

The Relationship between Self-Regulated Learning and EFL Achievement in Synchronous Online Language Education¹

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Abstract

The present study highlights the significance of online self-regulated learning (SRL) in language education by investigating its impact on English as a foreign language (EFL) achievement. It focuses on the self-reported use of online SRL by focusing on six dimensions: goal-setting, structuring the environment, task strategies, time management, help-seeking, and self-evaluation, and potentially their power in predicting L2 achievement. Employing quantitative explanatory design, this study was conducted at an English preparatory class of a state university in Turkey with 91 undergraduate Turkish learners of EFL. Data were collected through a five-point Likert-type Turkish version of the *Online Self-Regulated Learning Scale* (Korkmaz & Kaya, 2012), initially developed by Barnard et al. (2009). As for the dependent variable of achievement, summative scores of two exams measuring both receptive and productive skills were gathered. The results suggest that the participants were medium to high level online self-regulated learners. Among the online self-regulation strategies, they report structuring their studying environment as the most frequent behavior, by seeking help from others and setting goals. The most significant positive correlation was observed between time management and goal-setting strategies, with a large effect size of $d= 0.56$. Our multiple regression model predicted 14% of the variance in language achievement scores; more specifically, employing help-seeking strategies was the strongest predictor of language achievement scores of Turkish EFL learners. The findings emphasize the importance of online self-regulation research and encourage online self-regulation implementation in the field.

Resumen

El presente estudio destaca la importancia del aprendizaje autorregulado en línea (SRL) en la educación de idiomas al investigar su impacto en el rendimiento del inglés como lengua extranjera (EFL). Se centra en el uso autoinformado de SRL en línea centrándose en seis dimensiones: establecimiento de objetivos, estructuración del entorno, estrategias de tareas, gestión del tiempo, búsqueda de ayuda y autoevaluación, y potencialmente su posibilidad para predecir el rendimiento en L2. Empleando un diseño explicativo cuantitativo, este estudio se realizó en una clase preparatoria de inglés de una universidad estatal en Turquía con 91 estudiantes turcos de EFL. Los datos se recopilaron a través de una versión turca de una escala de cinco puntos tipo Likert sobre aprendizaje autorregulado en línea (Korkmaz & Kaya, 2012), desarrollada inicialmente por Barnard et al. (2009). En cuanto a la variable dependiente de rendimiento, se recogieron puntuaciones sumativas de dos exámenes que miden tanto habilidades receptivas como productivas. Los resultados sugieren que los participantes eran estudiantes autorregulados en línea de nivel medio a alto. Entre las estrategias de autorregulación en línea, relatan estructurar su ambiente de estudio como el comportamiento más frecuente, al buscar ayuda de otros y establecer metas. La correlación positiva más significativa se observó entre la gestión del tiempo y las estrategias de fijación de objetivos, con un tamaño del efecto grande de $d= 0,56$. Nuestro modelo de regresión múltiple predijo el 14 % de la varianza en las puntuaciones de rendimiento del lenguaje; más específicamente, el empleo de estrategias de búsqueda de ayuda fue el predictor más fuerte de los puntajes de rendimiento del idioma de los estudiantes turcos de inglés como lengua extranjera. Los hallazgos enfatizan la importancia de la investigación sobre la autorregulación en línea y fomentan la implementación de la autorregulación en línea en el campo.

Introduction

Since the 1980s, there has been an increasing interest in the conceptualization and implementation of self-regulated learning (SRL) (Palalas & Wark, 2020; Roth et al., 2016). As one of the conative sources of individual differences in second language acquisition (SLA) (Ortega, 2014), SRL is defined as:

an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment (Pintrich, 2000, p. 453).

The impact of SRL in face-to-face education has been recognized in the research literature (Ergen & Kanadli, 2017). Recently, due to the Covid-19 pandemic and the requirements it has brought, online education has become the norm, and the future holds more opportunities for its use (Hodges et al., 2020). In virtual

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learning environments, the role of SRL becomes more prominent due to the characteristics of online education that prioritize learner autonomy (Barnard et al., 2009). Learners should be cognizant of their learning processes and their likely outcomes to embark on beginning a new learning behavior and determine the roadmap of planned learning (Sinclair, 2000) in all kinds of learning modes. However, detachment from a traditional school environment naturally entails individuals equipped with higher SRL behaviors. Recognizing the multiple internal and external factors that have a role in learners' self-regulatory learning behaviors (Ergen & Kanadli, 2017; Hardy et al., 2019), online education conditions call for an investigation into to what extent learners regulate their changing learning environments and apply self-regulatory strategies to attain success in such outlets. Learners with high self-regulatory behaviors have consistently reached higher language achievement than those with relatively fewer self-regulatory behaviors (Khodarahmi & Zarrinabadi, 2016; Lin et al., 2017; Mirhassani et al., 2007; Şeker, 2016; Vardar & Aarsal, 2014). As online learning environments leave more space for SRL practices with learners leading their learning processes individually, this study hypothesizes that self-regulated learning behaviors in online environments could explain their EFL achievement. Understanding language learners' online SRL behaviors and how they relate to language achievement will inform practitioners' current practices in online environments by implementing activities that contribute to learners' online SRL skills. With this in mind, this study aims to investigate EFL learners' use of SRL strategies in a preparatory year program and its predictive power on EFL achievement scores.

