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Integrating Mentimeter to Boost Students' Motivation, Autonomy, and Achievement

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Abstract

This study investigated the impact of a student response system, Mentimeter, on students' motivation, autonomy and language achievement in the second language (L2) classroom. A group of L2 learners at a public university in Oman were placed in experimental and control groups, and the use of Mentimeter was evaluated through task participation and L2 assessment performance. In this mixed-methods study, exam scores on all four skills were used to evaluate students' progress and overall achievement, while surveys were used to evaluate the motivation and autonomy of students. A number of volunteers also shared their perspectives on using this digital platform through semi-structured interviews. Findings indicated that students perceived a high level of motivation and autonomy in using Mentimeter, while their examination outcomes did not reveal a statistically significant difference between the two groups' mean scores. The results revealed that integrating Mentimeter helped to overcome demotivation in the classroom, while it did not contribute significantly to their overall scores. Further studies should be carried out to observe whether different factors such as duration of the intervention, assessment of specific linguistic knowledge or sample size may yield different outcomes. Implications can be constructive for teachers to develop more interactive lessons and keep students engaged while learning.

***Keywords*:** autonomy; interactive learning; Mentimeter; motivation; second language (L2); technology integration

Introduction

The digital advancements of the 21st century have forced education systems worldwide to redesign how knowledge is delivered toward methods and strategies in which digital tools are the key characters. In higher education, the main precedence has been manifested in implementing various technology-enhanced platforms to teach synchronously or asynchronously (Fuchs, 2021). At the same time, attention towards the emphasis on interactionist approaches to second language acquisition has changed the way educators design their lessons. Interactionist, task-based research has recently

examined the potential effects of negotiation of meaning on L2 vocabulary development and the role of pushed output production within the negotiation process. Within the field of Computer-Mediated Communication (CMC), it is also considered that successful implementation of computer-based, interactive, communicative tasks can yield numerous benefits for L2 learners (Blake, 2000; Farahmand & Kowsary, 2016; Fuente, 2003; Loewen & Sato, 2019; Mohin et al., 2022). According to Ellis (1999), interaction is usually referred to as "the interpersonal activity that arises during face-to-face communication; however, it can also refer to the intrapersonal activity involved in mental processing", but in CALL, interpersonal interaction also takes place electronically over a computer network, not only in face-to-face conversation (Chapelle, 2006). During this transition to hybrid forms of instruction, it has been critical to maintain student interaction while reacting to student responses, providing feedback, and attempting to curb dropouts (Dalipi et al., 2017; Mayhew, 2019; Pichardo et al., 2021). Feedback and assessment are used to track student progress, manage learning pace, and assess instructional methods (Nicol & Macfarlane, 2006). Recently formative assessment is becoming the focus of attention as the primary purpose of assessment is to support high-quality learning (Chappuis & Chappuis, 2007).

In the second language classroom, when the teacher wants to gauge students' understanding of a topic or subject matter, issues arise related to students' lack of confidence, lack of anonymity, lack of participation in responding, copying each other's ideas, and loss of responses after the task is done. This is particularly the case in Oman's EFL context, where foundation students are immediately placed in a setting where they have to begin using their L2 skills, a task which they have had no prior engagment with. To prevent these shortcomings, teachers turn towards a number of student response systems have been developed to help learners with adapting to and overcoming challenges of the process. One effective platform to deliver an interactive and inclusive class is the easily accessible web-based tool, Mentimeter (*https://www.mentimeter.com*). This platform has the potential to not only enhance student participation but also construct a collaborative and engaging learning environment. It is also worth mentioning that Mentimeter helps teachers monitor students' understanding and interaction and provide immediate feedback accordingly (Elliott, 2003; Pichardo et al., 2021). Mentimeter provides a means to carry out formative assessments through quizzes and polls throughout the semester. In a study conducted by Mohin et al. (2022), a Mentimeter formative assessment model was developed, which could be implemented as a good practice in higher education. Further, Moorhouse and Kohnke (2020) found that Mentimeter offers greater features and potentials that are applicable to virtual classrooms, such as increasing student participation. Through its variety of item types, this platform allows the teacher to gauge students' learning while keeping them motivated at the same time.

