EXPLORING THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING LEVELS AND THE PROPENSITY TO UTILIZE MOBILE RESOURCES IN ENGLISH VOCABULARY LEARNING AMONG ENGLISH LANGUAGE STUDENTS

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Abstract. To bridge the gap in the literature on how self-regulated learning levels might shape the ways students employed MALL for learning English vocabulary, this study investigated the relationship between SRL levels and the propensity to utilize MALL resources for vocabulary learning among 149 first-year English language students at a university in Vietnam. The research employed vocabulary exercises on the university's LMS system for experimentation and a mixed-methods approach, combining quantitative data from an online questionnaire with qualitative data from interviews and student journal reports to collect data. The results show that students demonstrate a high level of overall self-regulation, the employment of MALL is mainly in the on-tasks phase, and the students may need further guidance in the planning and self-refection phases. The results also revealed a significant employment of free-of-charge resources and personal technological devices when working on tasks. It can be inferred that students with higher levels of self-regulation are more likely to leverage mobile technologies for vocabulary learning. Some recommendations are highlighted accordingly.

Keywords: self-regulated learning, learning vocabulary, technological devices, mobile resources

1 INTRODUCTION

Vocabulary learning has remained one of the continuing and significant challenges for learners of the English language at different stages of their literacy development (Webb & Nation, 2017; Boroughani, Xodabande, & Karimpour, 2023). Learning vocabulary is a complex process (Yu & Trainin, 2022) in which students' awareness and self-regulation in vocabulary self-development play a crucial role in making this knowledge alive and active for students' use. With sufficient knowledge of extensive vocabulary, language users can communicate in a smoother and more situationally precise way (Webb & Nation, 2017). Recently, mobile devices and applications for learning vocabulary have provided new opportunities for students and created an increased interest in mobile assisted language vocabulary learning, especially in how learning behavior changes towards self-regulated learning (SRL) as the new technologies facilitate interaction across different language learning settings (Ko, 2019; Xodabande & Atai, 2020; Zou et al., 2029; Xodabande et al. 2022). Lin and Lin (2019) noted that due to the more interactive features of mobile applications, students can improve their vocabulary while being more attracted by a wider variety of learning contents. Ekhlasa and Shangarffam's review of related literature in 2013 noted that using self-regulation has an important role in the language learning process and it focuses on the high responsibility and autonomy of learners. More recent research studies show that the application of various digital technologies for vocabulary learning has been associated with increased learning enjoyment and motivation (Cheng et al., 2019; Hao et al., 2021; Boroughani et al., 2023), collaboration, interaction, and improved performance among language learners (Yang et al., 2021). Boroughani et al. (2023) have also found empirical evidence for the effectiveness of mobile-assisted vocabulary learning in the self-regulated learning mode.

Originated in Corno and Mandinach's (1983) theory, SRL would comprise of strategic actions, learning motivation, and self-efficacy, Chen and Hsu (2020) related SRL to planning, monitoring, and evaluating strategies, learner engagement, and abilities to achieve a goal. Hence, the three typical stages of self-regulated learning vocabulary include planning, implementing or monitoring, and self-reflection (Zimmerman & Schunk, 2001). As discussed earlier, while most previous studies have related the employment of mobile technologies and digital resources to SRL in terms of separate components such as motivation, strategies, or vocabulary retention, no study has examined how individuals' SRL as a whole

system shapes their employment of mobile-assisted language learning (MALL). The current study aims to address this gap and explores the impacts of SRL on the employment of MALL for learning vocabulary among university students. To acquire this goal, the following questions were investigated:
Question 1: What are the self-regulated learning levels of the students?
Question 2: How is SRL shaping their employment of MALL for vocabulary learning?

2 LITERATURE REVIEW

In the literature review, self-regulated learning (SRL) and SRL levels are discussed, and it is important for language learners because learning a language. Mobile assisted language learning (MALL) and mobile learning resources as a learning process that is supported with portable technological devices. Vocabulary learning SRL and mobile resources are crucial for language learners to master.