Literature Review

Self-regulated learning

Sitzmann and Ely (2011, as cited in Hardy et al., 2019) define SRL as the "modulation of affective, cognitive, and behavioral processes throughout a learning experience to reach a desired level of achievement" (p. 421). Self-regulation involves taking the initiative to set goals and regulate actions to reach the desired goal, along with self-monitoring and managing time and environment (Zimmerman & Risemberg, 1997). The social cognitive theory of self-regulation explains it as an intra-personal mediator for the effects of external influences and a basic impetus for purposeful human actions (Bandura, 1991). While Bandura (1986) emphasizes one's use of self-monitoring, self-judgment, and self-reaction toward a goal, Zimmerman (1989) highlights self-assessment, self-direction, control, and adjustment in SRL processes.

SRL has been theorized in different models by different researchers. For example, Winne and Hadwin (1998) theorized four stages of study that incorporate metacognition and control mechanisms- task definition, goal setting and planning, enactment, and adaptation used recursively and in a flexible order by learners. Zimmerman's (1998) three-phase model categorizes SRL strategies within the phases of forethought, performance control, and self-reflection. Pintrich (2000) similarly puts four phases together:

(1) Forethought, planning, and activation of prior knowledge of the task, the context, and the self in connection with the task; (2) Monitoring processes; (3) Control and regulation of different parts of the task, the context, and the self; and (4) Reaction and reflection on the task, the context, and the self – each also with four different areas for regulation: cognition, motivation and affect, behavior and context (as cited in Quesada-Pallarès et al., 2019, p. 3).

Within this phase-oriented approach to SRL, dimensions such as environment structuring and goal-setting are often associated with forethought. Likewise, time management, task strategies, and help-seeking relate to the performance control phase; and strategies such as self-evaluation are associated with the self-reflection phase (Barnard-Brak et al., 2010). In subsequent years, Hadwin et al. (2011) and Järvelä and Hadwin (2013) explored SRL theory concerning social and interactive learning using ICT tools. This model, called the Socially Shared Regulated Learning Model (SSRL), recognized the multidimensional effects of group work, common aims, negotiation, strategies, and goals, and perceiving an individual as a social entity (see also Hadwin et al., 2010).

Self-regulated learning in online education

Self-Regulated learning processes in educational settings are shaped by "direct and indirect relations, moderators and mediators, and boundary conditions" (Boekaerts & Corno, 2005, p. 225). For learners to achieve their ultimate goals, they must contextually utilize cognitive, affective, and behavioral strategies. Such strategies need to be adaptive as educational contexts are dynamic in multifarious ways regarding curricular goals, human relations, and instructional modes or the nature of the learning environment (Hardy et al., 2019). With the nature of learning environments partially or completely evolving to online ones,

curricular goals, interactions, and instructional modes are shaped accordingly, resulting in a need to rely on a diverse set of strategies for self-regulation.

The online mode of education shapes the relationships between people and the environment in a more different way in comparison to a face-to-face education mode; the separation of learner, teacher, and environment creates a new universe and a psychological and communications space called transactional distance (Moore, 1993). Thus, understanding this type of educational model lies, as Moore suggested, in the *elementary structures* of distance education “—namely, the structure of instructional program, the interaction between learners and teachers, and the nature and degree of self-directedness of the learner” (p. 20). Online education platforms provide learners with various opportunities like time flexibility but continuing one’s education online requires traits such as higher motivation, self-efficacy beliefs, or self-regulatory learning skills (Goradia & Bugarcic, 2017). Moreover, learners can make more independent decisions during their learning processes (Wong et al., 2018). The distance alters the educational transactions and the balance of control (Garrison, 1993). In this regard, the instructor’s control over the learning process in online education is rather bounded by several factors, including physical, social, and emotional distance (Stephan et al., 2019), when compared to face-to-face classrooms (Dabbagh & Kitsantas, 2004).

Learner autonomy becomes more prominent in online education (Barnard et al., 2009). From a self-deterministic point of view, Barnard-Brak et al. (2010) state that “this agentic perspective provides that individuals who become self-regulated in their learning can act both autonomously and causally to influence their outcomes and experiences” (p. 62). Hence, in closing the transactional distance, employing SRL strategies may play a mediating role in promoting “dispositional characteristics and also psychosocial contextual influences” (Quesada-Pallarès et al., 2019, p. 3) in such autonomous learning environments.

Goals are a substantial part of the human motivational system (Pintrich, 1999), and “effort allocated toward a particular goal influences future performance which shapes future goal selection and effort allocation decisions” (Hardy et al., 2019, p. 3150). For distance learners, setting goals has an important role in performance outcomes (Lynch & Dembo, 2004). Furthermore, goals and context are in mutual interaction, so learners must regulate their effort and attention in structuring the environment within various contexts (Pintrich, 2003). Online education, thus, requires learners to structure and manage their physical learning environment effectively (Lynch & Dembo, 2004).

Learners also employ strategies to engage themselves in learning tasks and complete learning objectives (Khezrlou & Sadeghi, 2012). The extent to which learners construe the value and rationale of a task they are doing is crucial for their engagement in online learning activities; they set their goals and put effort into accomplishing the tasks accordingly (Zhang & Liu, 2019). Besides, learners need to manage and use their time efficiently in online learning environments as they might need to invest much more time in the completion of tasks to achieve their learning goals (Lynch & Dembo, 2004).