Hence, in this study, we attempted to investigate to what extent the integration of Mentimeter in an English course could impact motivation, autonomy and overall achievement among Omani students. The reason Mentimeter was chosen among similar digital platforms such as Kahoot, Socrative, Wooclap and Quizizz was that the teachers participating in this study believed it to be more engaging for students and more productive in providing real-time feedback, while numerous studies also found it advantageous and more dynamic (Ahshan, 2021; Gogbulut, 2020; Jovic et al., 2022; Pichardo et al., 2021; Quiroz Canlas et al., 2020).

Theoretical Framework

This study was built on theoretical foundations comprising the Interactionist Approach to Second Language Acquisition and Universal Design for Learning (UDL). Following the interactionist theory, Chapelle (1998) pinpointed some specific aspects of instructional design that could theoretically be incorporated into software design to support the kinds of interactions that language learners could benefit from. She proposed that in instructional design, the main linguistic features must be dominant, there should be a possibility for modifying the linguistic input, opportunities for comprehensible input and error correction be provided, and the learner should have the opportunity to participate in the L2 tasks. The underlying motivating principles pave the way for instructional design, as put forth by Chapelle (2006), and as observed in the integration of digital technologies in the classroom (Dahal et al., 2022; Hafner & Miller, 2011; Tsai, 2019).

From another stance, the notion of UDL, attributed initially to David Rose, Anne Meyer and their co-workers at the Center for Applied Special Technology (CAST) in 1999, follows the concept of universal design for learning as a means to focus research, development, and educational practice on becoming aware of diversity and applying technology to facilitate learning. Rose and Meyer (2002) propose that the fundamental concept of UDL is grounded in revealing insights about brain development, learning, and digital media. They observed the misconception between a growing diversity in student populations and culture and a curriculum known as "one-size-fits-all" to hinder the process of learning and academic achievement. This philosophy encompasses a series of principles, including multiple means of representation to help learners acquire information and knowledge, various means of expression so that learners can have alternatives to demonstrate what they know, and multiple ways to engage learners to understand their interests, create a challenging environment, and motivate them to learn (Edyburn, 2005). As a theoretical-practical model, UDL offers learning opportunities to learners of diverse backgrounds by introducing changes to knowledge presentation (Pichardo et al., 2021). Students should be provided with various options to express and communicate ideas and different forms of engagement to attract attention, reduce feelings of insecurity and provide effective feedback, all observed as cases needing greater attention in the Omani context.

Literature Review

The new generation of digital natives is growing with technology, and it is essential to provide learning environments that are technology-based, engaging and motivating to fulfill their changing needs. For this means, we turn toward the digital platform Mentimeter, as an online student response system that emphasizes collaborative learning and enhances interaction in the classroom (Mayhew et al., 2020; Mohin et al., 2022; Patterson et al., 2020; Pichardo et al., 2021). Educators started using this platform in 2014 as it facilitates interactive learning for teachers and learners. Students can easily access the specific exercise pages on this platform only by having an internet connection

and entering a six-digit number. Emma (2018) believes that students are advantaged by using Mentimeter to engage in real-time active learning and receive instant feedback on the outcomes. It also improves collaborative learning by enabling the learners to post their ideas on the same page. Moreover, it helps those students with lower proficiency or even lack of ideas to refer to their peers' posted responses to generate and trigger new ideas. Crump & Sparks (2018) assert that this platform improves the quality of learning among learners by encouraging interaction and discussion from even the most introverted students.

While numerous recent studies show the growing significance of enhancing student motivation and autonomy in the language classroom (Buckingham et al., 2023; Darvin & Norton, 2023; Paradowski & Jelinska, 2023; Yu et al, 2023), there still remains a gap in empirical research on enhancing motivation and autonomy in second language classrooms in the Middle East region. Enhancing student engagement in the classroom is quite challenging on the teacher's part since he/she has to understand the context of learning as it is transitioning continuously while also considering various pedagogical theories. Despite recent modernization in Arab countries such as Oman, they are still known to have a conservative culture. Arab people openly embrace technological advancement while still holding firm to fundamental religious teachings. Therefore, it is only normal to see females seldom talk in class or refrain from expressing their opinion in front of their male peers. Another factor that plays an active role in participation levels during class discussions is the language barrier, which results in a lack of confidence, shyness, and a low rate of engagement in class activities (Ranjbaran et al., 2022). One of the key features of Mentimeter is that it allows students to give anonymous responses, which significantly elevates student participation. Results of several studies (Langley et al., 2021; Little, 2016; Musliha & Purnawarman, 2020) indicated that using Mentimeter to elicit students' responses in formative assessment helped to overcome the students' fear of giving responses.