2.1 Self-regulated learning (SRL) and SRL levels

Self-regulated learning has long been researched in education in general and in language learning in particular. According to Zimmerman (1989), SRL is a process whereby students actively engage in their own learning activities from behavioral, motivational, and metacognitive perspectives in order to achieve learning objectives. Self-regulating students, thus, are those whose ideas and behaviors are within their own control, independent of the people and situations surrounding them (Zimmerman, 1989), and those who initiate learning objectives and then monitor, adapt, and assess their behavior, motivation, emotion, and environment to attain them (Schunk & Zimmerman, 1994; Zimmerman & Schunk, 1989). The established personal goals are considered the own feedback loops for their effectiveness monitoring and functioning adaptation (Spiegelman & Schunk, 2011). Similarly, Pintrich (2000) and Zimmerman (2000) described SRL as an active and systematic learning process in which students first identify their learning objectives and then modify their behavior, motivation, and cognitive processes in accordance with predetermined goals.

Presumed to be context-dependent, self-regulatory skills evolve through four levels (Zimmerman, 1996, 2000a), including (1) learning via modeling-learners infer the key components of a skill or technique from witnessing a model; (2) the imitative level-learners imitate a modeled skill while obtaining social feedback until their performance becomes close to the model's general form; (3) the self-control level-learners can apply effectively a proven skill in the absence of the model; and (4) self-regulation-learners acquire adaptive use of a skill under shifting circumstances. Pulkkinen and Puustinen (2001) noted that students who successfully complete each level in sequence would learn more easily than others. This is important for language learners because learning a language, according to Winne (1995), is a process of learners' internal development and self-orientation. SRL scales have also been developed by researchers in the fields of physical education and general learning. Toering *et al.* (2012) proposed an SRL scale for general learning based on the SRL process. They first assumed four factors: "planning," "self-monitoring," "evaluation," and "reflection" and then added two factors: "effort" and "self-efficacy," which are thought to be indicators of motivated states based on previous studies showing a positive relationship between the degrees of cognitive and metacognitive strategy use and motivation. The six-factor scale was then turned into five-factor scales by Tsuchiya (2019) using exploratory factor analyses, including two for the performance and thought phases, respectively, and one for the self-reflection phase. This scale proved to be valid in gauging learners' SRL when they learn English, in which the five parameters showed supporting relationships with one another. In particular, they encompass the phases of "planning" in the foresight phase, "self-monitoring" in the performance phase, "evaluation" and "reflection" in the self-reflection phase, and the motivational aspects. Among them, motivation has exhibited some interaction with other factors, making them crucial for maintaining an ongoing SRL process (Tsuchiya, 2019).

There is increasing acknowledgement that L2 education benefits greatly from SRL, which can result in improving learning outcomes (Teng & Zhang, 2020; Zhang et al., 2019). Therefore, one of the main objectives of contemporary education has been to teach students how to be self-regulatory (Zimmerman, 2008), especially focusing on elements that are involved in handling pre-specified learning content selected by teachers, including motivation, strategic action, and metacognition processes (Brenner, 2022; Zimmerrman, 2002). Especially when learning online via using technological resources, self-regulation in virtual learning is not the same as it is in traditional learning settings (Barnard et al., 2009), as

it plays a crucial role in enabling language learners to engage and sustain their behavior, emotion, and thought processes. Self-regulation (SRL) in online learning is a crucial skill that affects the effectiveness of computer-assisted learning (Adeyinka & Mutula, 2010).

According to Yu (2023), factors affecting SRL ability include internal personal factors and external training and intervention. One of the individual factors is motivation, which is positively correlated with SRL and learning outcomes (Lim & Yeo, 2021). Besides, students' language proficiency and self-efficacy also affect SRL. Learners with a higher language proficiency and sense of self-efficacy are likely to have higher self-regulation ability (Csizér & Tankó, 2017; Sardegna et al., 2018). Yu (2023) concluded that learners' individual factors have a great impact on their ability to regulate themselves. Online learners of second languages should therefore be conscious of their own psychological states, modify their motivation for learning, and uphold positive learning beliefs and self-efficacy. Meanwhile, external factors are those such as support and intervention they are offered within the learning process. Research has shown that students who are provided with learning strategies can enhance their academic performance and self-regulation (Bandalos et al., 2003). Similarly, Whipp and Chiarelli (2004) have noted that learning performance and learners' online SRL level can be enhanced by interventions in motivation, self-efficacy, interest, attribution, instructor support, peer aid, curriculum design, and other areas. Therefore, instructors should be aware of how students are evaluated and given feedback on their self-regulation skills. They should also provide additional resources and techniques to students for improving their self-regulation (Yu, 2023).

