A Brief Discussion on The Influence of Digital Mobile Micro Education Teaching Methods on College Students' English Vocabulary Teaching Design

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Abstract

Digital and micro-teaching methods play a pivotal role in the educational landscape, fostering effective English language learning. Vocabulary proficiency is crucial for acquiring a second language, underpinning meaningful interactions. Identifying key factors enhancing students' English vocabulary is imperative. This study investigates the influence of digital mobile teaching and micro-teaching on students' English vocabulary, delving into how student readiness and engagement moderate this relationship. Data was collected from 425 English language course students using a questionnaire derived from prior research, employing a simple random sampling technique. Responses were measured on a 5-point Likert scale and analyzed using SPSS and innovative PLS software. The outcomes underscore the significant impact of both digital mobile teaching and micro-teaching on English vocabulary. Moreover, student readiness and engagement emerged as moderators in the connection between these teaching methods and vocabulary enhancement. These findings affect students and educational institutions seeking to enrich language learning. Future studies could explore additional variables further optimizing digital mobile teaching and microteaching's impact on English vocabulary.

Keywords: Digital Mobile Teaching; Micro Teaching; Students' Readiness; Student Engagement; Student's English Vocabulary

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Introduction

The acquisition of a second language can present challenges, particularly in vocabulary. However, students' proficiency in the four fundamental skills—listening, reading, speaking, and writing—is greatly aided by a robust vocabulary. The term "vocabulary" denotes a repository of words or a compilation of terms that individuals who speak a specific language can potentially employ (Tuyen, 2022). Other scholars have additionally suggested that possessing a vocabulary of around 2,000 to 3,000 words facilitates approximately 80% comprehension of written text and empowers students to deduce or infer the meanings of unfamiliar words through context. This ability, in turn, allows them to engage in discussions about word meanings with their teachers and peers, culminating in assimilating new words into their existing mental lexicon (Wahyuni, 2021).

Zhang and Yu (2021) emphasized that digital teaching materials are preferable over non-digital alternatives, as students tend to exhibit higher motivation when utilizing digital tools for learning. Numerous studies concur that digital learning significantly enhances students' vocabulary acquisition and comprehension (Q. Yang, 2021). The pivotal role of motivation is consistently underscored as the determining factor contributing to the superiority of results achieved through digital tools compared to traditional non-digital methods (Susanty, Hartati, Sholihin, Syahid, & Liriwati, 2021).

In a study conducted by Kleinsorgen et al. (2022), the effects of digital vocabulary learning versus activity-based lessons were examined. Kleinsorgen et al. (2022) concluded that digital vocabulary learning conferred distinct advantages, primarily due to its higher engagement and inspiration, resulting in more favourable outcomes. Additionally, a study by Ingulfsen, Furberg, and Strømme (2018) that investigated the impact of digital games on students' learning and motivation yielded similar results to the study mentioned above by Kleinsorgen et al. (2022).

Microteaching is a pedagogical approach employed in the training and preparation of teachers. It involves using real-world classroom situations to foster the development of teaching skills, granting participants a deeper comprehension of the art of effective teaching. This educational technique can be implemented using uncomplicated topics or lessons and a few students. Doing so streamlines the challenges associated with actual teaching by enabling prompt feedback after each practice session (Tuyen, 2022).

A learner is deemed ready for learning when they possess the necessary capacities to engage in learning activities that align with specific instructional objectives. Achieving educational goals becomes more feasible when a student's readiness aligns with the learning content. Students who are well-prepared for learning tasks tend to attain superior learning outcomes, whereas those who lack preparation often encounter challenges or increased frustration (E. V. Reddy, P. Reddy, Sharma, K. Reddy, & Khan, 2022). The readiness of higher education institutions to embrace evolving technologies is paramount to achieving desired outcomes across diverse domains, including enhancing students' English vocabulary (Küsel, Martin, & Markic, 2020).

Research by F. Martin, Stamper, & Flowers (2020) delves into students' readiness levels for effectively utilizing technology-driven tools and the consequent impact on their behaviour. Thus, student autonomy, coupled with their level of preparedness, emerges as a pivotal facet of e-learning (Dangol & Shrestha, 2019).

Student engagement is a pivotal concept that provides valuable insights into a student's behaviour within the teaching and learning process (Panigrahi, Srivastava, & Sharma, 2018). This notion holds significant potential for application, serving as a cornerstone for understanding a student's interaction with education. Observing students in action can gain valuable insights into a university's teaching strategies and policies (Ingulfsen et al., 2018). Beyond its direct impact on educational dynamics, this engagement also exerts indirect influence, shaping aspects like a teacher's professional identity, school climate, and more (Mizani, Cahyadi, Hendryadi, Salamah, & Retno Sari, 2022). Furthermore, evidence suggests student engagement correlates positively with advancements in English vocabulary acquisition.

In light of these considerations, it is imperative to ascertain the characteristics that wield significant influence over the extent of academic success achieved by students engaged in online learning. The primary objective of this study is to assess the correlation between online

instructional methods and the level of academic achievement students reach. In technology-enabled education, it becomes crucial to delve into how student progress is impacted by factors such as preparedness, motivation, and the user-friendliness of the technological tools employed.

Therefore, the fundamental aim of this research was to contribute to the existing knowledge by investigating the mediating roles of motivation, preparedness, and technological convenience. This study delved into the relationship between online instruction and student achievement, explicitly gauging student engagement. It is widely acknowledged that heightened student involvement in an educational endeavour correlates positively with their overall performance.

Literature Review

Numerous language teachers agree that expanding one's vocabulary is one of the first steps in becoming fluent in a target language (Barcroft, 2015) agree that vocabulary is the foundation of language and that having a large vocabulary is necessary for clear and successful communication (Dehham, 2021). According to Barcroft (2015), One way to think of a person's vocabulary is as their lexicon, which includes all of the words they have picked up over their life. However, Al-Jarf, (2022) suggests that understanding those terms does not come about instantly but is cultivated gradually through engagement with a wide range of contexts over time (Q. Yang, 2021).

According to Dehham (2021), for students to have the greatest possible opportunity to acquire new terms, teachers should add a variety of activities and exercises into their regular classroom routine. According to Schmitt (2008), the frequency of content is a necessary component of language acquisition and processing theories. In addition, Guo (2020) discussed the difference between the unconscious phase of language acquisition, during which speakers aren't even aware that they're learning a new language, and the conscious process of language learning, during which speakers are aware only that they're learning a new language to communicate.

The term "language learning" relates to the conscious understanding of a second language, knowing the rules, being aware of them, and being able to communicate about them and how they co-occur when learning a second language. (Q. Yang, 2021) noted that Words can be learned in two ways: by accident and on purpose. When focusing on utilizing the dialect in reading or conversation, the author argues that this is an instance of "incidental vocabulary learning." This kind of learning often occurs subconsciously when the learner is unaware that they are acquiring new words. Vocabulary studied and learned purposefully, such as when preparing for a test, is called "purposeful vocabulary." Idiomatic expressions are examples of this language style (Barcroft, 2015).