To close the transactional distance inherent in online education, learners also need help-seeking strategies to solve or prevent problems concerning their academic performances because self-regulated help seekers take the initiative to seek support from others at the right place and time. However, factors influencing online help-seeking behaviors (e.g., perceptions of self-efficacy, epistemological beliefs, and perceived benefits regarding online help-seeking) have a complex nature (Liu, 2017). Hao et al. (2016) posited that “online help-seeking offers a range of potential advantages compared with help seeking in traditional classroom contexts” (p. 467). Also, it is possible to facilitate learners’ help-seeking processes and provide them with multiple means and channels of communication (Cheng et al., 2013).

Since self-regulated behaviors are context-specific (Zimmerman, 1989; Zimmerman & Schunk, 2008), an assessment of self-regulated behaviors should be conducted through specific instruments and with the context in mind. SRL can be best explored in an online learning environment, as it is a suitable avenue for learners to exert their internal focus of control (Bowen, 1996). Barnard et al. (2009) stated that “as the context of students’ learning changes and develops so must the methods of measuring self-regulation evolve” (p. 5). With that in mind, they developed an SRL questionnaire specifically designed for online learning environments by adding the characteristic features of the environment.

Reviewing the dimensions of online SRL, Barnard et al. (2009) put forward that the goal-setting dimension is about setting educational goals for assignments, projects, and long-term goals as well as setting goals to manage study time. Secondly, the environment structuring dimension is about attaching importance to the

location and surroundings of the studying place. On the other hand, the task strategies dimension is directly related to studying the content provided online and preparing questions for the class ahead. Another dimension is time management which refers to recognizing the time-demanding nature of online classes and managing time accordingly. One of the most notable dimensions is the help-seeking dimension which refers to looking for help in the content area and consulting a more knowledgeable other together with consulting resources. Self-evaluation dimension is related to evaluating one's progress and achievement in the online course by monitoring and controlling their performance. Self-evaluation strategies are employed "based upon social comparisons," and through these strategies, learners "adjust the implementation of skills and strategies in the forethought and performance control phases for the next learning task" (Barnard-Brak et al., 2010, p. 63).

Studies on self-regulated learning in online contexts

While SRL has been given credit in all modes and contexts of learning, online education entails more reliance on self-regulatory skills (Broadbent, 2017; Goradia & Bugarcic, 2017). Therefore, several studies were conducted to measure online learners' level of endorsing SRL strategies.

The crucial role of SRL in online learning outcomes has been investigated by employing multiple combinations of variables such as course satisfaction, online course preference, SRL skills, and attainment. For example, Lim et al. (2020) investigated the impact of peer learning on learners' use of SRL and satisfaction with online learning experiences. They found that learners' ability to learn with peers significantly influenced their SRL strategies. Further analysis revealed that the influence of peer learning on online learning satisfaction was fully mediated by SRL. Hamdan et al. (2021) found that online self-regulated learning, along with self-efficacy, learner-content, and learner-learner interaction were determinants in students' satisfaction with online education during the pandemic crisis of COVID-19. In a pre-service teacher training context, Kara et al. (2021) concluded that learners' perceptions of self-regulation in three types of online interaction are significantly and positively related to learner outcomes of perceived learning and satisfaction, with other interpretations on the impact of class size and type of instruction.

In another study, Zhu et al. (2020) found a significant correlation between university students' continuous intention to undertake online courses and SRL factors, including intrinsic orientation, performance orientation, self-management, and metacognitive awareness.

Massive Online Open Course (MOOC) environments, where learners need more guidance and rely more on SRL strategy use, have also been the subject of research. Kizilcec et al. (2017) found a positive relationship between 4,831 learners' goal setting and strategic planning skills and their success in attaining personal course goals, while help-seeking was associated with lower goal attainment. Given the importance of measuring and tracking students' SRL behavior in online learning environments, Li et al. (2020) focused on using clickstream data ultimately to support learners' self-regulated learning behavior. Time management and effort regulation strategy use were associated with better learning outcomes. Another study found that environmental structuring and time management skills significantly predicted successful MOOC learners' perceived course effectiveness (Lee et al., 2020). Similarly, Jansen et al. (2020) found positive outcomes of SRL support for enhancing MOOC learners' SRL use and course completion. The systematic review by Lee et al. (2019) revealed that SRL positively affects the sense of academic achievement, motivation, and learner behaviors in MOOC learning.

In the Turkish context, Korkmaz and Kaya (2012) examined the SRL levels of 222 first-year university students taking an information technologies course, comparing blended learning environments and online learning environments. The results yielded through the *Online Self-Regulated Learning Questionnaire* (OSLQ) by Barnard et al. (2009) found higher levels of self-regulation skills for online learning environments. Students reported their highest self-regulatory skills in structuring the environment and the lowest in goal-setting. Beckman et al. (2021) highlighted the cruciality of the characteristics of task assignments in online learning environments and suggested that those high-quality open-ended tasks significantly influence students' goal-setting behaviors and the type of interaction they need to go through. In a Spanish context, Quesada-Pallarès et al. (2019) compared vocational education and training students' perceived self-regulation at the onset of their education regarding online versus classroom learning modes, and in the online learning group were found to employ metacognitive self-regulation and effort regulation strategies better. It was clear that the optional provision of online/traditional learning modes directed learners with higher self-regulation skills to the online learning mode.