2.2 Mobile-assisted language learning (MALL) and mobile learning resources

Mobile-assisted language learning can be defined as a learning process in which is assisted with portable technological devices (Quinn, 2000). The mobility of portable hand-held devices-such as tablets, iPod Touches, pocket electronic dictionaries, and cell phones-as well as the mobility of the learners themselves provide L2 learners with rich, convenient, real-time, and contextual learning opportunities that desktop computers might not be able to provide (Laurillard, 2007; Sharples, 2006). Mobile devices offer interactive affordances that enable learners to adapt the level of difficulty of the learning material to their own language competence level and learn at their own speed (Hung, Huang, Su, & Lin, 2012; Norris, Hossain, & Soloway, 2011). Hence, MALL enables students to transition from passive learning to active learning by overcoming the time and space constraints of traditional teaching modes (Chun-feng, 2019). Shamsi et al. (2019) revealed that the benefits included reducing students' anxiety and dread related to language, and learners' autonomy or control become apparent when MALL is incorporated into the English language learning process (Behforouz & Frumuselu, 2020; Bhestari & Luthfiyyah, 2021; CLASS, 2020; Lutfi, 2020). Furthermore, MALL is found to enhance learners' self-confidence in the language (Ali et al., 2020), increase students' interest in studying English (Ali et al., 2020; Tajik, 2020), make foreign language lessons more stimulating and favorable (Ciampa, 2014; Deris & Shukor, 2019; Kwangsawad, 2019; Mahdi, 2018; Tayan, 2017; Zheng et al., 2017), and facilitate language learning to be more efficient, especially for students of digital generations nowadays. Additionally, mobile technologies may enhance English language instruction. Students' academic success in learning English was markedly enhanced by an annotatable multi-media e-reader (Liu et al., 2021). Students' enthusiasm in studying the English language was piqued by mobile technology, which also increased learners' vocabulary retention in the language and frequency of vocabulary use (Zhai, 2021). Furthermore, the utilization of diverse digital tools for vocabulary acquisition has been linked to heightened enthusiasm and enjoyment of the learning process (Hao et al., 2021), enhanced cooperation and communication, and enhanced proficiency among language learners (Yang et al., 2021).

In the big data era of today, the internet has offered students a multitude of learning tools (Hwang & Fu, 2020). The term "online learning resource," as used by different writers, generally refers to any digital instrument, platform, or material intended to assist and promote learning over the internet. These resources are available in a variety of formats, which can be classified as forms of media (adaptive, interactive, narrative, and productive) (Laurenillard, 2013), online learning tools (like mind maps and quizzes), and online learning content (like video lectures, tutorials, online courses, e-books, etc.) (Mills et al., 2014). Thus, MALL has offered substantial affordances to students that go beyond the classroom's physical boundaries (Hao et al., 2021).

2.3 Vocabulary learning, SRL and mobile resources

Vocabulary, one of the language knowledge components, is crucial for language learners to master (Cameron, 2001). Having an extensive vocabulary is necessary for them to become proficient in that language (Wright, 2016), as it has a close relationship with both language production and comprehension (Anjaniputra & Salsabila, 2018). Vocabulary knowledge has long been regarded as the basis for learning new languages and an essential aspect to all uses of language (Morris & Cobb, 2004). However, vocabulary learning has remained one of the significant challenges that EFL (English as a Foreign Language) learners confront during their language literacy development (Webb & Nation, 2017). In learning English vocabulary, Smith (2019) has outlined all essential aspects of vocabulary that students need to know, including meaning, spelling, pronunciation, word family, part of speech, frequency, usage, and collocation.