Zhai (2021) has been concluded that picking up new words from casual exposure is more beneficial than deliberate study but that combining the two is optimal. This demonstrates why it is best to utilize both approaches to learning a new language or expanding one's vocabulary. This point is emphasized by (Research & 2014, 2016). For this reason, helping students succeed in new vocabulary is prioritized over strengthening their language skills during deliberate vocabulary acquisition (Siyanova-Chanturia & Webb, 2016). Instead, acquiring the knowledge of properly using previously learned terms requires accidental learning that offers context (J. Yang & Wang, 2022).

Additionally, Wahyuni (2021) stated that two types of language skills produce something to be communicated, such as speaking or writing and those that receive something to be communicated, such as listening or reading. There are four different types of language skills overall. Speaking and writing are productive skills, as Wahyuni(2021) indicate, whereas listening and reading are examples of receptive skills. According to Tuyen (2022), productive skills need the producer to produce output based on past knowledge, whereas receptive skills require the receptor to grasp input. As a result, receptive information can be understood on a higher level than what can be produced.

The term "digital mobile teaching" describes the dissemination of knowledge through various forms of electronic media. The accessibility of digital teaching technologies and the support provided to students, teachers, and the institutions that employ them significantly contribute to the sector's meteoric rise, especially in higher education (Hofer, Nistor, & Scheibenzuber, 2021).

With the current state of the higher education industry's finances, it is highly advised that schools maintain their reliance on digital pedagogy (Lapitan Jr, Tiangco, Sumalinog, Sabarillo, & Diaz, 2021).

The conventional methods used in the past have been updated to incorporate computer-based instruction. To persuade academic institutions to participate in the effort, a significant amount of pressure was applied to these institutions. The world of education needs to become used to the unconventional pedagogical approaches that digital and mobile teaching provide (van Rensburg, 2018). Professional educational institutions must incorporate digital and mobile teaching into their course offerings to raise the standard of the learning environment. Combining in-person instruction with online and offline activities is at the heart of digital and mobile education (Lapitan Jr et al., 2021). Concurrently, the most advantageous aspects of both digital and mobile education need to be improved further.

When the Internet was blocked, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) offered guidelines to ensure that Digital teaching continued uninterrupted. On the other hand, detractors asserted that Digital education is difficult to implement because of the challenging economic conditions in nations with a middle-income. (Gray & Diloreto, 2016). Not only does the closure of educational centres in poor countries have a detrimental influence on teaching, but it also harms the student's performance on assessments and examinations.

This problem is made even worse because the educational system already has room for improvement. The educators in these countries should be open to making changes and improvements to the educational systems that they are responsible for. In addition, educational institutions have a more extensive duty to develop digital teaching systems that are not just free from known vulnerabilities but also commercially feasible (Frazer, Sullivan, Weatherspoon, & Hussey, 2017). Although this task is difficult, it may be made easier if sufficient time is allotted and the necessary materials are available to students and teachers.

According to Mojibur (2020), digital Mobile teaching benefits student English vocabulary. Dommett et al. (2022) provide empirical evidence to show that students who spent more time on English vocabulary significantly improved their course marks. Aristovnik, Keržič, Ravšelj, Tomaževič, and Umek (2020) pointed out that digital mobile teaching is an effective method in terms; of both English vocabulary and academic performance. Lapitan Jr et al. (2021) found that students' English vocabulary was correlated with digital mobile teaching.

H1: Digital Mobile Teaching has a significant and positive impact on Students' English Vocabulary

The practice of microteaching is a method utilized in the education and preparation of teachers. Real-world classroom scenarios facilitate skill development, and participants better understand the art of teaching. Microteaching is a form of education that can be carried out with a straightforward topic or lesson and with a limited number of pupils. It simplifies the difficulties of actual instruction by allowing for the pursuit of quick feedback following each practice session (Tuyen, 2022). In today's world, audio-video recording devices and other forms of current multimedia technology play an essential part in the educational process.

Although Zhang et al. (2022) define micro-teaching as a teaching encounter that provides a setting for instruction in which the complexities of a regular classroom are scaled-down and in which the teacher receives extensive feedback on their performance, they do agree that microteaching is an effective method to be applied in the pre-service and in-service stages in the professional development of teachers. Since it was first implemented in the 1960s, the concept of microteaching has quickly spread to various other types of teacher training programs (Remesh, 2013). There has been a growing trend in recent years for pre-service teacher education programs to incorporate microteaching into their curricula to familiarise and provide practice teaching chances for their student teachers (E. V. Reddy et al., 2022).

Damalie (2018) identify Microteaching is a powerful method of education because it bridges the gap between theory and practice. Daily lessons are the "gallery" where a teacher can express their teaching values, subject knowledge, and teaching abilities in the context of contextual learning. By addressing any questions or concerns throughout the reflection process, teachers can

better prepare their student teachers to implement effective pedagogical strategies (K. R. Reddy, 2019). Student instructors can benefit significantly from reflective activities like analyzing a video recording of a lesson they have already taught to think critically about what went well and what could be done differently. Student educators can learn a lot from these types of experiences.

Zhang et al. (2022) believe that times when putting yourself in the perspective of another is both a revealing and unsettling mental exercise. However, Zhang et al. (2022) add that observing oneself can build strengths and provide an understanding of classroom interaction. Short lessons were given to coworkers, videotaped, and reviewed; premade forms were provided for feedback; and oral reports on English vocabulary were also a part of the study (E. V. Reddy et al., 2022). Students were encouraged to tackle the suggestions and comments made on their English vocabulary sessions by their other classmates within the time allotted for group discussion (Ledger & Fischetti, 2019). The study's results showed more defensive and passive patterns than affirmative patterns. The study concluded that teachers and students saw their time participating in microteaching as having a positive and significant effect on student English Vocabulary.

H2: Micro Teaching has a significant and positive impact on Students' English Vocabulary

Many definitions of "student involvement" have been presented in recent years as the term has garnered increasing interest in the academic world. The term describes students' time, effort, and energy to make the most of their college experience (D. P. Martin & Rimm-Kaufman, 2015). The word "student engagement" can be used interchangeably with "how well" or "how widely" students participate in daily academic life. This includes academic activities such as completing homework, studying for exams, attending classes, and progressing toward academic goals. Many studies have shown that students are more successful academically (in the sense that they are more likely to pass standardized tests and do well in their classes) when actively involved in the learning process (Dogan, 2017).

According to Mizani et al. (2022), The performance of language schools is often measured by how well their students use the English language. However, it is true that, in the modern world, pupils are only sometimes enthusiastic about acquiring a new language, and their performances frequently need to catch up on expectations. How well students utilize the many academic and digital tools often determines how well they learn English vocabulary (Dixson, 2015). According to Jian (2022), In many cases, schools evaluate their success by the extent to which their graduates have a well-developed command of the English language. Thus, it may be assumed that students' proficiency in English vocabulary tests, and by extension, their overall performance on final exams, will improve if they are actively involved in the learning process on both a physical and cerebral level. This is because pupils learn more effectively while doing it (Zepke, 2015).