Zhiwei (2019) shared his experience with the use of digital technology in classroom teaching to deter students from being distracted in using their mobile phones during class. Instead, the same was used to engage students in classroom discussions. He found out that using game-oriented applications like Kahoot and Mentimeter makes learning fun, engaging, and individualized for learners, while pointing out that the latter provides better features when it comes to providing various ways in collecting and performing in-depth numerical analyses of students' responses. This approach serves as a platform for the informal evaluation of students' learning and enables the lecturer to reflect critically on his/her teaching methods. According to Kuritz et al. (2020), the way Mentimeter rates and provides points on responses based on "accuracy" and "speed" fosters competition among students, thus making them engaged in the class. In other studies, it was found that Mentimeter has the potential to maintain students' attention in the classroom and enhance engagement, motivation, and peer learning (Chinaza, 2020; Hill, 2020; Prud'homme-Généreux, 2016; Skoyles & Bloxsidge, 2017).

In an action research on the effect of the Mentimeter on students' writing vocabulary carried out by Wong and Yunus (2020), results revealed the positive feedback from students and Mentimeter proved to be an effective platform to boost students' vocabulary knowledge in writing. In another study done by Ahmad & Subekti (2021), students' cognitive abilities and responses to problem based learning using web-based applications were tested and the results revealed that they had a positive attitude towards

learning statistics, their enthusiasm in their studies improved and their understanding of basic concepts in statistics boosted. Lapshova et al. (2021) studied the use of Mentimeter in surveying remotely and discovered that the use of Mentimeter could improve the learning environment and students' professional competence. Samad & Munir (2022) discovered that the users' viewpoint on the application of Mentimeter in learning English can be fruitful in improving speaking, vocabulary and participation in classroom activities. Chotimah & Cahyani (2023), in a study on the effect of Mentimeter on students' perception and vocabulary learning, discovered that their students developed a positive attitude towards the use of the application as well as benefiting from an improvement in descriptive vocabulary used in their writing. Pratama (2021) studied students' perceptions towards the application of Mentimeter and Google Classroom learning media. The results stated that their listening skill improved substantially using Mentimeter compared to Google Classroom.

Mayhew et al. (2020) shared their findings on student satisfaction when using Mentimeter and stated that it boosts enjoyment, enhances students' voice, and facilitates student learning. From the teachers' perspective, some benefits include the inclusivity of Mentimeter, that is, giving a chance to students who are less likely to participate due to other factors such as culture, gender, and disability (in line with UDL), higher attendance rates, improved class management, and real-time feedback. Similarly, Sari (2021) found students' positive attitude towards Mentimeter to be fun and amusing, praising its attractiveness (considering presentation style, different slide types and competitiveness), practicality (as it is paperless, simple to use and the class is not noisy), and anonymity (freely responding without fear of being judged. While most views on the use of this platform were positive, a low percentage (about 4%) reported not liking Mentimeter due to challenges such as Internet connectivity problems, waste of time, slow to setup, and the mere fact that they did not like using technology (Mayhew et al., 2020).

In a scoping review on integrating Mentimeter in the educational context, Ranjbaran et al. (2023) found that its many advantages greatly outweigh its limitations for both students and teachers. These merits expand from the adoption of an active student-centered pedagogy, allowing participation from a diverse audience with different backgrounds and capacities, anonymous elicitation of student responses, engaging students' active participation in an otherwise tedious, lecture-based class, enhancing student motivation, and providing immediate feedback of the learning outcomes.