It can be concluded from the above review of research on SRL and online learning contexts that there are various factors that might shape learners' use of SRL strategies as well as the multiple benefits of using those strategies within the confinements of online learning contexts. These possible influences and outcomes can be further investigated in different online learning environments in order to learn from students' behaviors and to guide them towards better learning opportunities. This study contributes to this research area by illustrating the use of online SRL strategies by EFL learners at the tertiary level regarding causal relationships between the self-reported use of those strategies and L2 achievement. Bridging the quantitative results with contextual details also provides insight into the factors that might impact the levels of online SRL strategy use and the predictive modeling of the results.

Self-regulated learning and language achievement in online contexts

There is a growing need for high levels of self-regulation in facilitating online learning processes (Ganieva et al., 2020) and upholding learners' continuous efforts to predict successful learning outcomes (Wang & Zhan, 2020). While several recent studies investigate online-self regulation alongside learner's characteristics, including motivation, self-efficacy, and conceptions of language learning (e.g., Su et al., 2018; Tao et al., 2020; Zheng et al., 2018), studies that examine online self-regulation behavior and language learning outcomes are scarce. Chang (2007) found the self-evaluation strategy moderately correlated with language achievement scores in a web-based language learning environment. Lin et al. (2017) also found that 466 high-school-level language learners used online SRL strategies moderately, yet their strategy use was a significant predictor of their language learning achievement. From the literature reviewed so far, it seems likely that the level of SRL employment and language achievement level are causally related.

The importance of SRL in foreign language learning makes it even more essential to investigate the self-regulation levels of foreign language learners in virtual learning environments due to the transactional distance that refers to the psychological or communicative space separating lecturers from learners in the transaction between them (van Alten et al., 2021). Also, virtual learning environments require more self-regulated behaviors as learners are dependent on more self-control, self-observation, self-motivation beliefs, self-judgment, and self-reaction (Wandler & Imbriale, 2017). To assess EFL learners' self-regulatory strategies during online education, this study attempts to identify the causal relationship between language learners' self-reported level of self-regulatory strategy use and their language achievement scores in an online learning environment. Considering the contextual influences on language learners' SRL behaviors and EFL achievement outcomes, this study sets out (1) to determine the level of online self-regulation employed by EFL learners at a tertiary level; (2) to investigate correlations among online SRL dimensions; and (3) to explain the impact of online SRL dimensions on learners' EFL achievement scores. This paper takes Şeker's (2016) study as a guide for measuring online SRL strategy use and its power in predicting language achievement, while adopting a different instrument and investigating an online education context. Thus, the study is driven by the research questions:

1. *To what extent do Turkish EFL learners studying at a preparatory year program employ online self-regulation?*
2. *Are there correlations among online SRL dimensions, namely, goal-setting, time management, task strategies, environment structuring, and help-seeking?*
3. *Which dimension(s) of online SRL can predict foreign language achievement?*

Methodology

This research follows quantitative explanatory correlational design which deals with variables influencing a dependent variable at one point in time (Cohen et al., 1994; Creswell, 2012). The sampling method was convenience sampling owing to low cost, readily available sample, and more reliable data collection. Details regarding participants and context, data collection, and data analyses are given in the following sections.

Participants and context

The present study took place in the English preparatory school of a competitive state university in Sakarya, Turkey. Institutional permission was granted. The online questionnaire included an online informed consent sheet regarding information about the study, details about participants' involvement rights as well as anonymity and confidentiality of the responses. The questionnaire was only available to respondents after they have given their digital consent and moved forward to the next section on the forms. There were 112

Turkish participants in the study. However, we realized that one of the classes had the highest scores in all dimensions. This surprising outcome led us to contact the department of foreign languages and we learned that this class was retaking the English preparatory class mandatorily due to the university regulations regarding their majors. Therefore, the researchers removed the participants from the dataset and conducted further analyses. This led to a total participant number of ninety. Seventy-four of the learners were male, while the remaining sixteen were female, with a mean age of 18.5. According to Westfall and Henning's (2013) criteria, the distribution was symmetrical in terms of kurtosis and skewness.

Learners who attend the preparatory year program are expected to reach B1+ level proficiency in all skills according to CEFR at the end of the year. The progress is assessed from the onset to the end of the program through skills-based testing. All learners who took part in this study were subject to a validated placement test provided by an international publishing company at the onset of enrollment at the university. They were placed by the testing unit of the university in classes ranging from A1 to B1 levels according to the Common European Framework of Reference (Council of Europe, 2001). The testing unit administered the tests through the university's online learning management and examination system.

The second author, who is also the lecturer in the research context, chose a communicative language teaching methodology with a well-structured online environment using online teaching tools and materials, and sustaining social interactions in and out of the classes. Due to the global COVID-19 pandemic, during the 2020-2021 academic year, the preparatory year program learners started their one-year intensive EFL learning journey online. As a result, the instructors had to reconsider their instructional practices. Social and communicative learning opportunities were provided during the classes, and assessment techniques in line with the instructional practices were adjusted to the online instruction environment. During the classes, various interactional patterns were utilized by employing communicative activities and effective use of breakout rooms. The learners had two hours of the main course followed by one-hour reading and writing, listening, and speaking skills classes four days a week. Apart from the scheduled classes, extracurricular activities like movie review sessions, student talks, or presentations were also planned. Daily workbook activities and online practice tool activities were assigned, and the learners needed to track their assignments every day. The instructor checked their progress on the online practice tools at the end of each week through the online practice platform provided as an accompanying material and the publications used.

