TEACHING SELF-REGULATED LEARNING STRATEGIES ON EFL STUDENTS IN MOOCS: A CASE STUDY IN VIETNAM

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ABSTRACT

Self-regulated learning (SRL) has been extensively explored in psychological research, particularly for its influential role in online education systems. Despite its importance, little is understood about how SRL-focused training impacts students' academic experiences. This study seeks to address this gap by examining SRL interventions within Massive Open Online Courses (MOOCs). Using a quasi-experimental design, the research involves both control and experimental groups. SRL strategy questionnaires and learner self-evaluations for speaking skills were administered before and after the training. Learning diaries were used to analyze students' application of SRL strategies in the MOOC environment, and pre- and post-tests measured the intervention's impact on speaking proficiency. Additionally, descriptive statistical analysis was conducted on the questionnaire results, complemented by thematic analysis of students' reflective journals. The findings revealed a strong positive correlation between EFL students' SRL strategy usage and their speaking course outcomes. Reflective journal analysis indicated that students tailored SRL strategies to their learning processes within MOOC contexts. The study provides practical insights for incorporating SRL training into MOOC-based learning and offers a theoretical foundation for promoting SRL across diverse educational systems.

Keywords: Teaching self-regulated learning strategies, synchronous online learning, MOOCs, higher education, Vietnam.

INTRODUCTION

Since its initial conceptualization in the 1970s, SRL has been regarded as a mechanism for self-control and self-instruction across various fields of study (Schunk & Greene, 2018). Numerous theoretical frameworks have since emerged to explore how SRL enhances the learning process. Defined broadly, SRL encompasses cognitive, metacognitive, motivational, behavioral, and emotional aspects (Panadero, 2017). Zimmerman (2000) described it as a cyclical process involving personal, behavioral, and environmental elements during learning and performance phases. This process occurs in three stages: forethought, performance, and self-reflection. Pintrich (2000) characterized SRL as students actively setting goals and employing cognitive, metacognitive, and resource management strategies to achieve those goals. This research adopts Pintrich's definition due to its applicability to MOOCs

Studies highlight the critical role of instructor support in fostering SRL, especially in promoting interactions among students and educators in online platforms (Cho & Kim, 2013; Gopez & Gopez, 2024). Meta-analyses have shown that SRL training programs significantly improve academic performance and enhance

cognitive and motivational strategies (Theobald, 2021). These programs also boost self-efficacy, directly influencing academic outcomes. However, details such as duration, resources, and delivery modes of these programs are often unclear, limiting their practical application

Within ESL/EFL education, SRL strategies have been shown to enhance language competence. For example, these strategies have positively impacted students' writing and speaking skills (Teng et al., 2020; Wijaya, 2021). Experimental studies have demonstrated that lower-proficiency students benefit more from SRL training than their higher-proficiency peers, underscoring the need for tailored approaches (Apridayani, 2022). While some argue that SRL is rooted in Western educational values, studies show that Asian students, including Vietnamese learners, can develop strong SRL capabilities with adequate opportunities (Lâp, 2008; Li et al., 2018; Tran & Tran, 2021).

In Vietnam, the Ministry of Education and Taining (2017) has emphasized the importance of self-directed learning to prepare students for the evolving demands of the workforce in the 4th Industrial Revolution in the context of the current graduates; in this regard, Vietnamese students would become self-directed by learning through open sources, such as Open Education Resources - OERs - and Open Course Ware – OCW. While research on SRL in Vietnamese higher education is growing, studies predominantly focus on specific skills. These studies focused on the impacts of SRL strategies on a specific skill, such as on writing (Mai, 2021), listening (Lem, 2019), the relationship between self-regulated English learning and self-efficacy (Ha, 2021), English major's perceived effects of SRL strategies on their learning (Tran & Nguyen, 2020), relationship between university students' self-efficacy and their English proficiency (Ngoc Truong & Wang, 2019), or SRL strategies and depression among medical students (Van Nguyen et al., 2015). This leaves a gap in understanding SRL's broader impacts. This study aims to fill this gap by exploring SRL strategies in MOOCs and their influence on EFL students' speaking performance.

Teaching students strategies for self-regulated learning is vital as it fosters their ability to manage their own learning processes (Parveen & Jan, 2023). These strategies encompass a self-guided approach through which learners apply their mental abilities to develop task-specific skills across different contexts (Nurjanah, 2023). By adopting such methods, students can minimize distractions from digital tools and enhance both their academic performance and overall learning outcomes (Wang et al., 2022). Furthermore, in the current digital era, essential skills like active learning, strategic learning methods, and critical thinking are increasingly indispensable (World Economic Forum, 2018, 2020). This underscores the necessity for students to not only gain knowledge but also master the methods for acquiring it.

An experimental study conducted by Hsu (2021) investigated the impact of self-regulated learning user interfaces (SRLUI), which support activities such as setting goals, planning tasks, self-assessment, and creating reminders, on the academic results of students enrolled in MOOCs. Findings indicated that employing SRL tools could benefit certain learners, helping them achieve improved grades. However, the research did not examine other influential factors such as prior knowledge, instructor involvement, or the quality of the course materials. Additionally, the study relied solely on self-reported pre-course questionnaires to measure self-regulated learning, a method prone to bias and inaccuracies.

This study comes into existence to meet this very purpose. Finally, the heightened emphasis on self-regulated learning at the university level presents a considerable challenge, particularly for students transitioning from high school to higher education (Vosniadou, 2020). Consequently, implementing a training program on SRL would greatly benefit these learners (Theobald, 2021). This study aims to fulfill that objective. The research questions are framed as follows:

1. To what extent do students' SRL strategies differ after being taught in MOOC-based learning environment?
2. What is the relationship between the EFL students' SRL strategies and their speaking final-course grades?
3. How do EFL students employ the taught SRL strategies in their learning in a MOOC-based learning environment?

LITERATURE REVIEW

Self-regulated Learning under the View of Social Cognitive Theory

Bandura's Social Cognitive Theory (1986) provides a framework for understanding self-regulated learning (SRL) as the result of interactions among personal, behavioral, and environmental factors. According to Schunk and DiBenedetto (2020), personal aspects encompass thoughts, beliefs, perceptions, and emotions, while behavioral elements include choices of activities, persistence, effort, performance, and the ability to adapt to surroundings. Environmental factors involve social influences, such as role models, guidance, feedback, standards, incentives, and opportunities for self-assessment.

Bandura's Social Cognitive Theory places significant emphasis on learning through observation (observational learning) and confidence in one's capabilities (self-efficacy) as essential components of SRL. Core self-regulation strategies, including setting goals, monitoring progress, and reflecting on actions, are pivotal. Similarly, Zimmerman's research (2000) complements Bandura's theory, highlighting the critical role of social environments, such as feedback and encouragement from educators, peers, and family, in fostering SRL. Collectively, these viewpoints illustrate that SRL is shaped by the dynamic interaction of mental processes, social influences, and external environments.

Zimmerman's Cyclical Phases Model of SRL

Stemming from the aforementioned social-cognitive view of SRL, Zimmerman and Moylan (2009) proposed a cylindrical model of SRL including three main phases: forethought, performance, and self-reflection. In the forethought phase, students are involved in task analysis which comprises of goal setting and strategic planning, and self-motivation beliefs, such as self-efficacy, task interest or value, and outcome expectations. The performance phase or Phase 2 involves self-control and self-observation processes, in which students will utilize cognitive, metacognitive, resource management, and motivation strategies to remain engagement in tasks and motivate themselves to complete the tasks. The third phase to the self-reflection phase includes self-performance and makes causal attributions about their academic outcomes (Zimmerman, 2000). These three phases occur in a cyclical manner (Zimmerman, 2000, 2013).

