic language educators, and poor oral and written communication in Arabic courses in synchronous online learning environments [25–27].

Malkawi *et al*. [28, 29] stressed the need for administrative assistance for e-learning platform adoption. They noted that a lack of tools to assist students learn and inadequate stakeholder participation might hinder the utilization of e-learning tools. In the same vein, Al-Abdullatif and Alsubaie [30] found that learning Arabic language via online platforms encountered different obstacles such as lack of school support and encouragement, inadequate training and professional development for the educators, time limitations and technical and infrastructure problems faced when using online platforms.

Kamel and Hassan [31] highlighted a significant deficiency in existing literature regarding the application of technological instruments in Arabic language instruction relative to other languages. The data show that only 8% of publications on Arabic language learning were reviewed between 2012 and 2020, whereas 47%, 27%, and 18% respectively were invested in languages such as English, French, and Spanish. Based on that, Arabic is underrepresented in technical education research, highlighting the need for further examination. In the same context, Issa and Siddiek [32] reported that Arabic language does not live up to the level of Turkish, Hebrew, and Japanese languages in terms of their available digital content and online presence. As a result, there is a need to bridge the digital gap so that the Arabic language can maintain a satisfying online presence. In this study, the researcher attempted to bridge a substantial gap in the existing literature on Arabic language learning and the related technology tools, equipment, and online platforms.

In fact, the political, economic, and social conditions that negatively impact the educational process in Palestine necessitate the use of technological tools, as evidenced by Teacher Creativity Center [33] the closure of 563 schools in 2024, depriving nearly 620,000 students of their right to education. Given the value of Mentimeter, the current study sheds light on the case of the Palestinian context to overcome the regular closure of schools due to difficult circumstances. Also, it highlights the potential of the schools to engage students in online learning settings through the adaptation of the Mentimeter platform as a solution to reduce the learning loss and the lack of technology use in Arabic language teaching; and to transform learning into a dynamic force that increases the chance to master language skills in general and Arabic reading comprehension skills in particular.

To that end, the study aimed to examine the impact of using Mentimeter in teaching reading comprehension skills. Therefore, the study problem can be expressed in the following hypothesis:

There are no statistically significant differences at α (0.05) on enhancing the reading comprehension Skills of tenth-grade students in Palestine due to using Mentimeter.

II. Literature Review

While digital resources are vital for learning a language, they should be used to teach reading comprehension skills. Understanding a text is more than simply interpreting letters [34]. Reading comprehension is the cornerstone of reading skills and paramount for learning [35]. Furthermore, efficient reading necessitates decoding symbols, comprehending their meanings, and obtaining pertinent information from the text. Educators, at all levels, prefer to teach children various reading abilities [36].

Additionally, reading comprehension helps students learn and employ language skills. This set of skills contributes to advancing students' ability to solve problems, develop critical thinking skills, retain information longer, express their opinions clearly, manipulate language, engage with various art forms, and understand the complex connections between structure, outcomes, and subsequent events [37]. Considering these issues, Soracc *et al*. [38, 39] emphasized the significance of equipping students with strong reading comprehension skills and recommended employing active teaching techniques, as they help students overcome learning problems and increase language proficiency. So, technology and digital tools are increasingly seen as imperative to language acquisition [40].

Millmoref [41] suggested that audience response systems (ARS), such as Mentimeter, enabled educators to introduce copious questions to later receive immediate responses. Following this, a more interactive and engaging teaching environment was created. This guaranteed a two-way conversation rather than one-way communication concerning teaching [42]. ARS networking opportunities are provided by the features that Mentimeter offers, which allow educators to design interactive and dynamic learning experiences. In turn, this improves the standard of learning interactions and creates a more interactive and engaging learning climate. Furthermore, it provides educators with more opportunities to be engaged in meaningful and efficient interactions with their students and enhances the effectiveness of communication between educators and pupils in the learning process [43].