With the use of online resources in vocabulary learning, Nurhasanah (2020) looked at the feedback process and found that these tools allow teachers to give students personalized feedback and direction. Before technology was introduced into the classroom, the majority of teachers found it challenging and time-consuming to remark on and/or write on their students' work (Manegre & Sabiri, 2022). Using online resources makes it easy for teachers to provide instant feedback through digital technology-based formative assessment, and it also boosts student engagement and satisfaction in the classroom (Elmahdi et al., 2018). As for mobile devices, the findings are inconclusive because of contrasting viewpoints. Mobile devices are perceived to be used for more personal and social apps rather than regarding it as a kind of learning tool (Stockwell, 2010) in mostly distracting environments (Reinders & Hubbard, 2013) with some unresolved technical problems, the difficulty of concentrating on learning while on the move, and insufficient example sentences for target words, which may result in students' unwillingness to use mobile technologies for vocabulary learning (Lu, 2008). However, it has also been found that learners may benefit from using mobile devices to assist them in processing the vast amount of words they must learn (Hulstijn & Laufer, 2001; Nation, 2001). While some mobile vocabulary learning apps allow language learners to download different kinds of content for offline study, others use the Global Positioning System (GPS) to find the learners' whereabouts and offer words that are relevant for the context (Godwin-Jones, 2011). When it comes to teaching L2 vocabulary, the use of MALL has proven to be a very successful method (Lin & Lin, 2019; Madhi, 2018).

With the employment of SRL in vocabulary learning, various studies have been conducted to find out the relationship among them. For example, research by Araya et al. (2013) revealed that teaching students self-regulation skills and raising their awareness of SRL can be viewed as the cornerstone of general learning, particularly when it comes to vocabulary acquisition. Mizumoto (2013), additionally, explored the effects of self-regulated vocabulary learning processes on learners' self-efficacy. Drawing on questionnaires and a vocabulary test, the study findings indicated that the SRL process could boost learners' self-efficacy and increase their vocabulary knowledge. In other words, the process of self-regulated vocabulary learning not only increases self-efficacy but also leads to the development of vocabulary knowledge. There has also been a significant positive correlation between students' English vocabulary level and the self-regulation ability of mobile vocabulary learning. Liang (2016) discovered that students with higher English proficiency have higher self-regulation ability in mobile vocabulary learning than those with lower English proficiency, particularly in metacognitive control and boredom control. While some students with low language proficiency are hesitant to use social media for language practice, higher-level learners, on the other hand, look for ways to practice their language after class and will use technology more actively to adjust their language learning and achieve their learning goals (Yu, 2023).

Despite various studies on English vocabulary learning with mobile resources and how self-regulated learners employed some particular tools of technology for vocabulary learning, the relationships among different aspects of SRL and MALL employment for vocabulary learning are still under research. SRL, with its different stages and levels, may affect the employment of mobile resources in students' self-study of English vocabulary in different ways. Therefore, it is essential that a further study be conducted to find out the relationship between SRL stages and levels and the propensity of mobile resource utilization in improving English vocabulary knowledge among EFL students. Findings of the study are expected to bridge the gap mentioned and contribute to the learning and teaching of English vocabulary to make the activities more effective, especially when students work on their own using available mobile resources they can access and in their favorable ways.

3 RESEARCH METHOD

This mixed-method study, which follows a quasi-experimental research design, generated quantitative data from an online questionnaire and qualitative data from interviews and journal reports from the participants. To evaluate the levels of SRL, a questionnaire was adapted from an inventory developed and validated by Tsuchiya (2019); the scale covered all defined factors of SRL, including self-efficacy, planning, effort, self-monitoring, and evaluation/reflection. The main body of the scale contained 40 multiple-choice questions to target participants' acceptance on a 5-point Likert scale. For the researcher to read the responses, the significance of each point in the 5-point scale is divided as follows:

Table 3.1: Scale ranges used to read the mean scores

Scale range	Usefulness	Frequency	Influence	Agreement	Significance
1.00 -1.80	Totally not useful	Never	Totally not influential	Strongly disagree	Totally not significant
1.81 - 2.60	Not useful	Infrequent	Not influential	Disagree	Not significant
2.61 - 3.40	Neutral	Neutral	Neutral	Neutral	Neutral
3.41 - 4.20	Useful	Frequent	Influential	Agree	Significant
4.21 - 5.00	Totally useful	Totally frequent	Totally influential	Strongly agree	Totally significant

The researchers added a demographic section and questions to assess the behaviors and attitudes of the participants towards MALL. In addition, the semi-structured individual interview was organized after that to offer the participants the opportunity to discuss their MALL use in more detail. To further triangulate the data, self-reflections of the participant were also collected from their journal reports.