Instruments

Online Self-Regulated Learning Questionnaire (OSLQ)

In the demographic section of the main data collection tool, questions regarding participants' gender, language learning background, age, and exposed language instruction were asked. As the main data collection tool, a Turkish translated version of the *Online Self-Regulated Learning Questionnaire* (Korkmaz & Kaya, 2012) with a Cronbach Alpha score of 0.94, initially developed by Barnard et al. (2009), was utilized. The rationale behind using the Turkish translated version was the potential language barrier that our participants could have encountered owing to their low foreign language level. Moreover, data collection instruments that are not specifically designed and/or adapted for the present context could jeopardize the valid data collection (Griffiths & Oxford, 2014). Bearing the context-specific nature of self-regulated behaviors (Zimmerman & Schunk, 2008), the scale included "but [was] not limited to goal setting, time management, task strategies, environment structuring, and help-seeking" (Barnard et al., 2009, p. 62). Sample items for each dimension are given below in Table 1.

Scale dimensions	Sample Items
Goal-setting	I set short-term (daily or weekly) and long-term goals (monthly or for the semester).
Structuring the Environment	I know where I can study most efficiently for online courses.
Task Strategies	I prepare my questions before joining the chat room and joining the discussion.
Time Management	I allocate extra studying time for my online courses because I know it is time-demanding.
Help-Seeking	I share my problems with my classmates online so we know what we are struggling with and how to solve our problems.
Self-Evaluation	I summarize my learning in online courses to examine my understanding of what I have learned.

Table 1. OSLQ dimensions and sample items

The items for SRL had Cronbach's alpha coefficient of at least 0.84, indicating significant reliability according to George and Mallery's (2018) standards. The parameters were assigned based on scaling provided by the scale developers (Korkmaz & Kaya, 2012). They categorized the responses into three groups where scores between 1.00-2.55, 2.55-3,35, and 3,35-5,00 correspond to Low, Medium, and High groups, respectively.

It took participants nearly five minutes to complete the OSLQ measure outside the normal class time. They were informed that provided information would be confidential and reported anonymously. There were no extra course credits and financial compensation for their time; however, ten participants were randomly selected for a lucky draw for books.

Assessment of language achievement

The data of the participants' language achievement scores were collected from the testing unit of the preparatory school. Learners' language achievement scores were gathered through two separate examinations: a quiz administered within the first quarter of the fall semester and a midterm exam administered within the following weeks. The scores of these exams were collected for research purposes, as they addressed achievement levels in four language skills. The first exam was composed of reading comprehension, and morphosyntactic and lexical knowledge. The second exam assessed productive skills by means of four assigned tasks in which learners were required to speak and record videos and write in pairs or individually. Both exams were scored out of 100 and the average scores were used as the achievement scores for the study. The quiz grades were calculated automatically utilizing the answer key entered on the online examination platform. In contrast, the midterm tasks were graded by the testing unit and the instructors to ensure reliability through task rubrics and inter-rater grading for randomly chosen learners' papers. While measures such as using a rubric or negotiation among raters were taken to reduce subjective bias in scoring the tasks, it is important to note that the scores might still include some subjectivity.

Data analysis

Descriptive statistics of online SRL levels of the participants were calculated through statistical analysis software, namely SPSS 22 and Jamovi. Later, a Pearson correlation was conducted to determine the relationships between the OSLQ dimensions. Lastly, a multiple regression was conducted to determine how online SRL dimensions could predict EFL achievement.

Results

An expectation-maximization algorithm was applied to replace missing values (Tabachnick & Fidell, 2013). Following the reliability test, preliminary descriptive analyses were run followed by correlation and regression analyses.

Research Question 1: To what extent are Turkish EFL learners self-regulated learners?

As a response to the first research question about learners' online SRL, the participants were found to be medium ($M=3.04$) to high ($M=3.92$) online self-regulated learners. In addition, they were found to be more self-regulated when it comes to structuring the environment ($M=3.92$), which refers to setting up the environment for an optimal opportunity for learning without distractions that can impede the efficiency of online courses. The lowest score with a mean of 2.87 was for self-evaluation which means that participants occasionally evaluate their learning.

Dimensions	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE</i>	Skewness	Kurtosis
Task Strategies	3.13	0.60	90	0.06	0.07	0.08
Self-Evaluation	2.87	0.67	90	0.07	0.13	0.30
Time Management	3.04	0.71	90	0.07	-0.24	0.07
Goal-setting	3.52	0.65	90	0.07	-0.69	0.92
Structuring Environment	3.92	0.66	90	0.07	-0.28	-0.41
Help Seeking	3.59	0.60	90	0.06	-0.05	0.23
Online SRL Total	3.34	0.44	90	0.05	-0.40	0.76

Table 2. Online SRL levels of participants

Research Question 2: Are there correlations among online self-regulated learning dimensions?