Different researchers debated the Mentimeter's role in language acquisition and learning. Wong and Yunus [44–46] illustrated Mentimeter's mechanism concerning enriching and improving students' writing vocabulary and performance. This platform boosted collaborative learning and built-up student confidence to complete their tasks alongside vocabulary. Mentimeter streamlines duties and activities, helping educators save time and meet their objectives [24]. Likewise, Mentimeter enhances input, provides more language practices, and facilitates interactive and task-oriented language acquisition [47]. According to Ranjbaran *et al*. [26], the digital platform has become significant for improving students' reading comprehension,

reading ability, and understanding. Samad and Munir [48] found in their study that using Mentimeter has improved in the areas of vocabulary, speaking, writing, listening, and pronunciation. As well, employing Mentimeter activities for evaluation purposes in all stages of the lesson motivates the students to answer. The environment encourages shy and hesitant students to participate making evaluation more fun where their participation is a crucial element in teaching reading comprehension skills and providing feedback. The platform presents real-time feedback and notes for both the students and educators. It also notifies the students of their progress in the learning process.

III. Materials and Methods

A. Research Design

The study adopted the true experimental method, which involves the manipulation of the independent variable to determine whether it induces changes in the dependent variable. This approach depends on systematic research techniques and random selection of participants to test a hypothesis [49].

B. Sample

A total of 80 male students participated in the study using Multistage cluster sampling being suitable for the study population as it involves 14 educational districts. One educational district was chosen for the study. The sample was randomly divided equally into two groups, namely experimental and control; both were chosen from one public school at Jenin governorate in Palestine.

C. Mentimeter Activities

The researcher designed Mentimeter activities that stemmed from the Arabic language textbook for the tenth grade. Mentimeter presents diverse assignments, including quizzes, word pulls, essay questions, multiple-choice and true/false, word clouds, summarization, and word order. The activities were allocated throughout three periods and disseminated to students through three links via the (e school Palestine) platform. Some of these activities were designed to be used at the beginning of the lesson to motivate students to engage in the lesson, to excite and to motivate them to use Mentimeter. Since this is a new experience for the students, an easy activity was chosen that includes multiple choice questions.

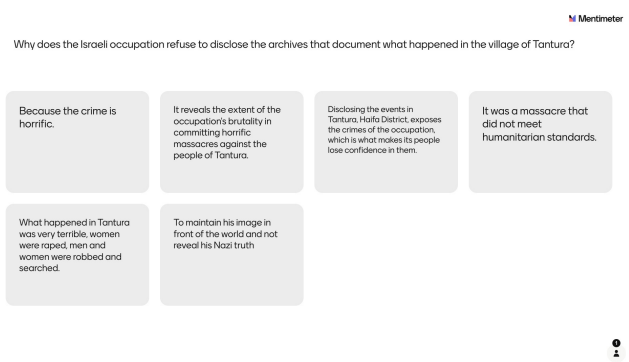

Fig. 1. Mentimeter's open-ended question.

Among the activities, an activity was designed with the aim of urging students to express their ideas freely and motivating them to discuss and dialogue between the students themselves and the educator as it includes open-ended and multiple-choice questions as presented in Figs. 1–2.

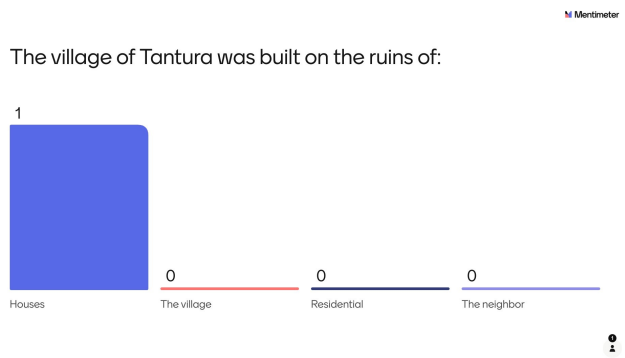

Fig. 2. Mentimeter's multiple choice question.