The participants in this study were first-year students in a Bachelor of English language program in Ho Chi Minh City, Vietnam. The questionnaire was launched online, and 149 respondents were collected. The respondents were asked to give their evaluations and feedback on the questionnaire at the beginning of a writing course in their curriculum. For the purpose of this study, the researchers scoped their study to vocabulary learning in this writing course (Writing 1). To examine how the students really employed MALL and self-regulated their vocabulary learning, a series of self-study vocabulary lessons were crafted following the content and progress of the Writing 1 course; afterwards, these lessons were uploaded to the official university's learning management system (LMS) and introduced to the participants by their teachers. To allow SRL to work, the teachers only made use of the lessons as optional activities and did not put any force on the students to complete. At the middle of the syllabus, based on the amount of completed self-study lessons recorded by the LMS, most and least active students were identified, and eight of them were chosen for an in-depth stimulated recall interview on their own writing works to see how they had been working on the vocabulary lessons and their evaluation and attitudes towards this way of practice.

Responses to the questionnaire were computed using descriptive statistics analyzed and exported by SPSS 26. The qualitative data from the interviews and qualitative section of the survey were transcribed and the underlying meanings inferred by content analysis strategy in qualitative research. As mentioned earlier, these data were also triangulated with self-reflection journals that the students had to complete together with the self-study lessons in LMS.

4 FINDINGS AND DISCUSSION

4.1 Students' Self-Regulated Learning Levels

The result for the students' SRL level mainly comes from quantitative analysis of responses to the questionnaire. Table 4.1 shows the SRL levels of the students across three stages, namely forethought, performance, and self-reflection. For each indicator, the mean score of the responses was interpreted based on scale ranges specified in Table 4.1.

Table 4.1. Students' self-regulated learning levels

Self-regulated learning stages	Mean	Scale	Std. Deviation
Factors for the forethought phase			
Self-efficacy			
When I come across something difficult in learning English, I am able to find solutions.	3.46	Agree	1.004
I think I can overcome something difficult in learning English if I make efforts.	3.79	Agree	1.009
I know what to do when I have troubles learning English.	3.08	Neutral	1.088
I understand the purpose of my studying English and what I should do for it.	3.83	Agree	1.070
If I study English as hard as possible, I succeed in dealing with troubles in learning English.	4.23	Strongly agree	.881
I can stay calm when I come across something difficult in learning English because I know how I should deal with it.	3.45	Agree	1.068
When I work on a task in an English textbook, I understand its purpose.	3.62	Agree	1.037
Average	**3.79**	**Agree**	
Planning			
I properly make plans to combat my problems in learning English.	3.30	Neutral	1.070
I grasp what I should do in learning English.	3.40	Neutral	1.190
I think what will be necessary for me to get over my problems in learning English.	3.45	Agree	1.074
Before I set about studying English, I think about what problems I have in learning English.	3.56	Agree	1.048
When I study English, I think about what I should do first and next.	3.32	Neutral	1.117
I can manage to keep studying English even if unexpected things happen.	3.36	Neutral	1.078
Before I begin to study English, I think what the best way is to solve my problems.	3.51	Agree	1.037
Average	**3.4**	Agree	
Factors for the performance phase			
Effort			
I work on any English assignment as hard as I can.	4.13	Agree	.859
Even if I have an English learning task that I'm not good at, I do my best.	3.86	Agree	.980
Even if I have an English learning task that I don't like, I can do it hard.	3.74	Agree	1.091
When I study English, I work hard.	3.98	Agree	.996