H3: Students Engagement has a significant and positive impact on Student's English Vocabulary

H5: Students Engagement moderated the relationship between digital mobile teaching and Students' English Vocabulary

H6: Students Engagement moderated the relationship between micro-teaching and Students' English Vocabulary

Student readiness is defined by Farid (1990) as The benefits of education being accessible to people from all walks of life and professional backgrounds. Kirmizi (2015) defines student preparedness as the ability to enhance learning via multimedia tools and online learning resources. When students demonstrate that they have the background information, skills, and attitudes necessary for success in a classroom like this one, they will be ready for English Vocabulary. Similarly, Gratz (2018) stated that to successfully manage the hurdles offered by digital teaching, learners who take part in English vocabulary classes must exhibit special skills and attitudes (Yu & Richardson, 2015).

In other words, student preparation for English vocabulary refers, in short, to the extent to which a person or organization has the prior knowledge and abilities, as well as the successful traits, necessary for success (attitude, motivation, etc.) required for experiencing digital teaching in the most effective way possible. Student readiness for English vocabulary can be a personal trait (Smith, Murphy, & Mahoney, 2010).

Students who have attained a particular level of preparedness can significantly contribute to expanding English vocabulary and increase the overall quality of engagement (Ramadhana et al., 2021). Therefore, before commencing the process of teaching students English vocabulary, it is necessary to conduct an assessment of the student's preparation. This will ensure that the process is successful. If this evaluation is carried out, it will make it possible for the aims of defining appropriate strategies and building expertise in information and communication technology to be carried out effectively. This will be the case if this evaluation is carried out (Demir Kaymak & Horzum, 2013).

H4: Students' Readiness has a significant and positive impact on Student's English Vocabulary

H7: Students Readiness moderated the relationship between digital mobile teaching and Students' English Vocabulary

H8: Students' Readiness moderated the relationship between micro-teaching and Students' English Vocabulary

The following conceptual model has been developed based on the research above and the hypotheses (Figure 1).
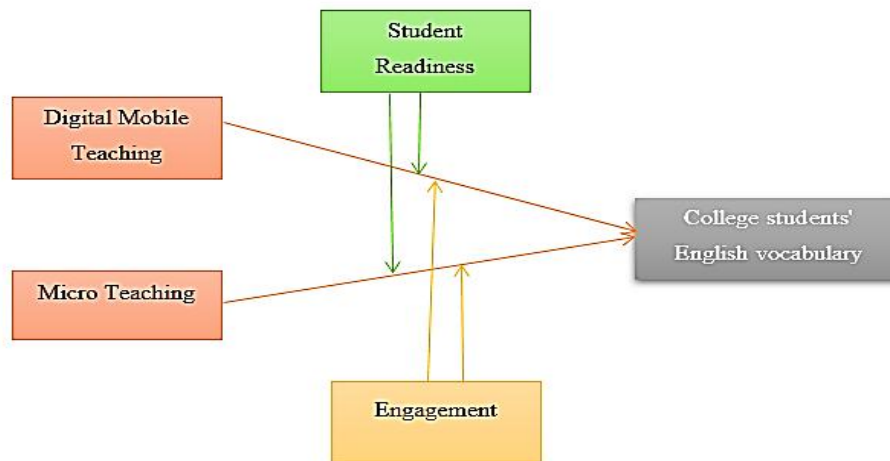

Figure 1. Conceptual Framework

Methodology

For this study, a method of research known as cross-sectional surveying was utilized since it was deemed suitable for the research issue addressed in previous discussions. Studies that are carried out in a universe that is composed of a variety of components and in which either the entire universe or a particular sample that has been taken from it is utilized to create an overall view regarding the universe are examples of the types of studies that fall under this category. These types of studies include: Studies that use a cross-sectional methodology are ones in which the progression of development is observed in separate groups that are thought to represent the various stages of development all at once, at a single point in time.

These groups are thought to be representative of the various stages of development because they are observed at the same time. This kind of study may be conducted in several different environments, including medical, social sciences, and anthropological research (Fraenkel, Wallen, & Hyun, 2012). Students from the English departments of various universities in China were recruited to participate in a research project. This resulted in the study's population being composed of these students. To provide more precise details, all individuals involved in the study were students enrolled in English language programs at the time of the research.

Concurrently, the specific population subset that could be targeted included students who were both enrolled in English language courses and had internet access. Eight hundred fifty

students enrolled in English language programs were randomly selected for a questionnaire. Out of the original 850 surveys, only 425 were deemed to provide sufficient information to warrant further examination. The questionnaire was divided into two distinct parts. The first section contains information about the respondents' demographics, including their gender, age, semester, vocabulary use, and time spent using the internet. The statements related to the study's variables are presented in section 2, which follows. Demographic data were analyzed using SPSS, while SmartPLS was employed to validate the hypotheses.

A five-point Likert scale, ranging from one (strongly disagree) to five (strongly agree), was employed to analyze participants' responses, indicating their agreement. The investigation assessed factors based on criteria established in prior research. Evaluation of college students' English language proficiency utilized a 5-point scale. Although the initial five questions were adapted from a previous study, they were modified by Hasan, Fakih, and Seraj (2022).

In assessing the micro-teaching variable, six questions were adapted from earlier sources, per Remesh (2013). Furthermore, five questions were drawn from prior research by Borotis and Poulymenakou (2004) and Küsel et al. (2020) to evaluate pupil preparedness. To gauge the effectiveness of digital mobile instruction, nine criteria were adopted by Rahim, Nesar, Mumtaz, Naeem, and Ali (2022). A nine-point rating scale derived from Dixson (2015) was employed to determine student participation levels.

Table 1 presents the demographic information pertaining to the survey respondents. Four hundred twenty-five people participated in the survey, including 210 men and 215 women. Sixty respondents were in the age bracket of 19-21 years, 53 were in the age bracket of 22-25 years, 201 were in the age bracket of 26-29 years, and the remaining 111 respondents were older than 30. Ninety-nine students were in their first semester, 91 were in their second semester, 109 were in their third semester, and 126 were in their fourth semester. Most respondents (199) spend between four and eight hours per day on the Internet, while 79 spend between two and three hours and 147 spend more than eight hours online. Only 152 respondents have never used vocabulary, while the remainder 272 used vocabulary. The findings of the demographic investigation are shown in Table 1.

Table 1. Demographic Profile of The Respondents

Demographic item		Frequency
Gender	Male	210
	Female	215
Age	19-21 years	60
	22- 25 years	53
	26-29 years	201
	More than 30 years	111
Semester	1st	99
	2nd	91
	3rd	109
	4th	126
Time spends on the internet	2-3 hours	79
	4-8 hours	199
	More than 8 hours	147
Use Vocabulary	Yes	272
	No	153

Results

Data were analyzed in this work using structural equation modelling (SEM), and to do so, partial least squares structural equation modelling (PLS-SEM) was utilized rather than covariance-based techniques such as AMOS. This was done because PLS-SEM is more suitable for data analysis than covariance-based methods (J. F. Hair, Sarstedt, & Ringle, 2019). The PLS-SEM was selected as the research method because, depending on the investigation's objectives, it may be employed for confirmatory or exploratory research (Hair, Hult, Ringle, & Sarstedt, 2021).

Approaches such as covariance-based structural equation modelling (CB-SEM) and partial least squares structural equation modelling (PLS-SEM) are what make up structural equation modelling (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). Both approaches have advantages and disadvantages, such as the covariance-based method may either validate or invalidate the theories depending on the circumstances.