D. Data Collection

To collect the required data, the researcher designed a scale that encompassed (30) questions involving the different levels pertinent to reading comprehension: Literal level, interpretive level, critical level and creative level [35]. The scale was developed according to Bloom's Taxonomy theory [50]. It involved six dimensions, namely, retention, comprehension, application, analysis, evaluation, and creation. For the sake of the validity and reliability of the scale, it must focus on reading comprehension without expanding into the areas of common grammar and linguistic issues [51]. The data were gathered in the second semester of the academic year (2023–2024). Participants were provided with a consent form that ensured the privacy and confidentiality of their answers. Moreover, to test the hypothesis of the study, students were assessed both before and after applying Mentimeter with the use of the same set of questions and materials. In the end, questions answered were then marked by the schoolteacher for each student across all 6 dimensions. After collecting the data, the researcher analyzed the students' marks using Statistical Software for the Social Sciences (SPSS). Subsequently, the independent t-tests and paired two-sample t-tests were utilized to measure the impact of Mentimeter in improving reading comprehension.

E. Reliability

The internal consistency of the total scale was assessed using Cronbach's Alpha to evaluate the reliability of the measurement tool. The analysis revealed that Cronbach's Alpha coefficient is (0.90) for the 30-paragraph scale, indicating a high level of internal consistency.

F. Validity

To verify the validity of the Arabic reading comprehension test, the researcher follows the steps listed below: First, passages that serve the course's learning objectives were selected. Second, the researcher created questions that accurately assess various comprehension levels while avoiding confusion and ensuring that the test measures reading comprehension rather than just committing to test-taking strategies, ranging from basic recall to higher-order thinking skills such as inference, analysis, and

evaluation. Finally, two qualified Arabic language educators reviewed the test to confirm its validity.

G. Data Analysis

All data was entered into the SPSS version 26 sheet. Then, descriptive statistics were performed using frequencies and percentages for categorical variables and mean and standard deviation for continuous numerical variables. The overall score was summated from different questions. A comparison between different groups was established using a t-test. A comparison was made between the two groups twice, the first before applying Mentimeter as an intervention and then after its application. Individual comparisons were drawn between the intervention and control groups, as well as between the same group before and after applying the intervention. P values were considered significant if they were less than 0.05.

IV. Result

This study aimed to discover the impact of applying Mentimeter in teaching reading comprehension among 10th-grade students in the Arabic language. For this purpose, a cohort of 80 students were enrolled in the study. They were randomly assigned to one of the two groups, designated as experimental or control groups. In this section, the findings are articulated and examined.

Prior to the study period, both groups underwent an assessment concerning six distinct variables using the study evaluation instrument.

A comparative analysis between the two groups regarding the six outcomes was conducted using an independent student T-Test as presented in Table 1 below:

Table 1. Differences between mean scores of using Mentimeter between groups at pre-test

Dimensions of the test	Experimental		Control		t-test	p. value
	M	SD	M	SD		
Memorization	5.1	2.4	5.2	2.5	0.091	0.928
Comprehension	5.5	2.2	5.4	2.0	−0.105	0.917
Application	5.6	2.0	5.6	2.2	0.107	0.915
Analysis	5.5	2.1	5.5	2.3	0.000	1.000
Evaluation	5.1	2.2	5.2	2.3	0.601	0.549
Creation	5.7	2.2	5.4	2.4	−0.630	0.531

An independent sample t-test was conducted to examine whether there were significant differences in mean scores using Mentimeter across various dimensions of pre-test between both groups. The results in Table 1 indicated no statistically significant differences in pre-memorization, pre-comprehension, pre-application, pre-analysis, pre-evaluation, or pre-creation ($p > 0.05$). Additionally, the total score analysis also revealed no significant difference between both groups ($p > 0.05$). Thus, it can be concluded that both groups are homogenous.