A Pearson correlation analysis was conducted among time management, goal-setting, self-evaluation, task strategies, help-seeking, and structuring the environment. Cohen's standard was used to evaluate the strength of the relationships, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a

large effect size (Cohen, 1988). As a requirement of the Pearson correlation, the relationship between each pair of variables should be linear, which was the case in the current study.

The correlation results were examined with Holm-Bonferroni corrections with an alpha level set at 0.05 to deal with familywise error rates (FWER) to reduce the possibility of getting a statistically significant result, also known as Type I error. Significant correlations and effect sizes were given in Table 3. It is important to note that positive correlation coefficients between two variables indicate that when one variable increases, the other tends to increase per the size of the effect. Table 3 presents the results of the correlations.

Dimensions		Goal Setting	Structuring Environment	Task Strategies	Time Management	Help Seeking	Self-Evaluation
1. Goal-Setting	Pearson's r	—					
	p-value	—					
2. Structuring Environment	Pearson's r	0.499 ***	—				
	p-value	< .001	—				
3. Task Strategies	Pearson's r	0.528 ***	0.420 ***	—			
	p-value	< .001	< .001	—			
4. Time Management	Pearson's r	0.559 ***	0.416 ***	0.344 ***	—		
	p-value	< .001	< .001	< .001	—		
5. Help Seeking	Pearson's r	0.204	0.149	0.236 *	0.037	—	
	p-value	0.054	0.161	0.025	0.728	—	
6. Self-Evaluation	Pearson's r	0.400 ***	0.350 ***	0.342 ***	0.511 ***	0.381 ***	—
	p-value	< .001	< .001	< .001	< .001	< .001	—

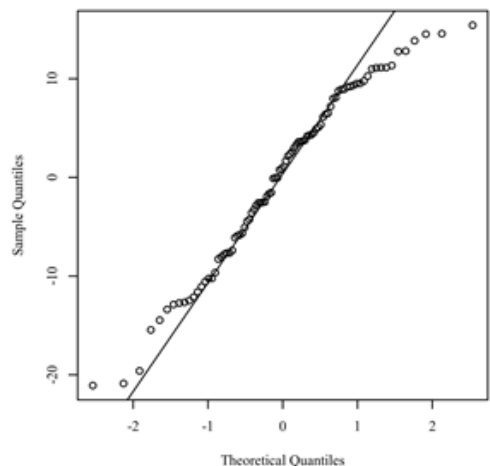
Table 3. Pearson correlation results for *Time Management, Goal-setting, Self-Evaluation, Task Strategies, Help Seeking, and Structuring the Environment*

The most significant positive correlation was observed between time management and goal-setting ($r_p = 0.56, p < .001, 95\% \text{ CI } [0.40, 0.69]$) with a large effect size of 0.56. Other dimensions, except for help-seeking, were positively correlated with moderate effect sizes. However, the help-seeking dimension was not statistically correlated with goal-setting, structuring the environment, self-evaluation, and time management. One exception to that was the positive yet small correlation between Help-Seeking and Task Strategies ($r_p = 0.24, p = .025, 95\% \text{ CI } [0.03, 0.42]$). No other significant correlations were found.

Research Question 3: Which dimensions of online self-regulated learning can predict foreign language achievement?

A multiple regression analysis was conducted to assess whether task strategies, self-evaluation, goal-setting, time management, help-seeking, and structuring the environment dimensions predicted EFL achievement scores significantly. In the first trial, the model was not statistically significant due to the very low adjusted R2 score of Structuring Environment. In the second trial, the structuring environment dimension was removed, and the model was statistically significant, with a 14% variance in EFL achievement score being explained by the model predictors.

Normality was measured using the Q-Q scatter plot (DeCarlo, 1997), and to meet the assumption of normality, the quantiles of the residuals should not diverge from the theoretical quantiles. Sharp diverges



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from the line can signal unreliable parameter estimations. Figure 1 presents a Q-Q scatterplot of the model residuals.

Figure 1: Q-Q scatter plot for normality of the residuals for the regression model.

Homoscedasticity, also known as equal variance assumption, was evaluated (Osborne & Waters, 2002), and no violation was found. Figure 2 presents a scatterplot of the equal variance assumption of regression.

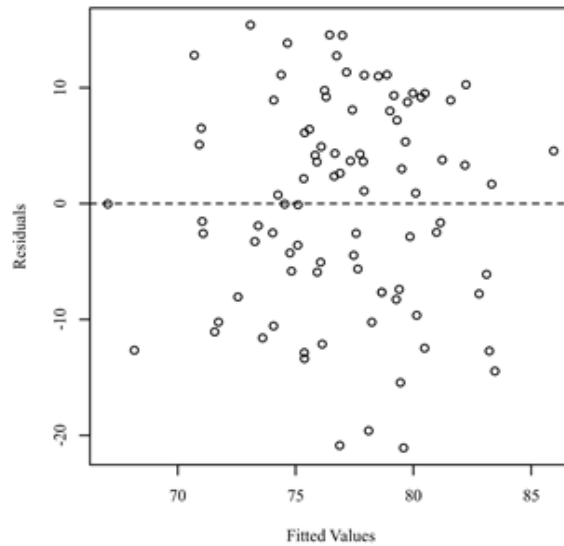


Figure 2: Residuals scatterplot testing homoscedasticity

Multicollinearity is another assumption of regression that needs to be met. It was calculated through Variance Inflation Factors (VIFs) to detect possible multicollinearity between predictors. If the VIFs are high, it signals multicollinearity in the model. All predictors in the model have VIFs less than 10 indicating a lack of multicollinearity, thus, concluding with all assumptions being met for multiple regression. Table 4 shows the VIF for each predictor in the model.

