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Research Article

Higher Education EFL Learners' Online Self-regulated Learning during the Covid-19 Pandemic: Relationships of Some Variables with Self-regulation

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Abstract: The sudden implementation of a fully-online education has caught learners in many countries flat-footed, bringing about more responsibilities for self-regulated learning. However, self-regulation seems to be an outstanding challenge facing learner-readiness, satisfaction and achievement in online education during the pandemic period. Nowadays, higher education students fail at effectively self-regulating their online learning experience. Therefore, it is worth identifying whether the situation in this sense has deteriorated or ameliorated during the pandemic process. Thus, this study aimed to understand to what extent higher education students self-regulated their online learning, and what kind of a relationship their self-regulation had with such variables as academic achievement, gender, preferred online learning environment, and attitudes towards the online course (English in this instance). The study also aimed to conduct the validity and reliability analyses of the Turkish version of the scale Self-Regulated Online Learning Questionnaire (SOL-Q). The findings of the study provide educational policy-makers with critical insights into the current situation of fully online education practices in higher education.

Anahtar Sözcükler: Öz-düzenlemeli öğrenme, yüksek öğretim, dil öğrenimi, Covid-19, çevrimiçi öğrenme

İngilizceyi Yabancı Dil olarak Öğrenen Üniversite Öğrencilerinin Covid-19 Sürecinde Çevrimiçi Öz-Düzenlemeli Öğrenme Becerileri: Bazı Değişkenlerle Öz-Düzenleme arasındaki İlişkiler

Özet: Tamamen uzaktan çevrimiçi bir eğitime ani geçiş birçok ülkede öğrenciler hazırlıksız yakalamış ve öz-düzenlemeli öğrenme konusunda daha fazla sorumluluk alınması gerekliliğini de beraberinde getirmiştir. Ancak, pandemi döneminde öz-düzenleme, çevrimiçi öğrenmede öğrenci hazır-bulunuşluğu, memnuniyeti ve başarısının önünde olağanüstü bir zorluk olarak görünmektedir. Günümüzde yükseköğretim öğrencilerinin çevrimiçi öğrenme deneyimlerini etkin bir şekilde kendi kendilerini düzenlemede başarısız oldukları görülmektedir. Bu bağlamda, söz konusu durumun pandemi döneminde daha mı kötüye yoksa daha mı iyiye gittiğinin tespit edilmesi araştırmaya değer bir konudur. Bu nedenle, bu çalışma, yükseköğretim öğrencilerinin çevrimiçi öğrenmelerini ne ölçüde öz-düzenleyebildiklerini ve öz-düzenlemenin akademik başarı, cinsiyet, tercih edilen çevrimiçi öğrenme ortamı ve çevrimiçi derse (İngilizceye) yönelik tutumlar gibi değişkenlerle nasıl bir ilişkisi olduğunu anlamayı amaçlamıştır. Çalışmada ayrıca Öz-Düzenleyici Çevrimiçi Öğrenme Ölçeği'nin (SOL-Q) Türkçe versiyonunun geçerlik ve güvenirlik analizlerinin yapılması amaçlanmıştır. Çalışmanın bulguları, eğitim politika-yapıcılarına yükseköğretimde tamamen çevrimiçi eğitim uygulamalarının mevcut durumuna ilişkin bazı görüşler sunmaktadır.

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1. Introduction

The Covid-19 pandemic negatively influenced 90% of learners worldwide, owing to the temporary school closures (UNESCO, 2020). In the face of the pandemic, a great majority of world countries (74%) offered education via government-supported online programs (Memon et al., 2020). However, the sudden implementation of a fully-online education has caught learners in many countries flat-footed, bringing about such challenges as stress, workload and low spirits (Abu Talib et al., 2021). This necessitated students to self-regulate their own learning process more in order to go through the ordeal with success. Indeed, an online learning environment demands more from students' self-regulation skills (Boor & Cornelisse, 2021), and probably the conditions caused by the current pandemic increased this demand. In fact, self-regulated learning is considered to significantly affect the active control of the learning process and, eventually, students' academic outcomes (Goulão & Menedez, 2015). Learners are supposed to have more autonomy, meaning that they should take more charge of their own learning (Holec, 1981), in online environments. Furthermore, it is emphasized that the students that develop competencies for self-regulation will be more able to go beyond the necessary to adapt to new challenging conditions (Goulão & Menedez, 2015). However, it is highlighted that autonomous learning is achieved when certain conditions are obtained, such as psychological and environmental factors (Zhong, 2018). It is clear that emergency cases could be powerfully effective on these psychological and environmental factors and, in turn, on learning outcomes (Bond et al., 2021; Garcia & Weiss, 2020, 2021); thus, any research on understanding the role of a certain learner-related or learning environment-related variable in the success of online learning practices during the lockdown due to the global pandemic would be of much significance for future educational policy-making.