Building on the social-cognitive perspective of self-regulated learning (SRL), Zimmerman and Moylan (2009) introduced a three-phase cyclical model of SRL: forethought, performance, and self-reflection. The forethought phase involves analyzing tasks, which includes setting goals and planning strategies, as well as fostering motivational beliefs such as self-efficacy, task interest, value, and expectations for outcomes. During the performance phase, students focus on processes like self-control and self-monitoring, employing strategies for cognition, metacognition, resource management, and motivation to sustain their engagement and drive task completion. The final phase, self-reflection, involves evaluating performance and attributing outcomes to specific causes (Zimmerman, 2000). These phases function cyclically, with insights from one phase informing the next (Zimmerman, 2000, 2013).

This model offers a detailed framework for understanding SRL sub-processes and highlights essential strategies, such as cognitive, metacognitive, and resource management techniques, that are particularly valuable in online learning contexts (Lehmann et al., 2014). Notably, this model has been widely adopted in virtual learning environments, including massive open online courses (MOOCs) (Min & Nasir, 2020).

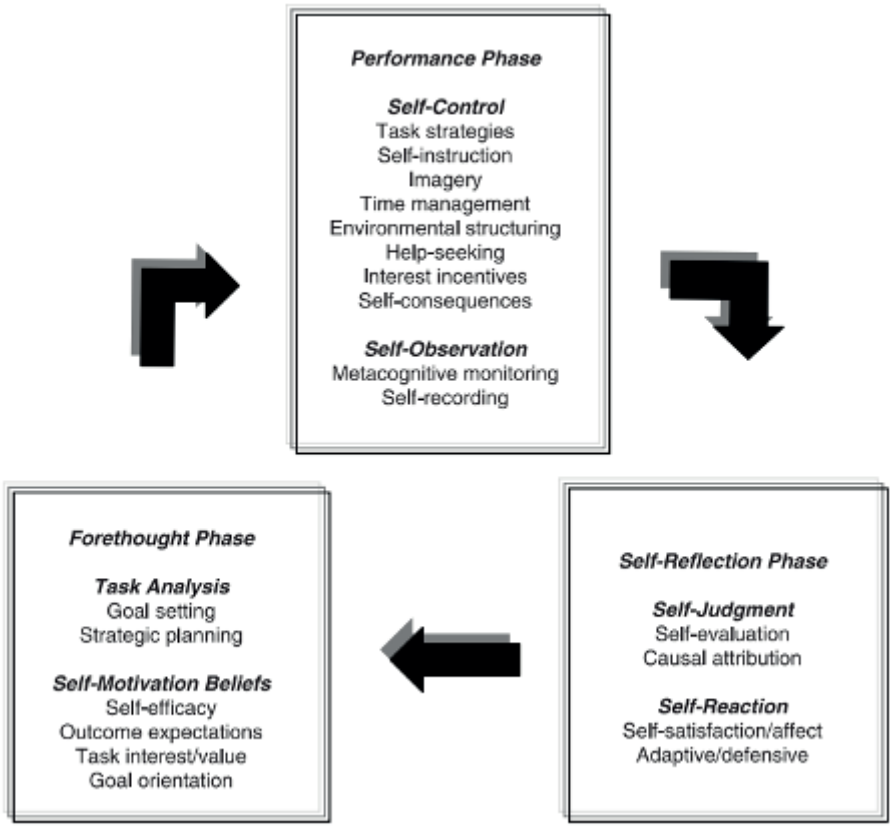

Figure 1. Cyclical phases model. Adapted from Zimmerman and Moylan (Zimmerman & Moylan, 2009)

SRL Strategies on Students' Academic Achievement in HEs

Numerous studies have examined the factors affecting academic success in higher education (HE), including peer learning (e.g., Lim et al., 2020), the use of learning platforms (e.g., Han & Shin, 2016), and self-regulated learning (SRL) strategies (e.g., Broadbent & Poon, 2015). This section emphasizes the role of SRL strategies in shaping academic outcomes in HE, which forms the core of this research.

Schneider and Preckel (2017) conducted a meta-analysis that revealed a significant link between SRL strategies and academic achievement. Among the motivational and engagement-related elements, resource management strategies—such as managing time, seeking help, and engaging in peer learning—exhibited a moderate yet meaningful relationship with performance. Effort regulation also showed a strong positive correlation. These findings align with Lim et al. (2020), who highlighted peer learning's contributions to academic success. Cognitive and metacognitive strategies were also positively linked to performance, though the association was moderate. Similarly, Honicke and Broadbent (2016) noted a medium-strength connection between self-efficacy, an essential SRL component, and academic performance.

Despite this, some research has produced mixed outcomes. For instance, Lim et al. (2020) and Cho and Heron (2015) found that certain SRL strategies did not always correlate positively with performance, indicating the influence of context and the multifaceted nature of SRL's effects.

In online education, SRL strategies are generally linked to better academic results (Broadbent & Poon, 2015; Kizilcec et al., 2017; Turan & Demirel, 2010), though supporting evidence remains limited (Goradia & Bugarcic, 2017).. Kizilcec et al. (2017) refined the Online Self-Regulated Learning Questionnaire (OSLQ) initially developed by Barnard et al. (2008) and updated by Littlejohn and Milligan (2015). Administering the questionnaire to over 4,800 participants, they found that actively setting goals and planning strategies strongly contributed to meeting course objectives. Interestingly, help-seeking behaviors were sometimes found to impede goal achievement.

In a later study (2020), Kizilcec and colleagues explored the impact of plan-making and "value relevance" interventions on course completion rates. Their results revealed no notable differences between the

interventions, suggesting that SRL initiatives may require additional context-aware support to improve their effectiveness (Kizilcec et al., 2020).

Turan and Demirel (2010) explored the relationship between self-regulated learning skills and achievement, concluding that developing SRL abilities enhances overall knowledge and transforms learners' self-efficacy. However, Mahmoodi et al. (2014) did not observe a positive relationship between SRL strategies and English achievement. Similarly, Kim et al. (2014) found only a weak relationship between cognitive strategies, metacognitive self-regulation, and student achievement in an online mathematics course. Although SRL strategies and students' perceived learning outcomes were positively related, Wei et al. (Wei et al., 2023) recommended conducting experimental studies to establish causality.

Turan and Demirel (2010) examined the relationship between SRL skills and academic achievement, concluding that improving SRL abilities boosts self-efficacy and knowledge. However, Mahmoodi et al. (2014) found no clear link between SRL strategies and English language performance, and Kim et al. (2014) reported only a weak relationship between cognitive and metacognitive strategies and success in an online mathematics course. Although SRL strategies were positively associated with perceived learning outcomes, Wei et al. (Wei et al., 2023) emphasized the need for experimental studies to confirm causal links.

Overall, SRL strategies appear integral to enhancing academic performance, as evidenced by improvements in grades, though some studies report inconclusive results. Zimmerman (1989) highlighted the context-sensitive nature of self-regulation, calling for further research into its applications across diverse disciplines and educational environments. Additionally, the causal relationships between SRL strategies and academic performance remain insufficiently explored, particularly within MOOCs and higher education settings.