Variable	VIF
Help-Seeking	1.27
Goal-Setting	1.82
Task Strategies	1.44
Self-Evaluation	1.67
Time Management	1.82

Table 4: Variance inflation factors for *Help Seeking, Goal-Setting, Task Strategies, Self-Evaluation, and Time Management*

The results of the linear regression model were significant $F(5,84) = 2.63, p = .030, R^2 = 0.14$, with a medium effect size (Cohen’s f^2) of 0.16, indicating that approximately 14% of the variance in EFL achievement score can be explained by help-seeking, goal-setting, task strategies, self-evaluation, and time management. Only help-seeking dimension significantly predicted EFL achievement score, $B = 5.50, t(84) = 3.00, p = .004$. This indicates that, on average, a one-unit increase in help-seeking will increase the value of the EFL achievement score by 5.50 units. The other variables did not significantly predict EFL achievement scores. Table 5 summarizes the results of the regression model.

Variable	B	SE	95% CI	β	t	p
(Intercept)	53.29	7.75	[37.87, 68.71]	0.00	6.87	< .001
Help-Seeking	5.50	1.83	[1.86, 9.15]	0.34	3.00	.004
Goal-Setting	1.22	2.05	[-2.87, 5.30]	0.08	0.59	.556
Task Strategies	1.57	1.95	[-2.31, 5.45]	0.10	0.80	.424
Self-Evaluation	-2.03	1.91	[-5.82, 1.77]	-0.14	-1.06	.291
Time Management	0.21	1.87	[-3.51, 3.94]	0.02	0.11	.909

Note. Results: $F(5,84) = 2.63, p = .030, R^2 = 0.14$ Unstandardized Regression Equation: L2 achievement score = $53.29 + 5.50 \cdot \text{Help Seeking} + 1.22 \cdot \text{Goal-Setting} + 1.57 \cdot \text{Task Strategies} - 2.03 \cdot \text{Self-Evaluation} + 0.21 \cdot \text{Time Management}$

Table 5. Results for Multiple Regression with *Help Seeking, Goal-Setting, Task Strategies, Self-Evaluation, and Time Management* predicting L2 achievement score

Discussion

The primary purpose of the current study was to determine the extent to which each dimension of the online SRL scale could predict EFL achievement scores. The aim was also to investigate the relationships among the online self-regulated learning dimensions. The study reached a range of findings, some of which corroborate previous findings in the literature.

This study revealed that Turkish EFL learners were medium to high online self-regulated learners with the highest score in the environment structuring dimension. This supports the findings of another study conducted in the Turkish EFL context. The participants in their study were also found to be medium to high online self-regulated learners (Korkmaz & Kaya, 2012).

While our model for online SRL could only predict 14% of EFL achievement, another study conducted within a face-to-face education mode setting and used a different SRL scale predicted language achievement scores by 53% (Ghanizadeh & Mizae, 2012). The context was an online learning environment where self-regulated learning behaviors differed from those in face-to-face classes. To exemplify, learners needed to set the environment for online sessions, seek help from their peers online, employ different task strategies, manage their time, and evaluate personal progress. The instrument used was also a determinant factor affecting the findings because all dimensions and statements were related to online learning environments. As a corollary to the theoretical propositions and hypotheses that expect a strong correlational relationship between online mode of education and self-regulation, a higher percentage of predictions could be yielded. However, such a high difference could result from other contextual characteristics, and the instrument employed acknowledges that self-regulation is a context-specific phenomenon (Zimmerman & Schunk, 2008).

In the Iranian context, studies found a significant relationship between SRL and language proficiency (Khodarahmi & Zarrinabadi, 2016; Mirhassani et al., 2007). On the other hand, the research literature has documented the lack of statistically significant relationships between SRL behaviors and language achievement (Mahmoodi et al., 2014). It is also important to note that literature on SRL and language achievement relationships remain scarce. Therefore, it is important to continue investigating the SRL dimensions and their relationship to language proficiency.

In the current study, help-seeking was the most predictive factor in EFL achievement scores. Similarly, a study on the relationship between help-seeking and thesis completion of EFL students found a positive and strong relationship ($r = .461$) with a moderate effect size (Mbato & Cendra, 2019). This suggests that students who seek help are more likely to perform better academically, which could also direct researchers to an in-depth investigation of learners' socially shared regulated learning behaviors in recently burgeoning online education contexts (see also Järvelä & Hadwin, 2013; Hadwin et al. 2011). In language education, learners should be supported in their search for help and a suitable environment where help-seeking is possible and encouraged. A more relatable study on the relationship between SRL and EFL achievement showed a strong correlation between EFL achievement and goal-setting, structuring the environment, and task strategies (Öztürk & Çakıroğlu, 2018). Considering this, learners who set goals, structure their learning environment, and apply task-related strategies will likely have higher EFL achievement.