Research Questions

The current study builds on the gaps identified in the context of Oman, such as lack of student engagement in the language classroom, lack of motivation, and low level of participation due to language and cultural barriers, in an attempt to address the following questions:

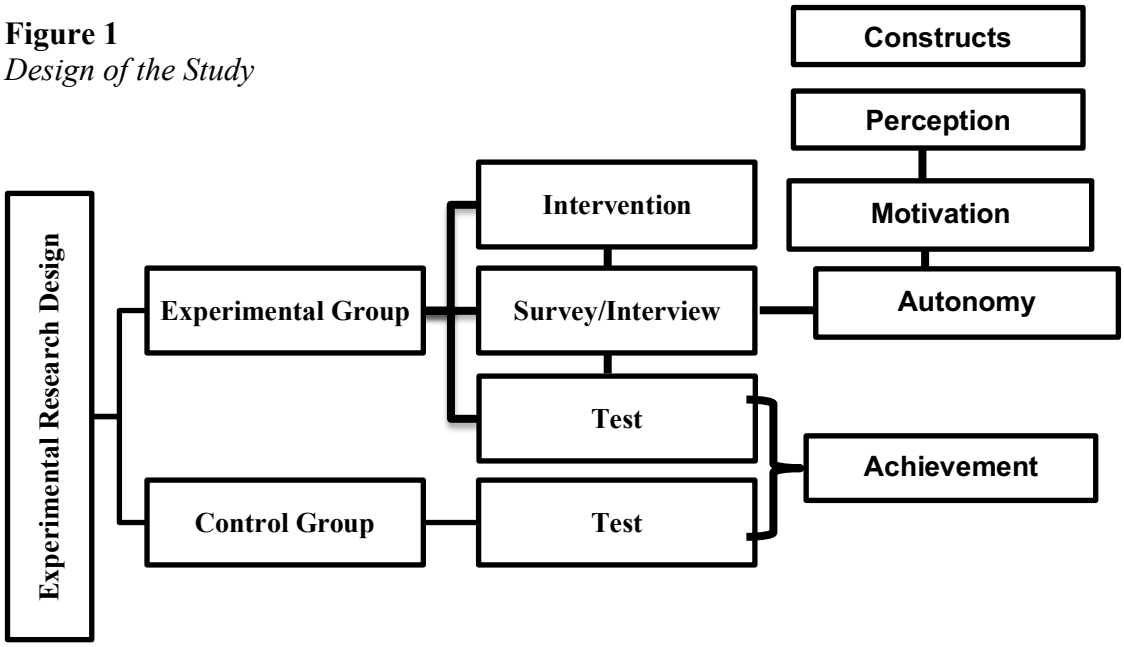
1. To what extent does the integration of Mentimeter affect student motivation?
2. To what extent does the integration of Mentimeter affect students' autonomy?
3. To what extent does the integration of Mentimeter affect students' language learning achievement?
4. What is students' perception of using Mentimeter in the classroom?

Methodology

Research Design

This study adopted a mixed-methods research design, incorporating both quantitative and qualitative methods to comprehensively investigate the impact of integrating Mentimeter activities and quizzes on enhancing students' English skills. The study's research design, data collection methods, and analyses procedures are outlined in Figure 1.

Figure 1
Design of the Study



Participants

The study population included 255 students (135 males and 122 females) enrolled in the foundation program (Level 4) at a public university in Oman. These students were randomly assigned to experimental and control groups. Notably, the foundation program requires students to successfully complete four levels of English to gain admission to post-foundation courses, which necessitates the attainment of proficiency in reading, writing, listening and speaking skills as evaluated through IELTS-based exams. For the second phase of the study, all level four students were also asked to participate in surveys to evaluate their perception of using Mentimeter in the classroom, leading to a total of 121 valid responses. In addition, students were asked to take part in semi-structured interviews, of which ten volunteers participated. Interviews were conducted online through MS Teams separately with each individual student volunteer.

Data Collection

Designing Mentimeter Activities

In the first phase of the study, the authors designed and developed Mentimeter activities/quizzes for course book content based on the semester's curriculum. The course books used for the Level 4 English program were *Pathways Reading, Writing and Critical Thinking 3*, and *Listening, Speaking and Critical Thinking 3 (National Geographic Learning, first edition)*. As Mentimeter offers a variety of item types, quizzes, word clouds, open-ended questions, multiple-choice items, and Truth/Lie were selected to engage students and gauge their vocabulary learning throughout the course. The duration of the study was ten weeks during the second semester of the academic year 2021-2022. Students were given activities and quizzed on the vocabulary content continuously every week.