On the other hand, PLS-SEM offers extensions in theoretical frameworks in addition to advancements in those frameworks (Hair Jr et al., 2021). The program Smart PLS 3.3 was applied to do the measurements on the data. The measurement, as well as the structural route, were both utilized in the measuring process for the data. The Smart PLS approach helps perform analyses on data that is either exceptionally difficult or highly restricted in scope.

Measurement models consist of several components, two of which are the model's dependability and validity. In this particular research project, convergent and discriminant validity were utilized to examine the model's reliability. In addition, the Cronbach alpha, composite reliability, and average variance extract were applied to analyze the model's accuracy and determine its level of dependability (Hair Jr et al., 2021). The dependabilities of all the variables being modelled in this study may be seen in Figure 2 and Table 2, respectively. To get things started, Cronbach's alpha requires a value of more than 0.70 to be considered satisfactory (Hair Jr, Sarstedt, & Ringle, 2019).

Overall, the values of Cronbach's alpha for the model variables in this research are more than 0.70. As an illustration, the values of IVs (micro-teaching and digital mobile teaching), DV (student English vocabulary), and Moderators (student involvement and student preparation) are, respectively, 0.881, 0.811, 0.808, and 0.890. The Cronbach alpha threshold was specified, and these numbers correspond to it. As a direct consequence of this, all values are recognized. The second stage of the study involves looking at the composite reliability (CR) and average variance extract (AVE) of the model variables. The acceptable values for the variables are more significant than 0.7, and the average variance extract and the acceptable values for the variables are more significant than 0.5. The composite reliability also has acceptable values that are greater than 0.5.

In addition, each variable's outer loadings were investigated, and the findings are presented in Table 2. When establishing the acceptable outside loadings for various objects, a number greater than 0.6 is considered suitable (Figure 2). Every single one of the components that make up the variable has a value that is greater than 0.6.

Table 2. Construct Reliability and Validity

	Items	Outer Loading	Cronbach's Alpha	CR	AVE
Digital Mobile Teaching	DMT1	0.705	0.881	0.901	0.505
	DMT2	0.708			
	DMT3	0.744			
	DMT4	0.708			
	DMT5	0.667			
	DMT6	0.592			
	DMT7	0.780			
	DMT8	0.737			
	DMT9	0.735			
Micro Teaching	MT1	0.866	0.811	0.856	0.510
	MT2	0.854			
	MT3	0.828			

	Items	Outer Loading	Cronbach's Alpha	CR	AVE
	MT4	0.531			
	MT5	0.536			
	MT6	0.571			
Student Engagement	SE1	0.632	0.890	0.911	0.564
	SE2	0.756			
	SE3	0.803			
	SE4	0.833			
	SE5	0.725			
	SE6	0.697			
	SE7	0.780			
	SE8	0.762			
Student English Vocabulary	SEV1	0.885	0.808	0.869	0.579
	SEV2	0.610			
	SEV3	0.875			
	SEV4	0.809			
	SEV5	0.566			
Student Readiness	SR1	0.719	0.734	0.836	0.568
	SR2	0.815			
	SR3	0.887			
	SR4	0.551			

To determine whether or not this study satisfies the requirements for discriminant validity, the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) test were applied (Hair Jr et al., 2021). According to the HTMT rationing criterion, for any variable values to be considered suitable, they must have a value lower than 0.85. Despite this, HTMT ratings of up to 0.9 might often be acceptable (Hair Jr et al., 2021). Table 3 contains the findings of this study, and as can be seen, all of the values are within the acceptable range, which extends from 0.85 to 0.90. This range was determined based on previous research. The findings of this analysis showed that the model being utilized for this research successfully achieves discriminant validity. The discriminant validity of the variables is presented in Table 3.

Table 3. Discriminant Validity (HTMT)

	DMT	MT	SE	SEV	SR
Digital Mobile Teaching					
Micro Teaching	0.805				
Student Engagement	0.359	0.471			
Student English Vocabulary	0.395	0.495	0.655		
Student Readiness	0.448	0.557	0.866	0.770	

When the R2 score is more significant than 0.5, it is determined that the strength of the model in the initial data is vital. The value of R2 for student English Vocabulary was found to be 0.432 in this investigation. The high R2 score indicated an extremely high level of model strength (Hair Jr et al., 2021). In addition to this, the values of Q2 for each of the latent constructs in the models are higher than Zero, which is a requirement for inclusion in the models. In addition to that, it functions as an example of significant indications.

Table 4. R-Square Values and Q-Square Values for The Variables

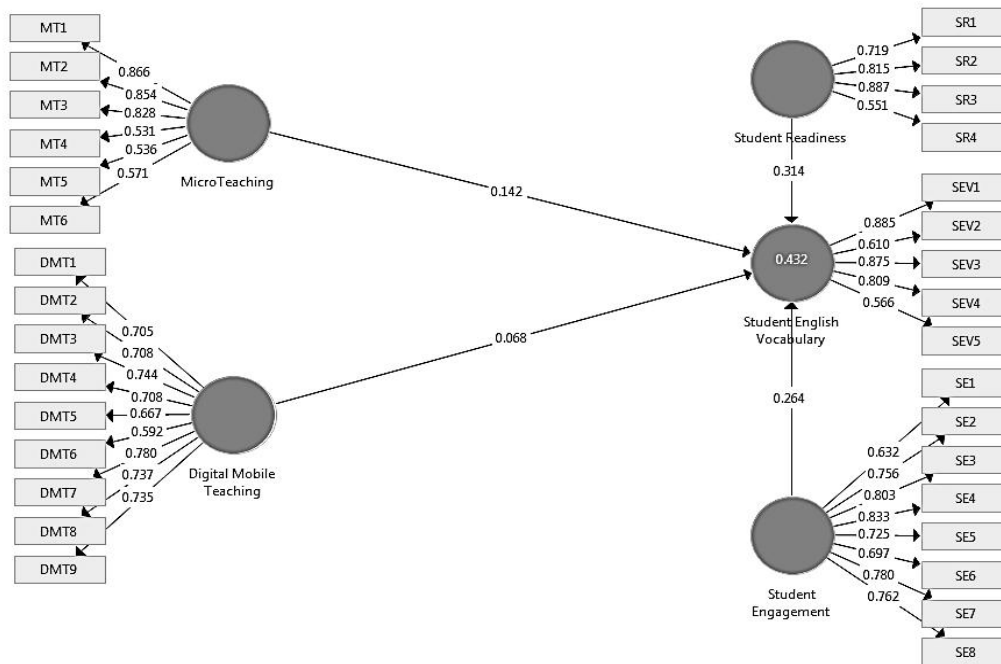|	R²	Q²
Students English Vocabulary	0.432	0.230

Figure 2. Measurement Model

This study employed a bootstrapping method with a total of 500 distinct samples so that statistical validation could be done on the model hypotheses (Hair et al., 2016). The "T" and "p" values were analyzed in this study to assess whether or not the hypotheses should be accepted or rejected (Hair Jr et al., 2021). An explanation of the results of the H1 relationship, which anticipated a strong effect of digital mobile teaching on student English vocabulary, is provided in Figure 3 and Table 5. (t = 1.746, p = 0.041) The values of these two variables point to the fact that this assertion is true. As a direct consequence of this, the H1 visa is granted.