Moreover, a moderate relationship between help-seeking and EFL achievement was evident; thus, aligning with our findings (Öztürk & Çakıroğlu, 2018). The fact that there was only one study that related to our particular finding could also originate from a very similar context, that is an EFL class in Turkey in Öztürk and Çakıroğlu's study. This implies that L2 achievement is related to help-seeking, one of the SRL dimensions.

As previously mentioned, the EFL achievement scores in the current study were measured through a series of examinations, including four skills, one of which is naturally writing. The writing skill of 80 Iranian EFL learners was moderately correlated with their self-regulation skills in a face-to-face classroom environment (Soureshjani, 2013). Furthermore, a mixed-method thesis study with 124 participants in the Turkish EFL context also reached a positive relationship between self-regulation and writing (Özbay, 2008). Accordingly, learners who exhibit strong self-regulatory learning behaviors are more likely to perform better at writing.

Besides writing, an experimental study revealed higher reading comprehension in the group employing self-regulated learning strategies. (Maftoon & Tasnimi, 2014). Also, the listening skill was one of the aspects of the language achievement scores of the current study. Nasrollahi-Mouziraji and Birjandi (2016) found a link

between SRL and L2 listening achievement. This, in a way, supports the finding of the model predicting 14% of EFL achievement scores.

Contrary to the present study, which found no correlation between help-seeking and other online SRL dimensions except for task strategies, Liu (2017) discovered that online learners' help-seeking behaviors were related to other SRL dimensions. How individual learners approach tasks and task outcomes is also linked with help-seeking strategy use as suggested within the frame of achievement goal theory, which puts forward indicators of help-seeking behaviors of learners (cf. Karabenick, 2003). In collaborative and goal-directed activities, learners will likely employ more help-seeking strategies. In this respect, practices that lead learners to use help-seeking strategies should include teachers' task choices and planning that positively reinforce learners' help-seeking behaviors and practices that focus on training learners about when and how to seek help to accomplish a task in online learning environments.

Goal-setting dimension of SRL needs more investigation for its strong correlation with the time management dimension, as setting goals requires good time management skills. Furthermore, goals "serve as reference points for performance" (Koch & Nafziger, 2011, p. 212). Also, reasonable and sophisticated behavior in setting goals leads to better self-control, including the exhibition of time-consistent behavior (Koch & Nafziger, 2011, p. 213). Similarly, as reported in many studies, Khat (2019) draws attention to a strong correlation between time-management, goals, and procrastination behaviors. In the present study, the participants seem to be aware of the task requirements, including their limits regarding the amount of time required to complete the tasks. Also, the learners were given clear notes explaining how to perform the tasks, and the deadlines given for the completion of tasks were in alignment with the task requirements, which included preparation and video shooting, which could help learners with setting goals to complete the tasks and managing their time accordingly. Fostering the ability for strategic use of goal-setting skills of learners in online learning platforms is likely to help learners manage their time within the transactional distance posed by the learning environment. As a result, it will enhance the possibilities of better learning outcomes for language learners. Well-adjusted level of task difficulty and use of incentives or sanctions for task completion are among the instructional practices to promote goal-setting strategy employment of learners (Suvorov & Van de Ven, 2008).

Another important finding stemming from the current study was that during the data analysis, the researchers realized that the group of learners who were taking the preparatory English classes compulsorily due to the university regulations regarding their majors were found to have the highest scores in online SRL measures. Due to the lack of robust evidence, it can only be inferred that motivational variates might play a role in learners' online SRL (Pintrich, 1999; Young, 2005).

In the final analysis, understanding learners' position in their awareness and level of applying self-regulation learning skills in online language learning environments will directly or indirectly influence their learning outcomes for different language skills. For this reason it would be useful to conduct further research in different online contexts and to promote relevant instructional practices where needed.

Conclusion

This study investigated online EFL learners' SRL through a quantitative explanatory approach utilizing an online self-regulation questionnaire to measure any correlation among SRL dimensions and to determine to what extent online SRL predicted the participants' language achievement level.

The undergraduate Turkish EFL learners in the study were found to be moderate to high self-regulated learners. Moreover, relationships between online SRL dimensions were found to exist. The most notable was the correlation between time management and goal-setting behaviors, which implies that learners who set goals in online learning environments are likely to manage their time more aptly. Online SRL behaviors were found to predict 14% of the variance in language achievement scores, and help-seeking behavior was the most impactful factor. Awareness and employment of online SRL directly or indirectly contributed to the EFL learners' language achievement in the online language learning environment. A surprising finding was that learners in the compulsory preparatory year class showed higher levels of online SRL behaviors than those of other participants in the study.

This study was limited in that only quantitative measures were used; therefore, in-depth explanations of the results from participants' perspectives were lacking. Participants were not grouped by their achievement scores, and the online SRL differences in low and high groups were not compared. Further studies can tap into these points. We suggest that more studies should be conducted on the relationship of online SRL on

EFL achievement with different samples, possibly with other factors such as online learner engagement, self-efficacy, and online learning motivation. To ensure the reliability of the data, further studies should also make use of questionnaires, interviews, think-aloud techniques, and learning diaries. A qualitative perspective could bring further explanations to the results. For example, it could respond to why certain dimensions are scored higher than the others and add to the inferential tests conducted to measure correlational relationships investigated in the study.

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