I keep studying an English learning task even if it is too difficult for me.	4.14	Agree	.959
I never give up on working on a task in learning English, even if it is difficult for me.	3.49	Agree	1.160
Even when I think a task in learning English unimportant for me, I work on it.	3.63	Agree	1.074
I concentrate on my English study when I sit at the desk.	3.26	Neutral	1.134
Average	**3.77**	Agree	
Self-monitoring			
I check how much I make gains while I'm studying English.	3.44	Agree	1.042
I check if I make good progress while I'm studying English.	3.59	Agree	1.027
I pay attention to whether my learning method is good or bad while I'm studying English.	3.56	Agree	1.009
I study English while thinking whether my learning method is effective or not.	3.48	Agree	1.069
While I study English, I care about how well I engage in learning English.	3.66	Agree	1.031
I check my answers during my studying English.	3.79	Agree	.981
I study English on my own because I want to raise my English proficiency.	3.95	Agree	.925
I work on a task while thinking of what I should do for it.	3.94	Agree	.887
Average	**3.67**	Agree	
Factors for the self-reflection phase			
Evaluation & reflection			
I sometimes reflect on my learning English based on my problems.	3.75	Agree	1.046
I reflect on my studying English and think the ways I did were good or not.	3.51	Agree	1.082
I reflect whether the English studying method I used was good or not.	3.67	Agree	.983
I reflect on everything I did in studying English on a day.	3.31	Neutral	1.096
I reflect on every single step I've taken in learning English.	3.46	Agree	1.037
I sometimes make sure how much I've raised my English proficiency.	3.72	Agree	.958
I sometimes reflect on what I've done for my studying English and find what to do from now on.	3.46	Agree	1.081
Based on my experiences in learning English, I think about new learning ways.	3.50	Agree	1.131

I sometimes wonder whether my learning methods for English are truly effective or not.	3.72	Agree	.943
Average	**3.56**	Agree	

Generally, based on this self-evaluation quantitative data, the students do not seem to have a considerately high level of SRL. This result may come from the fact that they are still year-1 university students having just transferred from high school education, where closely coaching from teachers was more focused. Across the three stages, performance was rated highest (M = 3.72), followed by forethought (M = 3.59), and evaluation and self-reflection (M = 3.56).

For self-efficacy factors in the planning stage, the students are quite confident in terms of believing in themselves in dealing with "difficulties" and "making efforts." They strongly believe (M = 4.23) that if they study English as hard as possible, they will succeed in dealing with troubles in learning English. However, the lowest mean score (3.08) also went to "I know what to do when I have troubles learning English," with the highest standard deviation (SD = 1.008) in the group. It seems that a considerable number of them still need much guidance and mentoring when big challenges arise in learning. Compared to self-efficacy, interestingly, planning skills would be more problematic to the students; the average mean score for this group is only 3.4, which is also the lowest average mean score among the groups of factors. The responses come out that the students are not confident in deciding what to "do first and next," thus they have not had truly reasonable plans or made effective plans to combat problems in learning English.

For effort group in the performance phase, the students might be more self-assured about their attempt with general statements such as "I work on any English assignment as hard as I can" (M = 4.13, SD = 0.895) and "I keep studying an English learning task even if it is too difficult for me" (M = 4.14, SD = 0.095). For more specific tasks, such as sitting at the desk or working on a difficult task, they show less assertiveness with mean scores of 3.26 (SD = 1.134) and 3.49 (SD = 1.160), respectively. While self-planning results are not too high, self-monitoring also received a common equivalent of "agree," with the mean scores ranging from 3.44 to 3.95. The respondents have challenges in activities such as paying attention, checking, and engaging. They tend to start working on their own to "raise English proficiency" and work directly on a task while thinking of what to do for it.

Results from factors for the self-reflection phase confirm that the learners do not spend much time on checking and self-correcting for improvement. A number of them are even neutral in insisting that "I reflect on everything I did in studying English on a day" (M = 3.31, SD = 1.096) or spend time "thinking of new learning ways" (M = 3.50, SD = 1.151).

Overall, students need to strengthen their SRL skills, especially in forethought and self-reflection, to optimize their learning. Journal reports also confirmed varied experiences with their learning activities. While some found them moderately challenging, others struggled more. Most students reported improved vocabulary knowledge, but preferences for online or paper resources varied, underscoring the need to cater to individual learning styles.

4.2 The relation between SRL and MALL utilization

This section of the study addressed the second research question, aiming to determine how SRL influenced the students' choices and effectiveness in using MALL applications to learn new vocabulary.