In addition, the beta value of this hypothesis revealed that a change of one unit in digital mobile teaching would result in a change of 0.068 units in student English vocabulary. This was shown by the fact that there was a positive correlation between the two variables. Second, Hypothesis 2 predicted that students' English vocabulary would improve significantly due to microteaching. The values of t and p both point to this assertion being true (t = 2.836, p = 0.002). The beta value of H2 demonstrated that there would be a change of 0.142 units in the student's English vocabulary for every one-unit shift in the preparedness for microinstruction. As a direct consequence of this, the H2 is approved.

Thirdly, the H3 hypothesis postulated that the level of involvement shown by students had a considerable and favourable impact on the English vocabulary of such students. Table 5 indicates significant findings, and both the t and p values imply that the hypothesis may be accepted (t = 2.933, p = 0.002). This is shown by the fact that the values are significantly different from zero. Therefore, we may agree that hypothesis 3 is correct. According to the beta value of hypothesis 3, there would be a change of 0.264 units in the students' English vocabulary for every one unit shift that occurred in the student's involvement.

According to Hypothesis 4, there is a correlation between student preparation and student English vocabulary, and this correlation is both positive and substantial. As a direct consequence of this, the H4 is approved. In addition, the beta value of this hypothesis revealed that there would be a change of 0.314 units in student English vocabulary if there were a change of one unit in student preparedness. Figure 3 and Table 5 both display the findings that directly address all of the hypotheses.

Table 5. Direct Effects

Hypotheses	Relationship	Beta	SD	T value	P Values	Decision
H1	DMT -> SEV	0.068	0.039	1.746	0.041	Supported
H2	MT -> SEV	0.142	0.050	2.836	0.002	Supported
H3	SE -> SEV	0.264	0.090	2.933	0.002	Supported
H4	SR -> SEV	0.314	0.090	3.490	0.0001	Supported
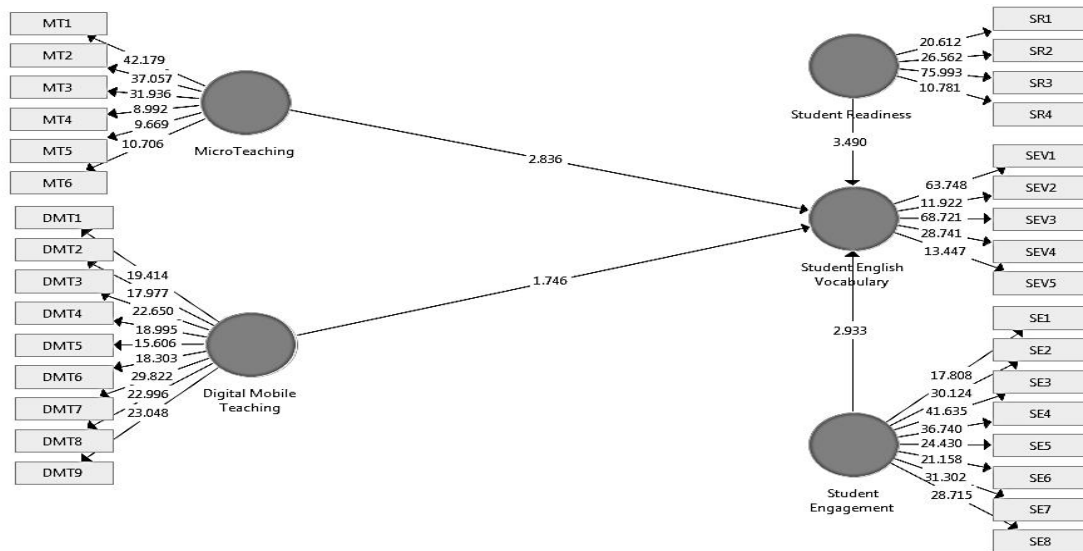
Figure 3. Structural Model

According to the fifth and sixth hypotheses, the connection between digital mobile teaching and students' English vocabulary and the connection between micro-teaching and students' English vocabulary is significantly moderated by the level of student engagement in the learning process. An interaction term was chosen so that an analysis could be carried out to identify the degree to which student involvement acts as a moderating impact on both of the connections. According to the findings of the study, there is a connection between digital mobile teaching and students' English vocabulary, and micro-teaching and students' English vocabulary, and these connections are moderated by student engagement (t = 4.200, p = 0.0001) and (t = 2.584, p = 0.005) respectively.

Additionally, there is a connection between digital mobile teaching and students' English vocabulary and micro-teaching and students' English vocabulary. The acceptance of Hypotheses 5 and 6 follows naturally from this reasoning. Figure 4 and 5 and Table 6 correspondingly illustrate student involvement's moderating effect on the relationships between the variables.

According to the seventh and eighth hypotheses, student engagement has a significant moderating influence on the connection between digital mobile teaching and students' English vocabulary and the connection between micro-teaching and students' English vocabulary. Both of these relationships involve teaching students English using digital mobile devices. An interaction term was introduced so that an analysis could be carried out to identify the degree to which student readiness acts as a moderating impact on both of the connections.

According to the findings of the study, there is a connection between digital mobile teaching and students' English vocabulary, and micro-teaching and students' English vocabulary, and these connections are moderated by student readiness (t = 3.951, p = 0.0001) and (t = 2.041, p = 0.021) respectively. Additionally, there is a connection between digital mobile teaching and students' English vocabulary and students' English vocabulary and micro-teaching. The acceptance of Hypotheses 7 and 8 follows naturally from this line of reasoning. Figure 6 and 7, as well as Table 6, illustrate the moderating effect that student involvement has on the relationships between

variables.