Self-regulated Learning and Speaking Ability

While self-regulated learning (SRL) is considered well-established in educational psychology, its potential applications in English Language Teaching (ELT) remain underexplored (Teng, 2022). Despite the limited research, existing studies highlight its benefits. SRL has been shown to enhance academic performance (Teng, 2022), improve foreign language proficiency in flipped classrooms (Ozturk & Cakiroglu, 2021), and support better speaking outcomes in traditional learning contexts (Aregu, 2013; Uztosun, 2020).

Aregu investigated the influence of SRL strategies on speaking abilities by involving 97 students from a "Spoken and Written Communication" course at Bahir Dar University's College of Business and Economics. His study utilized surveys, tests, and reflective diaries. Meanwhile, Uztosun observed that self-regulated learners often sought opportunities to practice speaking beyond classroom settings. Ozturk and Cakiroglu examined SRL's role in flipped classrooms by comparing test outcomes between experimental and control groups, finding that the experimental group excelled in reading, writing, speaking, and grammar.

Additionally, incorporating SRL techniques with smartphone-assisted activities has been shown to significantly enhance speaking skills (Alotumi, 2021; Menggo et al., 2022). These findings are consistent with other studies that emphasize SRL's positive impact on language acquisition (Almekhlafy, 2020; Godwin-Jones, 2017).

These studies demonstrate that SRL methods can effectively improve speaking skills in both physical and online learning environments. However, many assume participants already understand or accept the value of SRL strategies for enhancing their speaking abilities. Research on training students in SRL techniques to develop speaking skills in digital settings remains scarce. This study aims to fill this gap by addressing the role of SRL training in online speaking skill development.

METHOD

Materials

The materials used for the treatment of the study are granted permission from the two authors of Self-regulation intervention (Siegle & Reis, n.d.) of the University of Connecticut. This intervention program has been validated and experimented from 1990-2013 with the participation of the University of Connecticut (1990-2013), University of Virginia (1990-2013), Yale University (1990-2006), the University of Georgia (1990-1995), Stanford University (1996-2000), City University of New York (1996-2000). For this reason,

the materials of this intervention program are adapted in the current study. Based on these materials, detailed SRL strategies lesson plans, based on Archer and Hughes' (2011) guidelines, are made to teach the experimental group.

Design

We employed an experimental design with a control group and an experimental group, lasting 5 weeks during the time students learning a MOOC in Coursera within 3 months. We evaluated the effectiveness of the treatment with pre- and post-questionnaire survey collected from both control and experimental groups, and assessed students' use of self-regulated learning strategies by having them write reflectional journals with eight suggesting questions after each time they finished learning in MOOCs.

Participants

The participants of this study, as illustrated in Table 1, include fulltime undergraduate English major students from two intact classes in a priavate university in Mekong Delta. These students meet the described criteria, such as majoring in English, having completed English preparation courses prior to their discipline and a MOOC completion (Advanced English grammar-ENG302c). More importantly, their English proficiency (based on their completed English courses scores on previous semesters) difference prior to the treatment has been proved statistically insignificant (Sig._Levene's test = 0.55, Sig.t-test = 0.136 > 0.05). In other words, the control group and the experimental group are not different in terms of their English proficiency based on their academic scores before their taking the MOOC SSC302c (Advanced Presentation Skills) in Coursera.

Table 1. Research participants

Category	Class1	Class2
Advanced Presentation Skills (SSC302c)	SRL	
(Control group)	SRL	
(Experimental Group)		
Advanced English grammar (ENG302c)	Completed	Completed
English preparation courses	Completed	Completed
Gender	Female:Male	
20:10	Female:Male	
23:8		
Age	19-20	19-20

Although random assignment of the participants to the control and experimental groups are difficult in real EFL classes, there should be, to some extent, random assignment of the group to the expeirmental condition or another (Gass, 2010). The current study setting happened to have two intact classes that share almost similar features, which made the use of a control and an experimental group possible in this study. Ten out of 31 participants of the experimental group were willing to write reflective journals, including two males and eight females.

Teaching SRL Strategies

The studies in the MOOC context by Kizilcec et al. (2017) and Littlejohn et al. (2016) identified seven effective approaches to SRL: goal setting, time management, self-assessment, plan, methods to approach a task, elaboration, and help-seeking intention. However, using the tool developed from these previous studies, Jansen et al. (2017) identified that two persistence and environmental structuring were also effective in assessing the SRL strategies of students in MOOCs. As a result, SRL strategies used in this study would be the integration of all these findings.

The teaching of nine Self-regulated learning strategies was conducted on the experimental group who has been experiencing learning in two MOOCs in a private university in the Mekong Delta, Vietnam. All lessons were conducted online via Google Meet. The instructor, also the researcher of the present study, followed the guidelines for explicit instruction developed by Archer and Hughes (2011). To them, the structure of a typical explicit lesson includes three parts: opening, body, and closing. In particular, the opening section should get students ready to learn new skills or contents; the body of the lesson includes three steps, namely modelling, prompted or guided practice, and unprompted practice. The closing section should be a summary of key points of the lesson in an interactive way, such as posing questions related to the lesson contents for students to answer.

Research Instruments

Closed-ended questionnaires and reflective journals were used for data collection. The questionnaire-surveys comprise two sections. Section 1 includes the participants' demographic information, and Section 2 includes 47 items related to SRL strategies adapted from previous studies. In particular, the items related to goal setting, environment structuring, time management, help-seeking, and self-evaluation were adapted from (Barnard et al., 2009), items involved in task strategies, strategic planning, and elaboration were adapted from (Kizilcec et al., 2017), and those relevant to students' persistence strategies and academic achievement were adapted from Jansen et al. (2017) and Ejubovic and Puska (2019).

In order to examine if the students' academic scores increase or not after the treatment, two of my colleagues, who have been working as English teachers for almost ten years in universities and have experienced in grading oral exams since 2017, were invited to be the examiners for a pre-test which was performed by the experimental group. The reliability of their grading was tested using Paired Samples Test. The results are presented below:

Table 2. Inter-rater reliability of Pre-test speaking scores of the experimental group

		Paired Differences							
				95% Confidence Interval of the Difference					
	Mean	Std. Deviation	Std.Error Mean	Lower	Upper	t	df	Sig. (2-tailed)	
Exp. group	Examiner1a Examiner1b	-.10032	.46787	.08403	-.27194	.07129	-1.194	30	.242

The sig. = 0.242 > 0.05 means that the mean grading scores of EL1705 by the two examiners were not different. This means that the students' pre-test scores can be used to compare with their end-course (or post-test) scores.

The reflective journals suggested eight open-ended questions, such as "What SRL strategies did you apply in your learning in MOOCs for the subject SSC302c?", "What worked well? Please explain.", "What did not work well? Please explain.", or "What will you change or improve for the next time learning in MOOCs?"

Data Collection and Analysis

Piloting Phase

Prior to the official data collection phase, the questionnaire was administered to thirty-one students who have studied at least one MOOC at the same university with the research participants for the purpose of piloting phase. The Cronbach's Alpha of the variables ranged from 0.714 – 0.921, indicating that the instrument was reliable for further data collection and analysis.