When explained about MALL and asked to evaluate the significance of MALL to the nature of self-study of vocabulary and how frequently that MALL had been employed in their learning, the results (as in Table 4.2) generally show that MALL was rated as a useful tool and resource and quite supportive for their learning styles. This finding contradicted some studies suggesting students do not use digital technology for self-regulation (Yot-Domínguez & Marcelo, 2017).

Table 4.2. Students' evaluation of SRL significance and their level of technology utilization

	Mean	**Scale**	**Std. Deviation**
Evaluation of SRL significance	4.51	Totally significant	.794
Frequency of MALL utilization in learning English	3.78	Frequent	1.077

In reporting on the specific tools, devices, and resources that were employed most frequently, the students rated the significance and usefulness of tools like smartphones, desktops, tablets/laptops, LMS, apps, online courses, library resources, e-resources with textbooks, and other internet resources. As shown in Table 4.3, smartphones and tablets/laptops were rated highest, indicating a preference for flexible and accessible mobile tools. Paid apps and online courses received the lowest ratings, likely due to cost concerns or a preference for free options. Other tools, including desktops, LMS, free apps, free online courses, library resources, and textbook e-resources, received neutral ratings, suggesting no strong opinions on their significance for vocabulary learning. These findings suggested a need to investigate the low significance of paid resources and to focus on enhancing mobile learning tools.

Table 4.3. Evaluation of the most-often employed MALL in learning vocabulary

The significance of MALL in learning English	**Mean**	**Scale**	**Std. Deviation**
Smartphone	3.68	Significant	1.027
Desktop	2.83	Neutral	1. 119
Tablet /laptop	3.59	Significant	1.121
LMS	3.09	Neutral	1.068
Free apps	3.30	Neutral	1.081
Paid apps	2.48	Not significant	1.069
Free online courses (extra curriculum)	2.83	Neutral	1.057
Paid online courses (extra curriculum)	2.60	Not significant	1.070
University library resources (printed books)	2.92	Neutral	1.075
University library resources (e-books)	2.88	Neutral	1.059
E-resources accompanying textbooks	2.95	Neutral	1.055
Other resources on the internet	3.28	Neutral	1.071

As discussed in the research design, a semi-structured individual interview was conducted to examine more deeply how SRL might shape learners' employment of MALL for vocabulary learning. 8 students were chosen for interview based on the reported time with MALL and the frequency and their real time with vocabulary assignments on the university LMS system. The 8 students were divided into 2 groups: Group one consisted of the least frequent users, and group 2 included the most frequent users.

Both groups viewed vocabulary as essential for English skills, using methods like movies, themed words, apps (e.g., Duolingo), flashcards, and cultural exploration. Reading books and watching movies were favorite activities, while paragraph writing was least favored due to difficulty. Both groups found LMS exercises useful, especially multiple-choice questions, but Group 1 struggled with reflection exercises. All students planned to revise vocabulary and use supplementary LMS exercises for exams, preferring laptops for their larger screens. Interviewees emphasized the convenience and accessibility of these resources, allowing them to practice vocabulary on the go and according to their individual schedules. Additionally, students highlighted the ability of MALL to cater to different learning styles through functionalities such as audio pronunciations, visual aids, and interactive exercises. However, there were some challenges associated with MALL use. The students mentioned distractions (social media notifications, games) as potential barriers to maintaining focus during self-study sessions and remembering difficult vocabulary. Additionally, concerns regarding the accuracy of information presented on some mobile applications were raised. Preferences for learning materials varied, with both paper and online resources being utilized.

Interestingly, from the individual interviews, it was noted that compared to the planning and reflecting stages of SRL, the performance shaped the employment of MALL more clearly and directly. The employment of smartphones, tables, LMS, and free apps, as shown in Table 4.3, mainly occurred in this

stage of SRL. Some students stated that they sometimes used these devices for initial searching for information and available guidance rather than for any planning purpose. Meanwhile, the self-reflection stage of SRL received the least employment of MALL and awareness, even with the exercises designed and made ready for self-refection purposes in the LMS.