Table 6. Moderation Effect

	Original Sample	T values	P Values
SE x DMT -> Student English Vocabulary	0.184	4.200	0.0001
SE x MT -> Student English Vocabulary	0.121	2.584	0.005
SR x DMT -> Student English Vocabulary	0.168	3.951	0.0001
SR x MT -> Student English Vocabulary	0.078	2.041	0.021
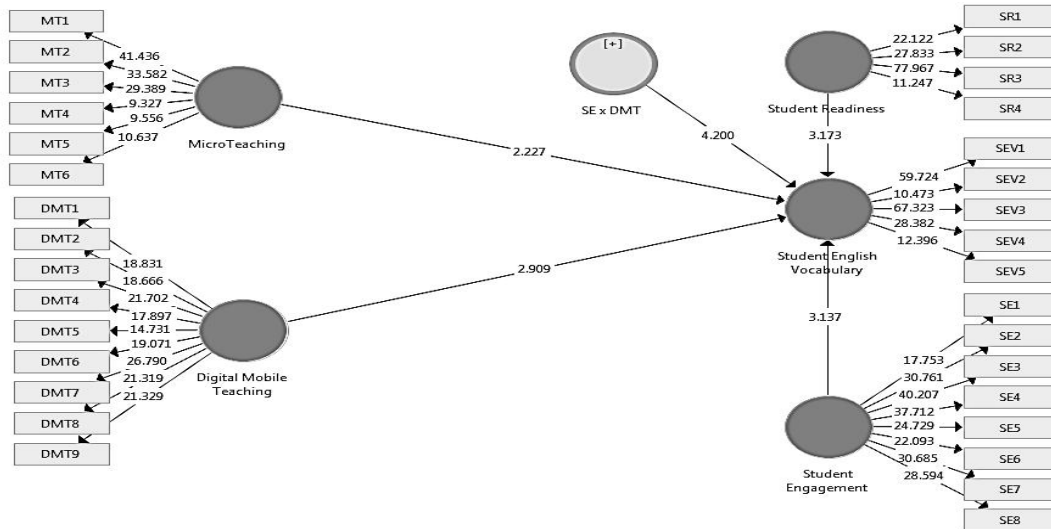
Figure 4. Student Engagement as a Moderator between Digital Mobile Teaching and Student's English Vocabulary
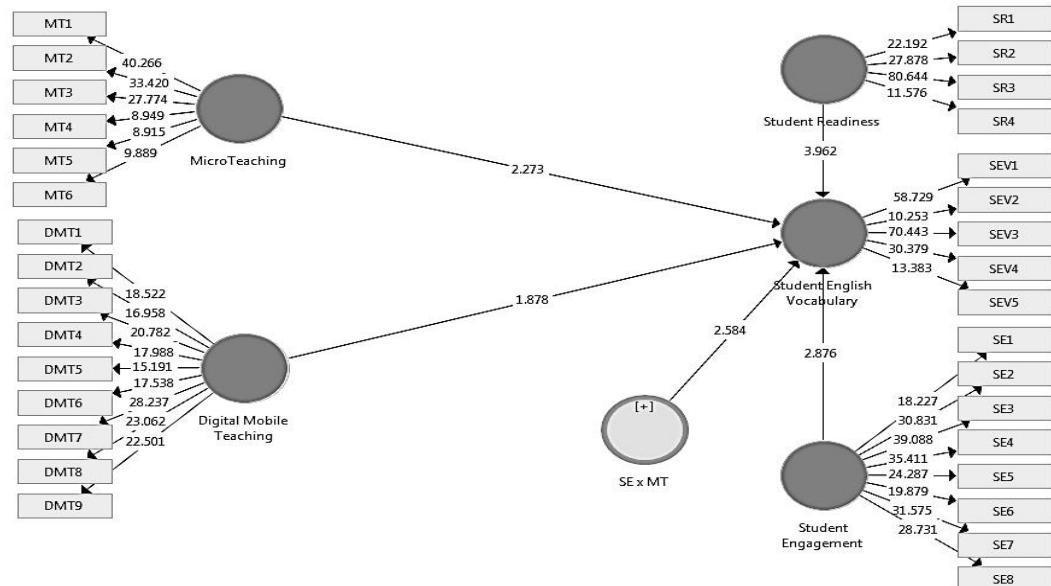

Figure 5. Student Engagement as a Moderator between Micro Teaching and Students' English Vocabulary
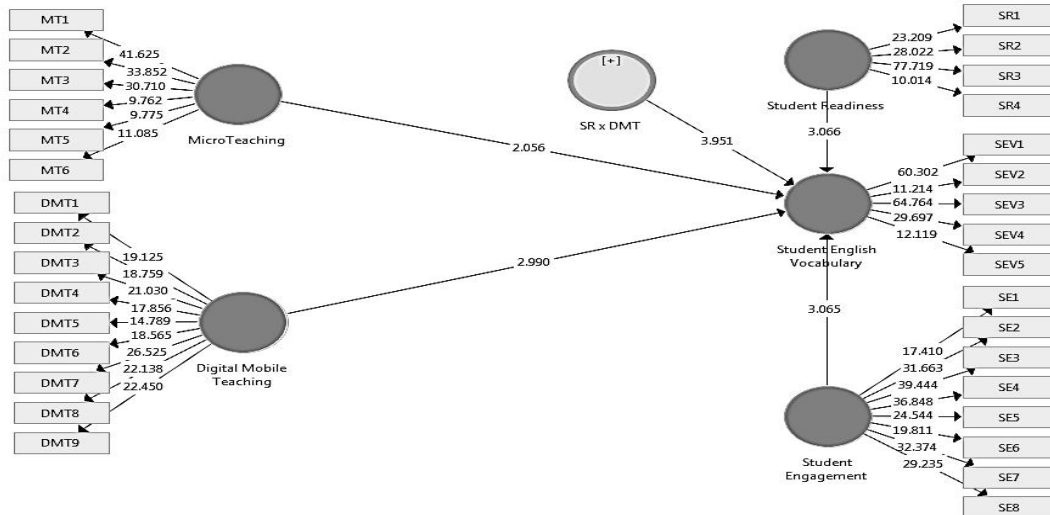
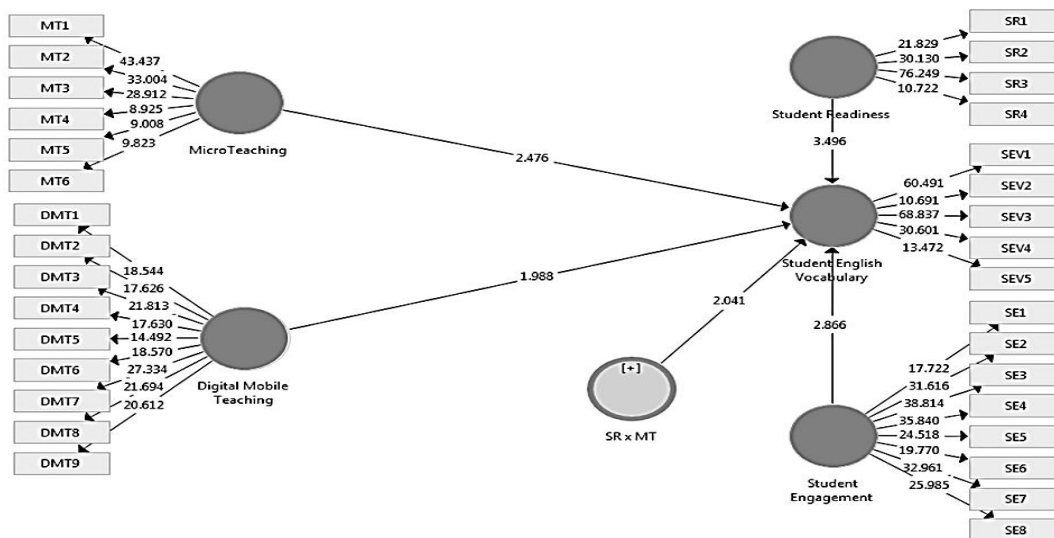Figure 6. Student Readiness as a Moderator between Digital Mobile Teaching and Student's English Vocabulary

Figure 7. Student Readiness as a Moderator between Micro Teaching and Students' English Vocabulary

Discussion

This study aimed to assess the correlation between the utilization of digital mobile teaching methods and students' proficiency in English vocabulary. The research findings reveal a significant association between digital mobile teaching and enhancing students' English vocabulary skills. These outcomes align with research by Danubina (2022) and Le & Ma (2021), demonstrating that students' English vocabulary expands when exposed to digital mobile techniques. In the 21st century, the significance of technology is anticipated to escalate, fostering a more conducive learning environment for students within their familiar surroundings.