Examining Student Achievement

In the second phase of the study, students' performance was examined through the semester final exams, mirroring the format of IELTS examinations. This exam comprised reading comprehension (60 minutes/25 questions), listening (40 minutes/ 25 questions), and writing (70 minutes/including Task 1 and 2) taken consecutively on a single day. Furthermore, a 12-minute speaking exam was administered on a separate day. Comparative analysis of the final exam scores between the experimental and control groups was conducted to evaluate the impact of Mentimeter integration on overall academic achievement.

Survey and Interview Data Collection

In the third phase of the study, students were required to complete an online survey through Google Forms on their perception of using Mentimeter in the classroom. A number of volunteers were then interviewed regarding their perception of using Mentimeter and how it affected their learning and motivation in the classroom. The survey used a 5-point Likert scale, where a score of 1 represents *'Strongly Disagree'* and a score of 5 corresponds to *'Strongly Agree'*. In total, 121 valid responses were collected. Subsequently, semi-structured interviews were conducted with ten voluntary participants to gain deeper insights into their experiences with Mentimeter and its effects on their learning and motivation. These interviews were conducted online via MS Teams, individually with each volunteer.

Quantitative and Qualitative Data Analysis

The collected data, encompassing both quantitative and qualitative elements, underwent comprehensive analysis. Quantitative data were subjected to appropriate statistical analyses like means and standard deviations to pinpoint the students' perceptions and the levels of motivation and autonomy that Mentimeter granted them. Additionally, a portion of the quantitative data was analyzed by conducting an independent sample t-test and Cohen's d to detect any statistically significant differences

between the experimental and control groups. The qualitative data were systematically analyzed to extract key themes and insights from the interviews, contributing to a holistic understanding of the study's outcomes. On the other hand, the qualitative data were examined through thematic analysis, which is an appropriate approach for uncovering patterns, themes, and deeper insights within textual or narrative data.

Data Analysis

The current study examined the use of Mentimeter in enhancing the students' motivation, autonomy and overall achievement. The collected data for investigating students' motivation and autonomy were analyzed using mean and standard deviation, whereas the achievement was examined by conducting an independent t-test.

Reliability Test

The first set of analyses verified the reliability level of the data collected from the survey and test. As per Table 1, the four constructs obtained a high level of Cronbach's Alpha (Nunnally & Bernstein, 1994). This indicates that the data collected is reliable; therefore, further analyses can be done.

Table 1
Alpha Cronbach on four constructs

Construct	No. of items	Source	Cronbach's Alpha
Perception (Survey)	10	Mohin et al. (2022), Pichardo et al. (2021), Mayhew et al. (2020)	0.812
Motivation (Survey)	6	Mohin et al. (2022), Mayhew et al. (2020), Quiroz Canlas et al. (2020)	0.810
Autonomy (Survey)	7	Skoyles & Bloxsidge (2017), Wood (2020)	0.789
Achievement (Tests)	Four skills		0.819

Findings

Perceptions

The first section of the survey was built to investigate students' perceptions towards involving Mentimeter in their learning process (10 items). As shown in Table 2, the results indicated that the majority of those who responded to these items felt that Mentimeter was stress-free to use (*M = 3.56, SD = 0.546*). Hence, it stimulated them to take a key part in the class (*M = 3.56, SD = 0.546*) and enabled them to remain active without getting bored (*M = 4.40, SD = 0.600*), or losing focus (*M = 4.32, SD = 0.622*).

The feature of anonymity Mentimeter offers pushed students to express themselves freely without feeling embarrassed or intimidated (*M = 4.35, SD = 0.704*). The respondents perceived Mentimeter in a heightened competitiveness sense, which helped them study for the class in advance (*M = 4.40, SD = 0.677*) and show some eagerness for the next Mentimeter activity (*M = 4.52, SD = 0.607*). The participants also appreciated the prompt feedback they got from Mentimeter (*M = 4.32, SD = 0.604*), which enhanced their learning; for example, they could retain the lexical items properly (*M = 4.31, SD = 0.633*). Overall, the students recommended the use of Mentimeter in all their courses (*M = 4.36, SD = 0.604*).