However, the more frequent MALL users showed a deeper understanding of vocabulary importance and more effective self-study strategies compared to group 1, which relied more on teachers and struggled with self-directed learning. This MALL-engaged group actively sought solutions and tailored their learning, using other online resources such as Duolingo and flashcards. Learners in group 1, on the other hand, preferred teacher-guided instruction and tended to avoid challenging exercises.

5 CONCLUSIONS AND RECOMMENDATIONS

The study found that while all of the mean scores are above average, the planning and goal setting had the lowest average (3.4). This suggests that as students demonstrate a high level of overall self-regulation, they may benefit from further guidance on strategically planning their vocabulary learning using MALL resources. The students would also need closer guidance and encouragement in their post-stages of SRL. This result may typically happen with freshman students who are still novice to more self-regulated methods in colleges, especially with students in an Asian country with a common belief of a strong teacher-dependent learning style. The results also revealed a significant employment of free-of-charge resources and personal technological devices when working on tasks. This result strongly corresponds to the reported levels of SRL in the 3 phases of forethought, performance, and reflection. It can be inferred that students with higher levels of self-regulation are more likely to leverage mobile technologies for vocabulary learning. However, the high deviations in each factor in the questionnaire indicate some variation in this relationship, highlighting the need for further exploration of the specific SRL strategies that contribute most effectively to MALL use.

Based on the findings, several other recommendations have been withdrawn to optimize the use of SRL and MALL for vocabulary learning among English language students. One of them is promoting metacognitive strategies like encouraging students to actively monitor their progress, evaluate their understanding, and adjust their learning strategies as needed. This can involve activities such as keeping learning logs, identifying areas of difficulty, and seeking additional practice on specific vocabulary terms. Optimizing MALL usage is another suggestion. First of all, lecturers may give a list of credible mobile resources by developing a list of reputable and well-designed MALL applications and platforms specifically for vocabulary learning. This list can be shared with students and integrated into the course materials, and lecturers incorporate MALL integration lessons through dedicated classroom time to introduce students to the functionalities and benefits of specific MALL resources. This can help students optimize their use of available apps and explore features that might be particularly helpful for vocabulary retention.

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MỨC ĐỘ TỰ ĐIỀU CHỈNH HỌC TẬP VÀ XU HƯỚNG SỬ DỤNG CÁC TÀI NGUYÊN CÔNG NGHỆ CHO TỰ HỌC TỪ VỰNG CỦA SINH VIÊN NGÔN NGỮ ANH

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Tóm tắt. Nhằm làm rõ mối quan hệ giữa mức độ tự điều chỉnh học tập của sinh viên và việc sử dụng các thiết bị di động hỗ trợ việc học ngôn ngữ để học từ vựng tiếng Anh, nghiên cứu này đã nghiên cứu mối quan hệ giữa cấp độ học tập tự điều chỉnh và xu hướng sử dụng tài nguyên điện tử di động để học từ vựng của 149 sinh viên năm thứ nhất đang học tiếng Anh tại một trường đại học ở Việt Nam. Nghiên cứu sử dụng các bài tập từ vựng trên hệ thống LMS của trường đại học để thử nghiệm và tiếp cận theo các phương pháp hỗn hợp, kết hợp dữ liệu định lượng từ bảng câu hỏi trực tuyến với dữ liệu định tính từ các cuộc phỏng vấn và nhật ký học tập của sinh viên để thu thập dữ liệu. Kết quả cho thấy sinh viên thể hiện mức độ tự điều chỉnh cao, việc áp dụng các thiết bị hỗ trợ chủ yếu ở giai đoạn thực hiện nhiệm vụ và sinh viên có thể cần được hướng dẫn thêm trong các giai đoạn lập kế hoạch và tự suy ngẫm. Kết quả cũng cho thấy sinh viên chủ yếu sử dụng các nguồn tài nguyên miễn phí và thiết bị công nghệ cá nhân khi thực hiện nhiệm vụ học tập. Có thể suy ra rằng những học sinh có mức độ tự điều chỉnh cao hơn có nhiều khả năng tận dụng công nghệ di động để học từ vựng nhiều hơn. Nhóm nghiên cứu cũng đưa ra một số khuyến nghị tương ứng.

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