Table 3. Reliability Statistics of piloting phase

Variables	Cronbach's Alpha	N of Items
Time management	.896	3
Self-evaluation	.824	4
Task Strategies	.857	6
Goal Setting	.919	5
Elaboration	.889	3
Environment Structuring	.814	4
Help Seeking	.714	5
Strategic planning	.919	4
Persitence	.921	5

The Actual Research Data Collection Procedures

The questionnaires were surveyed via Google Form. Five-point Likert scale was used, starting from Strongly disagree to Strongly agree, to investigate the participants' perspectives on the issue under investigation. The pre-questionnaire survey was conducted before the teaching of SRL strategies, while the post-survey was performed after the participants sat the end-course exam. The students were also asked to write reflective journals after each time they study in MOOCs to reflect on how they have applied the taught SRL strategies to their learning in MOOCs.

A correlation analysis approach in SPSS 25 was utilized for the questionnaires, and thematic analysis was employed to interpret data from students' reflective journals. This study would employ a process of six steps to analyze data, generate codes, and create themes recommended by Braun and Clarke (2006, pp. 87–93), namely familiarizing with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

ANALYSIS AND FINDINGS

Instrument Reliability: Pre-survey and Post-survey

Table 4. Measurement Model Parameter Estimation

Dimensions	Pre-survey	Post-survey
Goal-setting	0.735	.826
Environmental structuring	.818	.793
Task strategies	.846	.856
Time management	.869	.852
Help-seeking	.822	.724
Self-evaluation	.738	.742
Elaboration	.858	.824
Strategic planning	.832	.795
Persistence	.910	.862
Academic performance	.724	.779

Table 4 indicated the internal consistency reliabilities of the pre-survey and post-survey were ensured (Cronbach's Alpha > 0.7, Hair Jr, et al., 2021).

Research question 1: To What Extent do their SRL Strategies Differ after being Taught in MOOC-based Learning Environment?

This result of the Test of Normality (Table 5) of the survey data indicates that the scores of SRL strategies were not consistent, i.e., while P-values of goal setting, help-seeking, and self-evaluation were parametric or with a normal distribution (P = 0.58–0.147 > 0.05), P-values of environmental structuring, task strategies, time management, elaboration, strategic planning, and persistence ranged from 0.03–0.10, which was smaller than 0.05, indicating that the scores of these strategies did not follow a normal distribution. For this reason, Mann-Whitney can be used for mixed data distributions, including both normal and non-normal distributions (Vickers, 2005).

Table 5. Distribution of SRL strategy scores

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GS	.100	61	.200*	.970	61	.147
ES	.117	61	.037	.947	61	.010
TS	.119	61	.031	.943	61	.007
TM	.131	61	.010	.956	61	.028
HS	.147	61	.002	.963	61	.065
SE	.138	61	.006	.962	61	.058
EL	.142	61	.004	.946	61	.009
SP	.182	61	.000	.934	61	.003
PE	.146	61	.002	.942	61	.006

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Differences in SRL scores of the pre-survey between the control and experimental groups are demonstrated as follows:

Table 6. Pre-survey results of SRL strategies perceived by the control and experimental groups

	GS	ES	TS	TM	HS	SE	EL	SP	PE	AA
Mann-Whitney U	377.50	389.50	428.00	287.50	402.50	456.00	438.50	460.00	437.00	456.50
Wilcoxon W	842.50	885.50	893.00	752.50	898.50	921.00	934.50	956.00	902.00	952.50
Z	-1.269	-1.096	-.536	-2.597	-.910	-.131	-.387	-.073	-.408	-.124
Asymp. Sig. (2-tailed)	.204	.273	.592	.009	.363	.896	.699	.942	.683	.902

a. Grouping Variable: Group

Table 6 indicated that there is no difference in students' perceived values of SRL strategies in their learning in MOOCs, except for time management strategy (p = 0.009 < 0.005). In particular, the students of the experimental group had higher perceived values of time management than the control group (Mean rank = 36.73 vs. 25.08).

Table 7. Perceived values of time management between two groups (Mann-Whitney Test)

SRL strategy	Group	N	Mean Rank	Sum of Ranks
Time management	Experimental group	31	36.73	1138.50
	Control group	30	25.08	752.50
	Total	61		

However, their perceived values of SRL strategies have changed after the teaching of SRL strategies to the experimental group were conducted. Differences in SRL scores of the post-survey between the control and experimental groups were signposted below:

Table 8. Post-survey results of SRL strategies perceived by the control and experimental groups

	GS	ES	TS	TM	HS	SE	EL	SP	PE	AA
Mann-Whitney U	184.50	306.00	463.00	250.00	425.50	409.00	370.00	378.50	460.00	394.50
Wilcoxon W	649.50	771.00	928.00	715.00	890.50	874.00	835.00	843.50	956.00	890.50
Z	-4.066	-2.320	-.029	-3.137	-.574	-.813	-1.389	-1.256	-.072	-1.024
Asymp. Sig. (2-tailed)	.000	.020	.977	.002	.566	.416	.165	.209	.942	.306

a. Grouping Variable: Group

Table 8 showed changes in students' perceptions of the values of SRL strategies to their leaning in MOOCs. Particularly goal-setting strategy, environmental structuring, and time management have differed among the control and the experimental group.

Table 9. Changes in perceived values SRL strategies between two groups (Mann-Whitney Test)

SRL strategy	Group	N	Mean Rank	Sum of Ranks
Goal-setting	Experimental group	31	40.05	1241.50
	Control group	30	21.65	649.50
	Total	61		
Environmental structuring	Experimental group	31	36.13	1120.00
	Control group	30	25.70	771.00
	Total	61		
Time management	Experimental group	31	37.94	1176.00
	Control group	30	23.83	715.00
	Total	61		

a. Grouping Variable: Group

Table 9 indicated that the participants of the experimental group valued the roles of goal-setting, environmental structuring, and time management strategies in their learning in MOOCs than those from their counterparts from the control group.

The study also investigated how the control group perceived the values of SRL strategies after their three months of learning in MOOCs without being taught these strategies. Differences in SRL scores of the pre-survey and post-survey of the control group were measured as follows:

Table 10. Pre-survey and post-survey results of SRL strategies perceived by the control

	GS	ES	TS	TM	HS	SE	EL	SP	PE	AA
Mann-Whitney U	447.00	437.00	426.00	410.00	416.00	444.00	417.50	438.50	423.00	438.00
Wilcoxon W	912.00	902.00	891.00	875.00	881.00	909.00	882.50	903.50	888.00	903.00
Z	-.045	-.194	-.357	-.599	-.505	-.089	-.486	-.172	-.401	-.179
Asymp. Sig. (2-tailed)	.964	.846	.721	.549	.614	.929	.627	.864	.689	.858

a. Grouping Variable: Group

Table 10 indicated that their perceptions of SRL strategies have not changed over time.

Differences in SRL perceived scores of the pre-survey and post-survey of the experimental group were measured as follows:

Table 11. Pre-survey and post-survey results of SRL strategies perceived by the experimental group

	GS	ES	TS	TM	HS	SE	EL	SP	PE	AA
Mann-Whitney U	288.50	274.00	472.00	347.50	436.50	431.00	389.50	415.50	475.50	430.50
Wilcoxon W	784.50	770.00	968.00	843.50	932.50	927.00	885.50	911.50	971.50	926.50
Z	-2.718	-2.940	-.120	-1.902	-.624	-.702	-1.299	-.923	-.071	-.709
Asymp. Sig. (2-tailed)	**.007**	**.003**	.904	.057	.533	.483	.194	.356	.943	.478

a. Grouping Variable: Group

Table 11 showed that their perceptions of the values of SRL strategies (goal-setting and environmental structuring) in their learning in MOOCs have changed. In particular, they valued the roles of these two strategies more after being taught these strategies and experienced them in their learning in MOOCs in three months (Table 12 indicated the higher perceived values of these strategies).