Table 2
Students' perception towards using Mentimeter

	N	Mean	Std. Deviation
1. Mentimeter is easy to use.	121	4.56	0.546
2. I actively participate in Mentimeter activities in class.	121	4.53	0.564
3. Mentimeter helps me to express myself (give answers) in the class without being afraid of getting embarrassed or intimidated.	121	4.35	0.704
4. Mentimeter is like a game, so I am excited to participate in the next Mentimeter activity.	121	4.52	0.607
5. Since Mentimeter is like a competition, I want to study in advance to earn more points.	121	4.40	0.677
6. Mentimeter activities help me to remember vocabulary words better.	121	4.31	0.633
7. Mentimeter activities help me to pay attention and stay focused in class.	121	4.32	0.622
8. Mentimeter enables me to stay active in class without getting bored.	121	4.40	0.600
9. Mentimeter provides me immediate feedback of my learning in the class.	121	4.32	0.686
10. I recommend that all my courses/subjects use Mentimeter in class.	121	4.36	0.604
Valid N (listwise)	121		

Level of Motivation

The second section of the survey was designed to explore students' motivation levels in using Mentimeter in class (6 items). The findings, as demonstrated in Table 3, indicated that Mentimeter helped students to enhance their interest in the subject (*M = 4.36, SD = 0.532*), and thereby they could develop their engagement in the class (*M =*

4.41, SD = 0.628) and learn better (*M = 3.77, SD = 0.593*). Surprisingly, the participants went beyond learning the subject; they compared their answers with those their peers offered (*M = 4.34, SD = 0.613*) and applied the knowledge they learned (*M = 4.93, SD = 0.624*). Taken together, these results revealed that students would be motivated by the presence of Mentimeter in their learning process (*M = 4.46, SD = 0.671*).

Table 3
Level of motivation

	N	Mean	Std. Deviation
1. Using Mentimeter increases my interest in the subject.	121	4.36	0.532
2. Using Mentimeter in the classroom helps me to learn better.	121	3.77	0.593
3. Using Mentimeter helps me to apply my knowledge.	121	4.93	0.624
4. Using Mentimeter improves my engagement in class.	121	4.41	0.628
5. Using Mentimeter helps me to compare my responses with others.	121	4.34	0.613
6. When I know there will be a Mentimeter activity, I am motivated to study.	121	4.46	0.671
Valid N (listwise)	121		

Level of Autonomy

Seven items were generated in the third section of the survey to examine the autonomy participants granted in using Mentimeter. As indicated in Table 4, the respondents affirmed that Mentimeter offered them greater control over their learning (*M = 4.81, SD = 0.673*) by providing them with exciting options and choices (*M = 4.27, SD = 0.563*) and making them fully aware of the lesson activities' aims (*M = 4.76, SD = 0.725*). The respondents also emphasized that they could assess their progress (*M = 4.27, SD = 0.719*) via the feedback on the progress Mentimeter offers (*M = 4.23, SD = 0.704*). The participants believed they could cope with any technological tool integrated into the class (*M = 3.99, SD = 0.583*).

Table 4
Level of autonomy

	N	Mean	Std. Deviation
1. Mentimeter provides me with interesting options and choices.	121	4.27	0.563
2. I have more control while using Mentimeter.	121	4.81	0.673

3. I have a clear idea of the Mentimeter activities' aims.	121	4.76	0.725
4. I like to assess my own progress using Mentimeter.	121	4.27	0.719
5. I think it is important to learn from my mistakes using Mentimeter.	121	4.36	0.669
6. It is important to receive feedback from Mentimeter about how I'm progressing.	121	4.23	0.704
7. I am good at working with new technologies, such as Mentimeter, in the classroom.	121	3.99	0.583
Valid N (listwise)	121		

Achievement

An independent t-test was conducted to investigate any statistically significant difference between the experimental and control groups' performance. The output of the independent t-test revealed no statistically significant difference in the performance of the experimental and control groups, $t(255)=0.634$, $p=0.527$. The effect size (Cohen's d) for the difference between the two groups was found to be 0.082. According to Cohen's guidelines (Cohen, 1988), this effect size can be interpreted as small. Therefore, this suggests that the observed difference between the group which was engaged in Mentimeter activities and the group which received a conventional teaching approach is relatively small in magnitude.