The second objective of this study was to examine the relationship between micro-teaching and students' English vocabulary development. Comparatively, institutions that integrated the micro-teaching technique observed a noteworthy advancement in students' English vocabulary, starkly contrasting conventional teaching methods (Agustin & Silalahi, 2021).

The findings of this current study gain support from previous research, lending credence to our acceptance of Hypothesis 2.

A third objective of this research was to examine the potential correlation between students' level of class participation and their English vocabulary development. Notably, students tend to enhance their English vocabulary when they engage with subjects of personal interest. Encouragingly, the results of our study align with those of earlier investigations (Al-Jarf, 2022), leading us to validate Hypothesis H3.

Exploring the connection between student preparation and English vocabulary constituted the fourth aim of this study. As students are willing to embrace novel terminology and adopt innovative instructional approaches, their English vocabulary displays improvement, thus contributing to their overall linguistic proficiency (Tuyen, 2022). Such findings provide substantial backing for Hypothesis H4, consequently warranting its acceptance.

The fifth objective of the study was to investigate the potential moderating influence of student involvement on the relationship between digital mobile teaching and students' English vocabulary. The research findings indicate that the strength of the connection between digital mobile teaching and students' English vocabulary proficiency is contingent upon the level of student engagement. Notably, students enrolled in educational institutions that incorporate digital modes of instruction and exhibit high levels of engagement experience significant improvements in their English vocabulary, in contrast to their counterparts attending institutions that do not employ digital teaching methods (Zhang & Yu, 2021). Consequently, Hypothesis 5 (H5) is supported.

In alignment with the study's sixth objective, the interplay between micro-teaching and students' English vocabulary is influenced by the extent of student interaction. Students who actively participate in their learning through micro-teaching methods demonstrate notably higher English vocabulary proficiency than those who adhere to traditional teaching approaches without active involvement (Dehham, 2021). Thus, Hypothesis 6 (H6) is confirmed.

The seventh objective of this research aimed to ascertain whether student engagement plays a moderating role in the correlation between digital mobile teaching and students' English vocabulary. The research findings indicated that student's readiness level acted as a moderating factor in the association between digital mobile teaching and their English vocabulary. Notably, students attending educational institutions that employed digital modes of instruction and displayed receptiveness to learning new terminology exhibited more significant improvement in English vocabulary than their counterparts in institutions without such digital modes of instruction (Q. Yang, 2021). Consequently, Hypothesis 7 is validated.

The eighth research objective explored the moderating role of student readiness in the link between micro-teaching and students' English vocabulary. The study revealed that students who engaged with English through the micro-teaching approach and demonstrated an openness to learning new terms exhibited a significantly larger English vocabulary compared to students who followed conventional methods and were less receptive to learning (Kassa, Arficho, & Mulatu, 2022). As a result, Hypothesis 8 garners support.

Conclusion

The purpose of the research was to determine whether or not there is a correlation between the use of digital mobile teaching and micro-teaching techniques and the improvement of students' English vocabulary. The study further investigated the effect that student preparation and engagement play in modulating the relationship. A technique known as simple random sampling was utilized to obtain data from 425 different pupils.

According to the data, there is a strong and favourable association between digital mobile teaching and students' English vocabulary, as well as a good relationship between micro-teaching and students' English vocabulary. According to the findings, the association between digital mobile teaching and students' English vocabulary and the relationship between micro-teaching and students' English vocabulary was regulated by students' preparedness and participation. The data were acquired through the use of a questionnaire that was adapted from previously conducted research. A 5-point Likert scale was utilized to analyze the replies quantitatively. The smartPLS program was used to analyze the data.

This study has many applications in the real world. This study will assist educational institutions, decision-makers, policymakers, instructors, and students become aware of the essential elements of expanding English vocabulary. The implementation of digital and micro-teaching within educational contexts may be affected by the implications that may be made from these findings. When the advancements in information and communication technology that have taken place in the twenty-first century are considered, it is hard to emphasize how crucial it is to equip instructors to instruct pupils online. Students and teachers alike need to be equipped with the necessary technical skills for them to be able to respond appropriately to abrupt and unplanned shifts in circumstances that are brought on by emergencies.

Similarly, digital and micro-teaching pedagogies should be included in regularly scheduled obligatory programs for teacher professional development to provide teachers with continuous micro and digital teaching abilities. These programs should be included in regularly scheduled programs for teacher professional development. This system should also include a mechanism to control the students' actions. It is essential to get this done at the same time that the mechanism is being developed. While these studies offer valuable insights and significant contributions, their limitations warrant consideration. It's important to acknowledge the potential influence of memory bias on participant responses, given that all items were evaluated simultaneously. This could have potentially skewed the assessment of participant performance.

Secondly, the absence of a specific participant selection method is noteworthy. It raises questions about the sample's representativeness and introduces the possibility of biased results. In conclusion, the presented findings possess a certain level of generality, lacking differentiation among various subgroups. This omission points to the need for future research to explore potential distinctions between different groups. Subsequent studies may facilitate comparative analyses among these groups.

References

Agustin, A., & Silalahi, D. W. (2021). Critical reflection instrument in microteaching class: a research and development in english department teachers college universitas Pelita Harapan. *Prosiding Konferensi Linguistik Tahunan Atma Jaya (KOLITA)*, 67-72. Retrieved from https://ejournal.atmajaya.ac.id/index.php/kolita/article/view/3247

Al-Jarf, R. (2022). Learning vocabulary in the App store by EFL college students. *Online Submission*, *5*(1), 216-225.

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on the life of higher education students: A global perspective. *Sustainability*, *12*(20), 8438.

Borotis, S., & Poulymenakou, A. (2004). E-learning readiness components: Key issues to consider before adopting e-learning interventions. In *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 1622-1629). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

Damalie, S. N. (2018). Student-teachers' experiences of microteaching on an economics methods course. *African Research Review*, *12*(2), 101-108.

Dangol, R., & Shrestha, M. (2019). Learning readiness and educational achievement among school students. *The International Journal of Indian Psychology*, *7*(2), 467-476.

Dehham, S. H. (2021). Iraqi EFL students' ability to acquire English vocabulary through peer instruction technology. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(9), 1634-1639.

Demir Kaymak, Z., & Horzum, M. B. (2013). Relationship between online learning readiness and structure and interaction of online learning students. *Educational Sciences: Theory and Practice*, *13*(3), 1792-1797.

Dixson, M. D. (2015). Measuring student engagement in the online course: The Online Student Engagement Scale (OSE). *Online Learning*, *19*(4), n4.

Dogan, U. (2015). Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance. *The Anthropologist*, *20*(3), 553-561.

Frazer, C., Sullivan, D. H., Weatherspoon, D., & Hussey, L. (2017). Faculty perceptions of online teaching effectiveness and indicators of quality. *Nursing Research and Practice, 2017.* https://doi.org/10.1155/2017/9374189

Gratz, E. F. (2018). *An examination of the mediating effect of institutional trust on interpersonal trust and readiness for change in university faculty* (Doctoral dissertation, University of La Verne, La Verne, CA). Retrieved from https://www.proquest.com/openview/0500b9d5a5caa6e40faf0bf73c167369/1?pq-origsite=gscholar&cbl=18750

Gray, J. A., & DiLoreto, M. (2016). The effects of student engagement, student satisfaction, and perceived learning in online learning environments. *International Journal of Educational Leadership Preparation*, *11*(1), n1.