Table 12. Changes in perceived values SRL strategies of the experimental group (Mann-Whitney Test)

SRL strategy	Group	N	Mean Rank	Sum of Ranks
Goal-setting	Ex.Group_pre-survey	31	25.31	784.50
	Ex.Group_post-survey	31	37.69	1168.50
	Total	62		
Environmental structuring	Ex.Group_Pre-survey	31	24.84	770.00
	Ex.Group_post-survey	31	38.16	1183.00
	Total	62		

From the results and analysis above, it can be concluded that the intervention program of SRL strategies to students of English major have brought positive changes in their perceptions of the roles of SRL strategies in their learning in MOOCs, especially three SRL strategies such as goal-setting, environmental structuring, and time management.

Research Question 2: What is the Relationship between the EFL Students' SRL Strategies and their Speaking Final-course Grades?

In order to evaluate if there are any changes in the grades of the participants before and after the treatment, a comparison of the scores of the pre-test and the post-test (i.e., their end-course exam) was performed, in which the pre-test was carried out prior to the participants' commencement of their learning in MOOCs,

and a post-test was taken from their grades of the end-course exam. However, to ensure the inter-rater reliability of the two examiners, the Wincoxon Ranks Test was performed due to the skewed distribution of the students' grades.

Table 13. Inter-rater reliability of the end-course scores by two examiners

	Examiner1b - Examiner1a
Z	-1.263b
Asymp. Sig. (2-tailed)	**.207**

a. Wilcoxon Signed Ranks Test

Since Sig. = .207 > 0.05, there are no differences in grading of the two examiners.

Table 14. Differences in grades of pre-test and post-test

	Pre-test - Post-test
Z	-3.509b
Asymp. Sig. (2-tailed)	**.000**

a. Wilcoxon Signed Ranks Test

Since Sig. = .000 < 0.05, there are statistically significant differences in grades of the pre-test and post-test of the participants.

Table 15. Pre-test & Post-test results of the experimental group

Student ID	Examiner1a	Examiner1b	Pre-test	Examiner2a	Examiner2b	Post-test
Student 1	4	3.6	3.8	6.5	7	6.8
Student 2	5.5	5.7	5.6	7.3	7.5	7.4
Student 3	6.25	6.5	6.4	5	5.5	5.3
Student 4	7.5	7.5	7.5	8.75	9	8.9
Student 5	6	5.5	5.8	5.5	5	5.3
Student 6	3.75	4	3.9	6	5.5	5.8
Student 7	8	7.6	7.8	7.3	7.5	7.4
Student 8	3	2.9	3	5	5	5
Student 9	7	7.4	7.2	6.3	6.5	6.4
Student 10	5	5	5	5.5	5.5	5.5
Student 11	5.5	5.9	5.7	6	5.75	5.9
Student 12	6	6.2	6.1	6.5	6	6.3
Student 13	6	6.4	6.2	7	7.5	7.3
Student 14	6.75	6.5	6.6	7	7	7
Student 15	5.5	5.4	5.5	6.2	6	6.1
Student 16	4	4.6	4.3	6	6.3	6.2
Student 17	6	6.8	6.4	7	7.25	7.1
Student 18	5	5	5	6	6.2	6.1
Student 19	5	4.2	4.6	6.5	6.5	6.5
Student 20	3.75	3.8	3.8	6.3	6.5	6.4
Student 21	5	5.2	5.1	9	8.5	8.8
Student 22	5.5	6	5.8	6	6	6
Student 23	3.75	3.75	3.8	8.5	9	8.8

Student 24	7.25	7.6	7.4	8	8.3	8.2
Student 25	5	4.4	4.7	5.5	5.3	5.4
Student 26	3	3.5	3.3	5	5	5
Student 27	4.25	4.2	4.2	6.5	6.3	6.4
Student 28	6.25	6.8	6.5	6.5	7	6.8
Student 29	6.5	5.46	6	6.5	7	6.8
Student 30	5.5	6.5	6	7	7.5	7.3
Student 31	7	7.7	7.4	5	5.25	5.1
Average			**5.50**			**6.56**

Since the end-course speaking grades are not normally distributed (Table 16), Spearman's rank correlation was run to examine the relationships between students' end-course speaking grades and SRL strategy scores (Table 12). Details were presented below:

Table 16. Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
End-course Speaking grades	.106	31	.200*	.939	31	.076

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 17. Correlations of SRL strategies and end-course speaking grades

	GS	**ES**	**TS**	**TM**	**HS**	**SE**	**EL**	**SP**	**PE**		
Spearman's rho	End-course Grades	Correlation Coefficient	.090	.242	.334	-.166	.330	.498**	.452*	.508**	.427*
		Sig. (2-tailed)	.630	.190	.067	.371	.070	**.004**	**.011**	**.003**	**.017**
		N	31	31	31	31	31	31	31	31	31

Table 17 indicated that there was a positive correlation between students' end-course speaking grades and Self-evaluation, Elaboration, Strategic Planning, and Persistence (rs=.50, n=31, p=.004 < .05, rs =.45, n=31, p=.011 < .05, rs =.51, n=31, p=.003< .05, rs =.43, n=31, p=.017 < .05 respectively).

Research Question 3: How do EFL Students Employ the Taught SRL Strategies in Their Learning in a MOOC-based Learning Environment?

The participants reported on various aspects of their learning process in MOOCs for the subject SSC302c, including their study times, study environments, whether they studied alone or with peers, and the specific SRL strategies they applied. They also reflected on what worked well, what did not work well, which SRL strategies were most useful for them when learning MOOCs, and how they planned to improve their learning in virtual environments in the future. Over time, the participants showed an evolving comprehension and application of SRL strategies such as goal setting, time management, environmental structuring, help-seeking, elaboration, self-evaluation, persistence, and task strategies. They adapted their study habits, learned from their experiences, and made adjustments to improve their learning outcomes. The reflections reveal a journey of personal growth, as they became more self-aware learners, identified strategies that worked best for them, and recognized areas for further improvement.

Based on the thematic analysis approach by Braun and Clarke (2006), we have coded the data from the participants' reflective journals, which were written in two months, and developed the following five themes:

Theme 1: Strategies for effective learning

This theme encompasses the various strategies students have employed to manage their learning in MOOCs effectively, such as goal setting, time management, and strategic planning. Students prioritized their tasks and scheduled study sessions, set specific academic goals, and employed various learning methods like mnemonic devices or summarization to enhance comprehension and retention. This theme highlights the structured approach students take towards managing their workload and achieving academic success. The following excerpts illustrate this point.

> *In this week, I had a noticeable change during my studies. In particular, I tried to apply new strategies to my learning process and diversified my problem-solving skills during my studies. For example, I learned how to prioritize important presentations in other subjects and then spend my free time studying on Coursera (Student 3)*
>
> *For this week, I applied the Time management strategy to organize my schedule and complete the MOOCs within the specified time as well as balance the time to meet the deadlines between SSC302c and other courses. (Student 5).*

Theme 2: Motivation and engagement

It includes students' use of elaboration and persistence strategies to maintain engagement with the material and persist through challenges.