Table 2. Differences between mean scores of using Mentimeter among the experimental group at pre and post-test

Dimensions of the test	Pre-test		Post-test		t-test	p. value
	M	SD	M	SD		
Memorization	5.1	2.4	6.1	1.9	6.24	0.001**
Comprehension	5.5	2.1	6.3	1.7	5.83	0.001**
Application	5.6	2.1	6.3	1.8	4.47	0.001**
Analysis	5.5	2.2	6.3	2.0	5.70	0.001**
Evaluation	5.2	2.2	6.2	1.9	6.38	0.001**
Evaluation	5.2	2.2	6.2	1.9	6.38	0.001**
Creation	5.5	2.3	6.4	1.9	5.37	0.001**
Total	32.4	11.6	37.7	10.1	8.31	0.001**

**P value significant at 0.05

Table 2 above shows the results of the paired two-sample t-test that was conducted to assess whether there were statistically significant differences in reading comprehension improvement among 10th-grade students because of employing Mentimeter. The results showed a statistically significant difference between the means of the pre-test and post-test scores across all dimensions, as well as the total score ($p < 0.05$). Specifically, the pre-test scores ($M = 32.4$, $SD = 11.6$) were significantly lower than the post-test scores ($M = 37.7$, $SD = 10.1$), suggesting that the use of Mentimeter led to a significant improvement (t (39) = 8.311, $p < 0.05$).

Table 3. Differences between mean scores of the 6 study aspects among the two groups after the study period

Dimensions of the test	Experimental		Control		p. value
	M	SD	M	SD	
Memorization	6.9	1.61	5.35	1.93	0.000**
Comprehension	6.98	1.39	5.7	1.73	0.000**
Application	6.98	1.49	5.65	1.83	0.001**
Analysis	6.93	1.75	5.73	2.02	0.006**
Evaluation	6.85	1.61	5.58	2.01	0.002**
Creation	6.93	1.70	5.83	2.00	0.010**

**P value significant at 0.05

A paired t-test was conducted to assess the difference between the two groups after the study period. The study results show a significant difference between the two groups after the study period (p-value<0.005). the averages were much higher in the group of intervention in-compared to the control group. (Table 3).

V. Discussion

Before beginning the experimental cycle, the student's readiness and willingness to interact with Mentimeter were assessed and validated. This is an essential component for integration into technical and technological operations. According to the Technology Acceptance Model, individuals' acceptance of technology is influenced by perceived usefulness, ease of use, and existing desire [52], especially because this experiment was new and unique for both the students and the teachers. Additionally, teachers must carefully adjust materials to students' possible unfamiliarity with technology, which might lead to difficulties and misunderstandings [21]. Educators may have challenges in creating engaging presentations, communicating results, and applying Mentimeter presentations into synchronous settings [13].

Nevertheless, the results of this study stressed that employing Mentimeter has improved the reading comprehension skills of the students in the Arabic language virtual classroom environment by posing specialized short questions as a preliminary activity to challenge and test the previous knowledge of the students' reading skills. Furthermore, the results of the present study are aligned with [19, 53], which found that employing Mentimeter constitutes an active, appealing, and enjoyable learning environment and enhances the engagement and participation of the students in the learning activity during the lesson. In the same vein, the current study's results agree with previous studies that illustrated the use of the Mentimeter platform as an effective method to encourage students to participate in learning the language through articulating and expressing their thoughts and opinions in an unfettered manner and without fear or worry, which is owed to anonymity upon participation. This is also emphasized by the study of Vallely *et al*. [22, 44, 45, 54], which found that Mentimeter is an interactive tool that supports learning activities and is often used as an elicitation, brainstorming, and lesson clarification activity.

Based on the results of this study, the researcher emphasized that Mentimeter supports learning activities and is mostly used as an online platform for deduction, brainstorming, and lesson clarification and presentation. This is resemblant to Jackly and Lestariningsih [55], which found that Mentimeter's features make the platform an effective method for teaching Arabic language skills when considering the lack of interactive learning environments and the standing fear and hesitation among students. These activities contributed to developing the students' reading comprehension skills. This was indicated by the students' answers to the reading comprehension scale, which showed progress in these skills at all levels. This result is consistent with [56], which revealed that Mentimeter has a significant impact on the vocabulary development of students.

According to the results, the researcher stressed that using Mentimeter in teaching reading comprehension skills provides an opportunity for educators to design interactive activities that drive students' engagement and collaboration with consideration of their profiles and abilities. Like study [47], which indicates that Mentimeter, with its attractive activities that enhance learning interaction for the students, enables educators to create these interactive engagements. This experimental study used a Mentimeter to create an active interactive environment that helped students improve their reading comprehension skills through disagreement, discussion, and idea deduction. Thus, this opportunity allowed students to practice the language outside of standard methods of learning. Fariwan *et al*. [57–59] demonstrated that using traditional methods to teach Arabic is a major factor contributing to students' lack of language skills improvement.