Table 4
The output of the independent t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Total	Equal variances assumed	1.766	.185	.634	255	.527	-2.336	4.553
	Equal variances not assumed			.646	235	.519	-2.273	4.489

Discussion

The results of quantitative and qualitative analyses revealed the significant impact of integrating Mentimeter on students' ability to stay engaged and motivated in the classroom. The effect of game-based learning and conducting competitive quizzes helped boost students' motivation and keep them engaged in the lesson. These findings are in line with other studies, such as Mohin et al. (2022), who emphasized that formative assessment via Mentimeter was more productive for their students. Furthermore, students' remained more focused on the lesson when Mentimeter was used as the medium of teaching and evaluation. In another study carried out by Hill & Fieldler (2017), students showed great interest in Mentimeter quizzes resulting in an increase in their motivation. Little (2016) also found that this platform had the potential to increase student's attendance in class. The present study was also consistent with the results revealed by Pichardo et al. (2021), who believed that Mentimeter motivated their students, especially the shy ones, to participate in class activities. This is crucial in the Omani context, where cultural barriers result in lower student participation. In this context, students in mixed-gender classes refrain from responding to questions or participating in class activities because they are shy or don't want to be judged by their peers. However, while Mentimeter provided the opportunity for students to participate anonymously, there was a noticeable improvement in student participation, and the classes became quite engaging.

In addition to motivation, the effect of Mentimeter on learners' autonomy was also investigated, indicating significant changes among Omani students. A considerable number of studies have reported the impact of digital technology, and specifically Mentimeter on learner autonomy (Lengkanawati & Wirza, 2021; Tsai, 2019; Wang & Chen, 2020; Yeh & Lan, 2018; Yürük, 2019). They have used different forms of technology such as Kahoot, Quizizz, YouTube, and 3D virtual learning and studied their effect on the learners' autonomy, suggesting that technology-mediated language classes prove effective in enhancing students' autonomy. Others have also emphasized that applying ICT tools can improve students' autonomy across various disciplines (Coyle, 2021; Dahal et al., 2022; Hafner & Miller, 2011; Puspa & Imamyartha, 2019). As learner autonomy is an essential skill to be promoted in the classroom, it is crucial for teachers to help their students gain the ability to become autonomous learners and so the teacher has to gain confidence in shifting the teaching practice in order to integrate certain tasks to achieve this goal (Benson, 2009; Lam & Lawrence, 2002). It is through the integration of technology in teaching that they can foster learner autonomy and provide learners with more meaningful situations to use the language, gain access to authentic materials and move beyond the classroom walls to practice their knowledge and skills.

The data analysis also revealed findings that were not anticipated by the authors. While it was believed that the integration of Mentimeter would considerably impact student performance on their final exams, results revealed the contrary in this context. Based on the data analysis, there was no statistically significant difference between the test results of the control group vs the experimental group after the intervention. This result was contrary to other studies investigating the impact of integrating Mentimeter to enhance performance (Patterson et al., 2020; Ranjbaran et al., 2022; Wong & Yunus, 2020; Sirajudin & Hasan, 2021). Wong & Yunus (2020) used Mentimeter to improve students' writing ability in terms of vocabulary. Their study revealed that such a platform had a significant effect on boosting learners' lexical knowledge. Similarly, Mohin et al. (2022) concluded that Mentimeter could increase students' achievement in the final exam

as they could take in the course content, improve their knowledge of the subject and apply it in their final exams. Mayhew et al. (2020) also found that students' achievement significantly increased in terms of knowledge and retention through the application of Mentimeter. Fuenta (2003) put forth that computer-mediated interaction had a significant effect on students' acquisition of vocabulary both receptively and productively. She also emphasized that CMI had a positive effect on the learners' retention of vocabulary. These results were also in line with Puspa & Imamyartha (2019), who investigated how using Mentimeter as the teaching variation for the English classroom improved students' productive skills. We can come to the conclusion that most studies with positive results thus far have evaluated the impact of Mentimeter on a specific skill or only productive skills. However, this was contrary to our assessment of student achievement, whereas we analyzed all four skills as their overall achievement. While improvements in student competencies were not observed among students per se, results show improvements in students motivation and autonomy in the classroom. In the future, we can investigate the impact of Mentimeter on one or two specific skills in the context of Oman to fully understand the performance outcomes.