Elaboration Strategy: students make connections between existing knowledge and new information to learn new knowledge

> *Student 8: Linking new concepts to real-life examples or to knowledge I already possess has greatly enhanced my learning process.*
>
> *For the task strategy, I had some methods to do well that was when I studied MOOCs, I usually summarized my knowledge and took notes on what I have learned and understood (Student 4).*

Persistence: refers to students' efforts to maintain focus and remain studying despite challenges or lack of interest.

> *The thing that I haven't done well myself is persistence. I often end up in the middle because the test is too difficult, or I don't do well on the quiz (Student 1).*
>
> *Student 9: Even when topics are challenging or interest wanes, I push myself to continue studying and engage with the material.*

Theme 3: Reflective and adaptive learning

This theme reflects students' capacity for self-reflection, and their willingness to adjust strategies based on effectiveness. It showcases the critical role of self-evaluation and openness to change in students' continuous improvement and learning optimization. The following excerpts demonstrate this theme:

> *Besides, after each week of study, I usually check all my knowledge and evaluate myself what I have learned after this week (Student 3).*
>
> *In the future, I plan to continue refining my time management skills and explore additional strategies to optimize my learning experience in MOOCs. (Student 10)*

Theme 4: Collaborative and independent learning

This theme reflects on students' approaches to learning styles, ranging from independent to collaborative study by seeking help from peers. This theme, arising from peer collaboration and feedback seeking, emphasizes the role of social interaction in the learning process. It highlights how students collaborate with

peers on assignments, and actively seek feedback from instructors and peers, underscoring the value of shared learning experiences and resource utilization in enhancing understanding and academic performance.

> *Only when I have a problem with tasks, I seek help [from course mates], and we will study together (Student 6).*
>
> *As for help-seeking strategy, I sent messages to my classmates to ask for help when I did not fully understand the lesson. Sometimes, I sought clarification from my instructor as well (Student 10).*
>
> *Lately, I usually study in Coursera alone. Because I want a quiet space, and when I work or study alone, I feel it has a faster intensity than usual (Student 7).*
>
> *Usually, I go to a quiet cafe to be able to complete all the MOOCs set out. Strategy 8 is to use other sources to apply to learning, one of the most used sources I used is Google in addition to ask friends (Student 4)*

Theme 5: Adaptive learning environments

Students expressed their preferences for specific study environments that support their learning habits and needs. This theme highlights the importance of a conducive learning space that varies from person to person.

> *I have applied SRL strategies to learning, namely environmental structuring... For example, I often find comfortable places with less noise so that I can concentrate more (Student 1)*
>
> *Student 3: Choosing a quiet room away from distractions has significantly improved my concentration and efficiency in studying.*

These themes provide an insightful picture of the participants' self-regulated learning experiences in MOOCs at tertiary level, highlighting the strategies they find most effective, the challenges they encounter, and how they adapt their learning approaches to overcome these challenges after being taught SRL strategies.

DISCUSSION

This study aims at investigating students' perceptions of the value of SRL strategies to their learning in MOOCs, and to their speaking ability in particular after being instructed in SRL strategies and exploring how the students employ these strategies by self-reporting their experiences after each time learning in MOOCs. In response to a call for an experimental study to further investigate the causal relationship between SRL strategies and learning outcomes (Wei et al., 2023), this study confirms a positive correlation between SRL strategies and students' English speaking performance, which is unsupportive of a study by (Mahmoodi et al., 2014). In Mahmoodi et al.'s study, students were surveyed about their perceived impact of SRL strategies on their English achievement. The study did not review if the students had been taught the SRL strategies before or not; hence, it is possible that their true experience in these strategies might be questionable.

Yet, this study is supported by previous studies which indicated positively significant roles of time management, peer learning, goal setting, and strategic planning in students' academic performance (Broadbent & Poon, 2015; Kizilcec et al., 2017; Lim et al., 2020; Schneider & Preckel, 2017; Turan & Demirel, 2010). In addition, the result also showed an increase in the experimental group's end-course grades after the intervention. This result is consistent with the previous research by Almekhlafy (2020), Alotumi (2021), Godwin-Jones (2017), and Menggo et al. (2022), who contend that the assistance of SRL strategies enhances students' speaking abilities.

Although the study's focus was not on motivation, the themes emerged from the Findings section, namely Motivation and Engagement and Adaptive Learning Environments, also reflect on the role of intrinsic and extrinsic motivation in students' self-regulated learning processes in MOOCs. These themes reflect on what drives students to study (i.e., persistence in learning) and how they create conducive learning environments. Whether motivated by personal ambition or external rewards (i.e., a bonus grade for early completion of the course), students find ways to minimize distractions by organizing their study spaces, manifesting the interplay between an internal drive and an external impetus in fostering effective learning habits.

The study once again emphasizes that teaching SRL strategies to university students is essential (Vosniadou, 2020), and that observational learning or modelling facilitates students' SRL (Bandura, 1986). Findings

from the research students' reflective journals also resembled the cyclical process of SRL portrayed by Zimmerman's Cyclical phases model (Zimmerman & Moylan, 2009), in which the Performance phase of Zimmerman's Cyclical model was categorized into two subphases in this study, namely "Development and Refinement of stratetegies" and "Overcoming challenges and enhancing SRL". Students' SRL processes in MOOCs in this study were outlined and depicted in Figure 2 as follows:

- *Initial Phase (equivalent to the Forethought phase as in Zimmerman's model):* Students start by establishing goals, prioritizing tasks, the strategies to be used to achieve their goals, and creating environments conducive to learning, such as choosing quiet places and setting specific study times.
- *Development and Refinement of Strategies:* Over time, students refine their strategies for better time management, environmental structuring, and task strategies. They become more adept at employing sophisticated approaches like elaboration, setting clearer and more feasible goals, self-evaluation, actively seeking feedback, using additional resources like Google, and consulting peers to enhance learning efficiency.
- *Overcoming Challenges and Enhancing SRL:* Students face various challenges in MOOCs, such as maintaining motivation, persistence, dealing with distractions, adjusting study habits based on the effectiveness of the applied strategies, and trying new strategies to diversify their problem-solving skills and learn to prioritize tasks more effectively. Some recognized that passive reading and video watching were insufficient for effective information retention. In response, they made changes to their approach, such as implementing specific time slots for studying and creating a study schedule to avoid procrastination, stayed on track with the course schedule, and shifted from time management to task strategies when the former became less effective in certain contexts.
- *Relentless Improvement and Reflection (equivalent to the Self-reflection phase as in Zimmerman's model):* Through self-evaluation and self-reflection, students continuously contemplate their learning process, identifying what works well and what needs improvement. They express intentions to apply learned strategies more effectively in the future, indicating a cycle of ongoing self-regulation and enhancement of their learning experience.

These processes are illustrated in the figure below:

Figure 2. Students' SRL processes in MOOCs

This progression underscores the dynamic nature of SRL, highlighting how students actively engage with, adapt, and refine strategies to optimize their learning in MOOCs.

CONCLUSION AND LIMITATIONS

To the best knowledge of the author, this study is the first one using a randomized experimental design to examine the effects of teaching SRL strategies to EFL university students learning in MOOCs on their speaking performance. The results confirm the impact of SRL strategies, namely goal-setting, time management, environment structuring, help-seeking, self-evaluation, task strategies, strategic planning, and elaboration, on their speaking achievement and underscore the importance of teaching these SRL skills to students.

The findings of the current study add a theoretical contribution, confirming the demand for training SRL skills for students regardless of on-site or off-site learning formats. Regarding practical contribution, this study visualizes the implementation of teaching SRL strategies so that universities, educators, and instructors could consider online hands-on SRL activities and pedagogical support for students in online courses.