Guo, W. (2020). Study on the linguistic characteristics of college students' english vocabulary attrition in the context of Chinese. *The Theory and Practice of Innovation and Entrepreneurship*, *3*(12), 155.

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modelling (PLS-SEM) using R: A workbook*. London, UK: Springer Nature.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modelling (PLS-SEM): An emerging tool in business research. *European business review*, *26*(2), 106-121.

Hair Jr, J. F., Sarstedt, M., & Ringle, C. M. (2019). Rethinking some of the rethinking of partial least squares. *European journal of marketing*, *53*(4), 566-584.

Hasan, M. K., Fakih, A. H., & Seraj, P. M. I. (2022). The effect of technology-assisted language programme on vocabulary learning among EFL students at the tertiary level. *Heliyon*, *8*(8). https://doi.org/10.1016/j.heliyon.2022.e10313

Hofer, S. I., Nistor, N., & Scheibenzuber, C. (2021). Online teaching and learning in higher education: Lessons learned in crisis situations. *Computers in Human Behavior*, *121*, 106789.

Ingulfsen, L., Furberg, A., & Strømme, T. A. (2018). Students' engagement with real-time graphs in CSCL settings: Scrutinizing the role of teacher support. *International Journal of Computer-Supported Collaborative Learning*, *13*, 365-390.

Jian, Z. (2022). Sustainable engagement and academic achievement under impact of academic self-efficacy through mediation of learning agility—evidence from music education students. *Frontiers in Psychology*, *13*, 899706.

Kassa, K., Arficho, Z., & Mulatu, M. (2022). Relationship between students' attitude towards vocabulary learning and their english vocabulary knowledge. *Theory and Practice in Language Studies*, *12*(10), 1953-1960.

Kirmizi, Ö. (2015). The influence of learner readiness on student satisfaction and academic achievement in an online program at higher education. *Turkish Online Journal of Educational Technology-TOJET*, *14*(1), 133-142.

Kleinsorgen, C., Baumann, A., Braun, B., Griewatz, J., Lang, J., Lenz, H., . . . Hege, I. (2022). Publication activities relating to digital teaching and learning in the GMS Journal for Medical Education–a descriptive analysis (1984–2020). *GMS journal for medical education*, *39*(5). https://doi.org/10.3205/zma001580

Küsel, J., Martin, F., & Markic, S. (2020). University students' readiness for using digital media and online learning—Comparison between Germany and the USA. *Education sciences*, *10*(11), 313.

Lapitan Jr, L. D., Tiangco, C. E., Sumalinog, D. A. G., Sabarillo, N. S., & Diaz, J. M. (2021). An effective blended online teaching and learning strategy during the COVID-19 pandemic. *Education for Chemical Engineers*, *35*, 116-131.

Ledger, S., & Fischetti, J. (2020). Micro-teaching 2.0: Technology as the classroom. *Australasian Journal of Educational Technology*, *36*(1), 37-54.

Martin, D. P., & Rimm-Kaufman, S. E. (2015). Do student self-efficacy and teacher-student interaction quality contribute to emotional and social engagement in fifth-grade math?. *Journal of school psychology*, *53*(5), 359-373.

Martin, F., Stamper, B., & Flowers, C. (2020). Examining student perception of readiness for online learning: Importance and confidence. *Online Learning*, *24*(2), 38-58.

Mizani, H., Cahyadi, A., Hendryadi, H., Salamah, S., & Retno Sari, S. (2022). Loneliness, student engagement, and academic achievement during emergency remote teaching during COVID-19: The role of the God locus of control. *Humanities and Social Sciences Communications*, *9*(1), 1-9.

Mojibur, R. (2020). Online learning in higher education during covid-19 pandemic: Students' perceptions. Retrieved from http://repo.uniramalang.ac.id/id/eprint/387

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, *43*, 1-14.

Rahim, N., Nesar, S., Mumtaz, T., Naeem, S., & Ali, M. (2022). Validation of questionnaire regarding online teaching (QOT) during Covid-19 in Karachi, Pakistan. *Plos one*, *17*(9), e0274268.

Ramadhana, M., Putra, A., Pramonojati, T., Haqqu, R., Dirgantara, P., Ismail, O. A., & Wijaksono, D. S. (2021). Learning readiness as a predictor of academic resilience in online learning during school from home. *Library Philosophy and Practice (e-journal)*, *5362*.

Reddy, E. V., Reddy, P., Sharma, B., Reddy, K., & Khan, M. G. (2022). Readiness and perception of Pacific students to mobile phones for higher education. *Technology, Knowledge and Learning*, 1-20.

Reddy, K. R. (2019). Teaching how to teach: Microteaching (a way to build up teaching skills). *Journal of Gandaki Medical College-Nepal*, *12*(1), 65-71.

Siyanova-Chanturia, A., & Webb, S. (2016). Teaching vocabulary in the EFL context. *English language teaching today: Linking theory and practice*, 227-239.

Smith, P. J., Murphy, K. L., & Mahoney, S. E. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. *Distance education*, *24*(1), 57-67.

Susanty, L., Hartati, Z., Sholihin, R., Syahid, A., & Liriwati, F. Y. (2021). Why English teaching truth on digital trends as an effort for effective learning and evaluation: Opportunities and challenges: analysis of teaching English. *Linguistics and Culture Review*, *5*(S1), 303-316.

van Rensburg, E. S. J. (2018). Effective online teaching and learning practices for undergraduate health sciences students: An integrative review. *International Journal of Africa Nursing Sciences*, *9*, 73-80.

Wahyuni, S. (2021). Review on the students' speaking skill (a case study of the 6th semester students attending microteaching class). *Media Penelitian Pendidikan: Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran*, *15*(2), 136-142.

Yang, J., & Wang, J. (2022). Effect of english vocabulary on English reading performance in the Wenzhou-Kean University. *Open Access Library Journal*, *9*(2), 1-13.

Yang, Q. (2021). Application of English vocabulary presentation based on clustering in college English teaching. *Security and Communication Networks*, *2021*, 1-8.

Yu, T. (2014). *Exploratory factor analysis and reliability analysis of the student online learning readiness (SOLR) instrument* (Doctoral dissertation, Purdue University, West Lafayette, IN). Retrieved from https://docs.lib.purdue.edu/cgi/viewcontent.cgi?httpsredir=1&article=1593&context=open_access_dissertations

Zepke, N. (2015). Student engagement research: Thinking beyond the mainstream. *Higher Education Research & Development*, *34*(6), 1311-1323.

Zhai, C. (2021). Practical research on college English vocabulary teaching with mobile technology. *The International Journal of Electrical Engineering & Education.* https://doi.org/10.1177/0020720920985057

Zhang, J., & Yu, S. (2023). Investigating pedagogical challenges of mobile technology to English teaching. *Interactive Learning Environments*, *31*(5), 2767-2779.