Similar to the findings of Pichardo et al. (2021), who concluded that Mentimeter should be implemented as a collaborative learning tool as it enhances idea sharing among classmates, some students in this study were of the belief that this digital platform was a trigger to recall vocabulary they learned the previous lesson, and the interactive nature of the activities helped them to remember the new lexical items. This form of collaboration and learning from peers is very beneficial for vocabulary retention and engagement in the classroom: (pseudonyms are used for confidentiality)

> Moza: "*I can't think of anything. My mind is blank. But when I see other classmates' answers on the screen, I remember some words, and it helps me think of ideas."*
>
> Sara*: "My English is not excellent. I needed help. When I see my friends' answers, it helps me a lot."*
>
> Qais*: "The kind of activity that is reviewing and testing yesterday's lesson helps me to remember the words better."*

Yet another significant aspect of Mentimeter is its anonymity when responding to questions or taking part in quizzes. Students who are less confident in responding in class are encouraged to participate in class activities, thus enhancing both their learning and self-confidence. One student noted that:

> Basil: *"I was shy. I didn't want my friends to see my wrong answers, but in Mentimeter, no one knows it's me."*
>
> Asma*: "I like that nobody knows I am answering. There is no stress like when they see my answers."*

It was found that Mentimeter activities also captured the attention of more passive students. In addition to having more students alert and active during the class, it

transformed a nevertheless tedious class into a lively and interactive environment, especially through the use of competition. Based on the one-on-one interviews, it was found that even the shy students and females who previously refrained from participating in class activities due to cultural barriers became more active learners, indicating a decline in passiveness in class.

> Marwa: "*Classes are boring sometimes, and I often don't listen, but the Mentimeter app was like a game and interesting."*
>
> Mansour: "*With Mentimeter, I am more relaxed and have fun, not just listening to the teacher all the time."*

The results of this study were in line with Mayhew et al. (2020), who identified the high levels of satisfaction using this platform to be threefold. According to their study, Mentimeter was found to be effective in enhancing class enjoyment, increasing the students' voice and participation, and improving student understanding and retention, while no students reported drawbacks on using Mentimeter, similar to the results of the semi-structured interviews with students in our study.

Conclusion and Limitations

This study investigated the impact of integrating Mentimeter on students' motivation and autonomy, while also exploring their views on using this platform in the second language classroom. While a plethora of research indicates that Mentimeter has been found to be quite beneficial as an innovative digital platform in higher education (Ahmad, 2020; Andriani et al., 2019; Dunn & Kennedy, 2019; Hill, 2020; Kuritza et al., 2020; Lin & Lin, 2020; Musliha & Purnawarman, 2020), this study also confirmed the potential for students to take part in activities anonymously and in an engaging manner, which enriched their contribution to the class and even course outcomes. Therefore, students can experience enhanced participation in the learning process while collaborating more with their peers in a productive environment compared to the traditional classroom. The results have important implications for teachers who are struggling with student passiveness and lack of motivation in the second language classroom, especially those faced with language and cultural barriers. This study contributes to the literature by studying student engagement, motivation and autonomy in the Middle East region.

Among the merits of this platform is the benefit for the teaching process. Real-time feedback helps the teacher to continuously improve the lesson plan by identifying gaps in the student's knowledge, building on their strengths and weaknesses, and facilitating the process of modifying content. So this tool is not only beneficial to teachers for assessing students' understanding, but also for gauging their own teaching materials and teaching methods. By giving heed to the Universal Design for Learning, this platform has the potential to overcome cultural barriers in language learning. As one of the major challenges in this context, it is essential to ensure inclusiveness and equality for all students, and enhance learning opportunities for all students regardless of gender. Given that Mentimeter plays an important role in engaging students and enhancing autonomy,

teachers are strongly recommended to integrate this digital tool with a view to improve productivity of their lessons. However, further research is needed to examine whether engagement and motivation can be maintained if the use of this digital tool is continued in consecutive courses and in other subjects.

Although the findings are compelling, there are a number of limitations. One of the limitations of the study was that the activities designed through *Mentimeter* were entirely teacher-generated, and the students were not involved in task design whatsoever. Future research could consider the active involvement of students in generating content and creating slides, and go one step further to measure the effects of such active, authentic assessment on students' motivation, achievement, and increased autonomy in learning. Another limitation of this study was that the authors investigated overall achievement, while future studies could focus on specific linguistic knowledge to observe any differences in the outcome. Furthermore, this intervention was carried out specifically in level four of the foundation program, while further research could be conducted at different levels and across a wider audience, including other regions across Oman. Future research could also be conducted to evaluate the gender differences in the use of educational technology in the classroom.

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