The current study acknowledges its limitations in terms of its incapability of unveiling students' on-the-spot activities in MOOCs and a single experimental group. Hence, the study calls for further investigation of this issue with more control and experimental groups and with a design that can capture students' SRL activities in MOOCs. This could help uncover their detailed engagement and more explanatory behaviours. Thus, appropriate scaffolding could be made upon an individual basis. Another limitation is the teacher effect because the researcher took on both roles as the researcher and teacher for the class. However, this limitation was curbed by the way that the findings and interpretations were backed with "reasoned argument" and "adequate evidence" (Denzin & Lincoln, 2018).

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REFERENCES

Almekhlafy, S. (2020). Mobile-Mediated Communication a Tool for Language Exposure in EFL Informal Learning Settings. *SSRN Electronic Journal*, *June*. https://doi.org/10.2139/ssrn.3574694

Alotumi, M. (2021). EFL college junior and senior students' self-regulated motivation for improving English speaking: A survey study. *Heliyon*, *7*(4), e06664. https://doi.org/10.1016/j.heliyon.2021.e06664

Apridayani, A. (2022). Exploring Thai EFL Students' Self-Regulated Learning (SRL) Strategies and English Proficiency. *Mextesol Journal*, *46*(1), 1–10. https://www.mextesol.net/journal/index.php?page=journal&id_article=46332

Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. Guilford Publications.

Aregu, B. B. (2013). Enhancing self-regulated learning in teaching spoken communication: Does it affect speaking efficacy and performance? *Electronic Journal of Foreign Language Teaching*, *10*(1), 96–109.

Bandura, A. (1986). *Social foundations of thought and action*. Prentice-Hall.

Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., & Lai, S. L. (2009). Measuring self-regulation in online and blended learning environments. *Internet and Higher Education*, *12*(1), 1–6. https://doi.org/10.1016/j.iheduc.2008.10.005

Barnard, L., Paton, V., & Lan, W. (2008). Online self-regulatory learning behaviors as a mediator in the relationship between online course perceptions with achievement. *International Review of Research in Open and Distance Learning*, *9*(2), 1–11.

Boekaerts, M., Maes, S., & Karoly, P. (2005). Self-regulation across domains of applied psychology: Is there an emerging consensus? *Applied Psychology*, *54*(2), 149–154. https://doi.org/10.1111/j.1464-0597.2005.00201.x

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *Internet and Higher Education*, *27*, 1–13. https://doi.org/10.1016/j.iheduc.2015.04.007

Cho, M. H., & Heron, M. L. (2015). Self-regulated learning: the role of motivation, emotion, and use of learning strategies in students' learning experiences in a self-paced online mathematics course. *Distance Education*, *36*(1), 80–99. https://doi.org/10.1080/01587919.2015.1019963

Cho, M. H., & Kim, B. J. (2013). Students' self-regulation for interaction with others in online learning environments. *Internet and Higher Education*, *17*(1), 69–75. https://doi.org/10.1016/j.iheduc.2012.11.001

Denzin, N. K., & Lincoln, Y. S. (2018). The Sage handbook of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *NBER Working Papers*. SAGE Publications.

Ejubovic, A., & Puska, A. (2019). Impact of self-regulated learning on academic performance and satisfaction of students in the online environment. *Knowledge Management and E-Learning*, *11*(3), 345–363. https://doi.org/10.34105/j.kmel.2019.11.018

Gass, S. (2010). Experimental research. In B. Paltridge & A. Phakiti (Eds.), *Continuum companion to research methods in applied linguistics* (pp. 7–21). Continuum.

Godwin-Jones, R. (2017). Smartphones and language learning. *Language Learning and Technology*, *21*(2), 3–17.

Gopez, J. M., & Gopez, B. (2024). Instructor scaffolding for interaction and online student engagement among a sample of college students in the Philippines: The mediating role of self - regulation. *European Journal of Psychology of Education*, *39*(2), 1069–1091. https://doi.org/10.1007/s10212-023-00728-y

Goradia, T., & Bugarcic, A. (2017). A social cognitive view of self-regulated learning within online environment. *Advances in Integrative Medicine*, *4*(1), 5–6. https://doi.org/10.1016/j.aimed.2017.05.001

Ha, N. T. D. (2021). An attempt to investigate the correlation between online self-regulation and self-efficacy in english learning1. *Mextesol Journal*, *45*(4), 1–10.

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

Han, I., & Shin, W. S. (2016). The use of a mobile learning management system and academic achievement of online students. *Computers and Education*, *102*, 79–89. https://doi.org/10.1016/j.compedu.2016.07.003

Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, *17*(February), 63–84. https://doi.org/10.1016/j.edurev.2015.11.002

Jansen, R. S., van Leeuwen, A., Janssen, J., Kester, L., & Kalz, M. (2017). Validation of the self-regulated online learning questionnaire. *Journal of Computing in Higher Education*, *29*(1), 6–27. https://doi.org/10.1007/s12528-016-9125-x

Kim, C., Park, S. W., & Cozart, J. (2014). Affective and motivational factors of learning in online mathematics courses. *British Journal of Educational Technology*, *45*(1), 171–185. https://doi.org/10.1111/j.1467-8535.2012.01382.x

Kizilcec, R. F., Perez-Sanagustin, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers and Education*, *104*, 18–33. https://doi.org/10.1016/j.compedu.2016.10.001

Kizilcec, R. F., Reich, J., Yeomans, M., Dann, C., Brunskill, E., Lopez, G., Turkay, S., Williams, J. J., & Tingley, D. (2020). Scaling up behavioral science interventions in online education. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(26), 14900–14905. https://doi.org/10.1073/pnas.1921417117

Lap, T. Q. (2008). Phat trien nang luc tu học trong hoan cảnh Viet Nam. *Tap Chi Khoa Hoc Truong Dai Hoc Can Tho*, 169–175.

Lehmann, T., Hahnlein, I., & Ifenthaler, D. (2014). Cognitive, metacognitive and motivational perspectives on preflection in self-regulated online learning. *Computers in Human Behavior*, *32*, 313–323. https://doi.org/10.1016/j.chb.2013.07.051

Lem, N. C. (2019). Self-Regulated Learning and Its Relation To Vietnamese EFL Learners' L2 Listening Achievement. *VNU Journal of Foreign Studies*, *35*(4). https://doi.org/10.25073/2525-2445/vnufs.4395

Li, J., Ye, H., Tang, Y., Zhou, Z., & Hu, X. (2018). What are the effects of self-regulation phases and strategies for Chinese students ? A meta-analysis of two decades research of the association between self-regulation and academic performance. *Frontiers in Psychology*, *9*, 1–13. https://doi.org/10.3389/fpsyg.2018.02434

Lim, C. L., Jalil, H. A., Marof, A. M., & Saad, W. Z. (2020). Peer learning, self-regulated learning and academic achievement in blended learning courses: A structural equation modeling approach. *International Journal of Emerging Technologies in Learning*, *15*(3), 110–125. https://doi.org/10.3991/ijet.v15i03.12031

Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: Motivations and self-regulated learning in MOOCs. *The Internet and Higher Education*, *29*, 40–48. https://doi.org/10.1016/j. iheduc.2015.12.003

Littlejohn, A., & Milligan, C. (2015). Designing MOOCs for professional learners: Tools and patterns to encourage self-regulated learning. *ELearning*, *42*, 1–10.