This goes in line with [26] concerning learning the Arabic language via technology, which furnishes many opportunities for the students, which in turn facilitates the learning process, boosts students' motivation to learn the Arabic language, and develops their linguistic skills. Thus, using Mentimeter in teaching Arabic reading comprehension skills in this study changed the learning environment to active and rich, which was positively reflected in terms of increasing the students' diverse linguistic abilities. This was confirmed by Jackly *et al*. [7, 19, 55], which explained that Mentimeter enhances The student's capacity to master language vocabulary and express their views on an online forum, thus aiding in the advancement of linguistic accomplishment.

Moreover, the results of the present study demonstrated that the Mentimeter platform enables educators to enrich the content with educational activities that exceed the limit of the schoolbook, which helps develop reading comprehension skills, increase linguistic aptitude, and elevate the language level of the students. These results matched the findings of [5], which concluded that learning the subject using Mentimeter could increase students' interest in learning new idiomatic expressions and encourage them to learn the meaning and verbal expressions, although some of them require longer time to understand one meaning.

Moreover, using Mentimeter in the target language lessons in this study enabled the teacher to manage the formative assessment in the class effectively, where the teacher was able to diversify the assessment. This result is like [1, 15]; formative assessment via Mentimeter enabled interactive presentations through varied questioning styles, for instance, open-ended questions, …, etc. And this encouraged students to answer questions without the usual anxiety or hesitation in such cases. This result was shown by a study [10, 44] that Mentimeter permitted students to express their views on an online forum, thus aiding in the advancement of linguistic accomplishment. This enabled the teacher to identify the students' strengths and weaknesses. This result is consistent with study [19], which concluded that data of formative assessment can be recorded and analyzed deeply through Mentimeter, enabling it to bridge the gaps and address weaknesses.

Based on the experimental study results, students were encouraged to engage and participate actively, resulting in a development in their reading comprehension skills. Such a result meets the findings of the study by [47], which concluded that Mentimeter assists educators in tailoring educational activities to the needs of the students and leads to an increase in their comprehension of language activities and meaningful interaction.

VI. Conclusion

Considering the findings of the study, the researcher

concluded that it is critical to make a shift toward using Mentimeter platforms in teaching Arabic language reading skills. Because these platforms free the language from the constraints of traditional teaching methods, using the Mentimeter platform in the classroom helps create an interactive learning environment, which adds to improved teaching outcomes.

Moreover, the researcher summarized that Mentimeter can be used to create different levels of difficulty for reading comprehension questions, allowing educators to meet the diverse needs of students in the classroom. Also, Mentimeter allows educators to gather real-time data on student understanding. This data can be used to identify areas where students are struggling and tailor instruction accordingly.

In addition, adopting these platforms effectively entails restructuring the education industry, especially those that are correlated with integrating technology in education, especially teaching the Arabic language. Also, the researcher summarized that ensuring equitable access to the Mentimeter platform and reliable internet connectivity for all students is crucial for successful implementation. Therefore, it is essential to consider the cultural context of Palestinian classrooms and ensure that the use of Mentimeter technology aligns with local values, norms, and availability.

Based on the results, the researcher recommended sufficient and adequate training for Arabic language educators is needed to effectively integrate Mentimeter into their teaching practices and utilize the platform's features effectively.

Finally, the researcher recommended policymakers conduct pilot programs in schools to evaluate the effectiveness of Mentimeter in improving Arabic reading comprehension. Also, the researcher recommended the use of Mentimeter in the Arabic language curriculum and allocating resources for teacher training, technology infrastructure, and providing ongoing support for educators using Mentimeter.

Moreover, the researcher recommended conducting further studies with a larger sample size and variations in educational contexts to strengthen the findings of this research.

Conflict of Interest

The author declares no conflict of interest.

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