Mahmoodi, M. H., Kalantari, B., & Ghaslani, R. (2014). Self-regulated learning (SRL), motivation and language achievement of Iranian EFL learners. *Procedia - Social and Behavioral Sciences*, *98*, 1062–1068. https://doi.org/10.1016/j.sbspro.2014.03.517

Mai, T. T. T. (2021). Use of Self-regulated Learning Strategies in Paragraph Writing at Van Lang University. *International Journal of TESOL & Education*, *1*(3), 1–13.

Menggo, S., Darong, H. C., & Semana, I. L. (2022). Self-Regulated Learning Method Through Smartphone Assistance in Promoting Speaking Ability. *Journal of Language Teaching and Research*, *13*(4), 772–780. https://doi.org/10.17507/jltr.1304.10

Min, H., & Nasir, M. K. M. (2020). Self-Regulated Learning In A Massive Open Online Course: A Review of Literature. *European Journal of Interactive Multimedia and Education*, *1*(2), e02007. https://doi.org/10.30935/ejimed/8403

Ministry of Education and Training (MoET). (2017). *Document No. 1891/BGDDT-GDDH on the task of training human resources capable of adapting to the Industry 4.0*. MoET.

Ngoc Truong, T. N., & Wang, C. (2019). Understanding Vietnamese college students' self-efficacy beliefs in learning English as a foreign language. *System*, *84*, 123–132. https://doi.org/10.1016/j.system.2019.06.007

Nurjanah, R. L. (2023). Self-regulated learning strategy in learning activities of literal reading course to build learning independence. *SALEE: Study of Applied Linguistics and English Education*, *4*(1), 296–314. https://doi.org/10.35961/salee.v4i1.636

Ozturk, M., & Cakiroglu, U. (2021). Flipped learning design in EFL classrooms: implementing self-regulated learning strategies to develop language skills. *Smart Learning Environments*, *8*(1). https://doi.org/10.1186/s40561-021-00146-x

Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*, *8*(APR), 1–28. https://doi.org/10.3389/fpsyg.2017.00422

Parveen, A., & Jan, S. (2023). Self-Regulated Learning Among College Students : Unraveling Gender And Locality Differences. *Journal for Re Attach Therapy and Developmental Diversities*, *6*(2s), 429–432.

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-Regulation* (pp. 451–502). Academic Press.

Schneider, M., & Preckel, F. (2017). Variables associated with achievement in higher education: A systematic review of meta-analyses. *Psychological Bulletin*, *143*(6), 565–600. https://doi.org/10.1037/bul0000098

Schunk, D. H., & Greene, J. A. (2018). Historical, Contemporary, and Future Perspectives on Self-Regulated Learning and Performance. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of Self-Regulation of Learning and Performance* (2nd.). Routledge. https://doi.org/10.4324/9780203839010

Shu-Yi Hsu. (2021). *An Experimental Study of Self-regulated Learning Strategies Application in MOOCs* [Columbia University]. https://www.proquest.com/dissertations-theses/experimental-study-self-regulated-learning/docview/2560855495/se-2

Siegle, D., & Reis, S. M. (n.d.). *Self-Regulation*. https://nrcgt.uconn.edu/underachievement_study/self-regulation/

Sitzmann, T., & Ely, K. (2011). A Meta-Analysis of Self-Regulated Learning in Work-Related Training and Educational Attainment: What We Know and Where We Need to Go. *Psychological Bulletin*, *137*(3), 421–442. https://doi.org/10.1037/a0022777

Teng, L. S. (2022). *Self-regulated Learning and Second Language Writing: Fostering strategic language learners* (Vol. 26). Springer.

Teng, L. S., Yuan, R. E., & Sun, P. P. (2020). A mixed-methods approach to investigating motivational regulation strategies and writing proficiency in English as a foreign language contexts. *System*, *88*, 102182. https://doi.org/10.1016/j.system.2019.102182

Theobald, M. (2021). Self-regulated learning training programs enhance university students' academic performance, self-regulated learning strategies, and motivation: A meta-analysis. *Contemporary Educational Psychology*, *66*(3), 1–19. https://doi.org/10.1016/j.cedpsych.2021.101976

Tran, T. Q., & Nguyen, L. H. C. (2020). The use of Self-regulated Language Learning Strategies Among Vietnamese English-majored Freshmen: A Case Study. *VNU Journal of Science: Education Research*, *36*(1), 50–63. https://doi.org/10.25073/2588-1159/vnuer.4331

Tran, T. Q., & Tran, T. N. P. (2021). Vietnamese EFL high school students' use of self-regulated language learning strategies for project-based learning. *International Journal of Instruction*, *14*(1), 459–474.

Turan, S., & Demirel, O. (2010). In what level and how medical students use metacognition? A case from Hacettepe University. *Procedia - Social and Behavioral Sciences*, *2*(2), 948–952. https://doi.org/10.1016/j.sbspro.2010.03.132

Uztosun, M. S. (2020). The development of a scale for measuring the self-regulated motivation for improving speaking English as a foreign language. *Language Learning Journal*, *48*(2), 213–225. https://doi.org/10.1080/09571736.2017.1335766

Van Nguyen, H., Laohasiriwong, W., Saengsuwan, J., Thinkhamrop, B., & Wright, P. (2015). The relationships between the use of self-regulated learning strategies and depression among medical students: An accelerated prospective cohort study. *Psychology, Health and Medicine*, *20*(1), 59–70. https://doi.org/10.1080/13548506.2014.894640

Vickers, A. J. (2005). Parametric versus non-parametric statistics in the analysis of randomized trials with non-normally distributed data. *BMC Medical Research Methodology*, *12*, 1–12. https://doi.org/10.1186/1471-2288-5-35

Vosniadou, S. (2020). Bridging Secondary and Higher Education. The Importance of Self-regulated Learning. *European Review*, *28*(S1), S94–S103. https://doi.org/10.1017/S1062798720000939

Wang, C. H., Salisbury-Glennon, J. D., Dai, Y., Lee, S., & Dong, J. (2022). Empowering College Students to Decrease Digital Distraction Through the Use of Self-Regulated Learning Strategies. *Contemporary Educational Technology*, *14*(4), 1–16. https://doi.org/10.30935/cedtech/12456

Wei, X., Saab, N., & Admiraal, W. (2023). Do learners share the same perceived learning outcomes in MOOCs? Identifying the role of motivation, perceived learning support, learning engagement, and self-regulated learning strategies. *Internet and Higher Education*, *56*(August 2022), 100880. https://doi.org/10.1016/j.iheduc.2022.100880

Wijaya, K. F. (2021). English Education Master Students' Self-Regulated Learning Strategies in Academic Writing. *JET (Journal of English Teaching)*, *7*(1), 15–29. https://doi.org/10.33541/jet.v7i1.2313

World Economic Forum. (2018). *The Future of Jobs Report 2018*. https://www.weforum.org/publications/the-future-of-jobs-report-2018/

World Economic Forum. (2020). *The Future of Jobs Report 2020*. https://www.weforum.org/publications/the-future-of-jobs-report-2020/

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-regulation* (pp. 13–39). Academic Press.

Zimmerman, B. J. (2013). From Cognitive Modeling to Self-Regulation: A Social Cognitive Career Path. *Educational Psychologist*, *48*(3), 135–147. https://doi.org/10.1080/00461520.2013.794676

Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of Metacognition in Education* (pp. 299–315). Routledge. https://doi.org/10.4324/9780203876428