1.1. Literature Review

1.1.1. Theoretical Framework

The significance of self-regulated learning in online education has been emphasized by an increasing number of researchers (Broadbent, 2017; Hong et al., 2021; Inan et al., 2017; Jansen et al., 2019). Self-regulated learning is defined as a student's ability to independently and proactively engage in self-motivating and behavioural processes that increase goal attainment (Zimmerman, 2000). Self-regulated learning can be seen as a skill in which students need to know how to set goals, what it takes to achieve those goals, and how to actually achieve them. Thus, students must have the motivation to achieve their goals as well, to be able to regulate and control their own behaviour (Kitsantas & Dabbagh, 2010). The motivational component of self-regulation helps learners persevere in difficult assignments (Dabbagh & Kitsantas, 2012).

According to Pintrich (2004), the self-regulated learning viewpoint stipulates some presuppositions. In that, learners are considered to be operating participants in the learning process. Learners are expected to create their own meaning, goals, and strategies depending on the existing information in the "external" environment and the information in their own minds (the "internal" environment). Learners possess the potential to keep track of, oversee, and modulate particular aspects of their own cognition, motivation, and behavior, as well as certain qualities of their environment. Nevertheless, this does not necessarily imply that they can or will do so on any occasion or under any circumstances, yet some monitoring, control, and regulation are attainable. There are biological, developmental, contextual, and individual difference limitations which may possibly intervene with individual endeavours at regulation.

In line with these assumptions, researchers have been investigating the effects of various individual and learning-environmental variables on self-regulation. As Pedrotti and Nistor (2019) argue, higher education students cannot efficiently self-regulate their online learning experience. Therefore, it is worth identifying whether the situation in this sense has deteriorated or ameliorated during the pandemic process. Thus, a review of relevant research is thought to give us a clearer picture in this regard.

Self-regulation seems to be a great challenge facing learner-readiness, satisfaction and achievement in online education during the pandemic period (Aini et al., 2020; Biwer et al., 2021; Di Giorgio et al., 2021; Liu et al., 2021; Santamaría-Vázquez et al., 2021; Sulisworo et al., 2020). Several studies have revealed the role of self-regulation specific to the pandemic period. In that, Biwer et al.'s (2021) study revealed that the learners could less regulate their attentiveness, effort, and time; and that they were less motivated comparatively; it was further reported that learner self-study required more time and effort. Moreover, it was revealed that the learners who were labelled as adapters had higher degrees of autonomous learning by self-regulating their learning more (Biwer et al., 2021). In another study in this respect (Zinchenko et al., 2020), it is shown that there is a positive correlation between the learners' degree of awareness of self-regulation and their productivity in the self-organization of behaviour during an emergency period. Moreover, self-regulation has been found to be a significant predictor of learners' satisfaction with online learning during the lockdown (Hamdan et al., 2021). That is, the learners who self-regulated their learning more, and had digital competencies were found to be able to keep focused and engaged throughout the pandemic (Limniou et al., 2021). Within the context of Covid-19, Boor and Cornelisse (2021) suggest that improving learners' self-regulatory potentials should be a pivotal principle in planning online education so as to accomplish fruitful learning in an online setting. These researchers pinpoint three issues as regards to online self-regulated learning: 1) deranged curriculum structure and study rhythm, 2) less feedback, and 3) fewer chances of reflecting together.

Correlations and moderating/mediating effects of self-regulated learning in an online environment have also been studied during the pandemic period. A study by Zhou et al. (2021) revealed that relatedness is positively associated with online self-regulated learning, and online self-regulated learning has a full mediating effect on the relationship between relatedness and perceived learning gains. Moreover, it was also demonstrated by these researchers that task strategies and goal setting contributed most to the mediating effects of online self-regulated learning. Thus, the researchers conclude that teachers can promote students' online self-regulated learning by building a learning community and designing collaborative learning activities (Chiu et al., 2021; Zhou et al., 2021). In another study conducted during the pandemic, it is suggested that promoting self-regulated learning is likely to influence the optimization of the digital learning environment and academic achievement; and learners having higher levels of self-regulated learning skills are able to optimize their digital learning environment and become more progressive with regard to academic achievement (Sutarni et al., 2021).

Several possibilities are reported to be reasons affecting learners' self-regulation during the pandemic, such as poor sleep quality (Di Giorgio et al., 2021), receiving education within substandard places and seclusion, which lays more burden on learners' resource management, not being provided with their usual learning environment, involuntary shift to online learning modality, and being unable to reach all technical resources or receive support from instructors and peers (Biwer et al., 2021). Within fully online education, learners who

study on their own might interact spontaneously with others less, and there exist some worries about whether they experienced effective learning, especially in the course of lockdowns (Hong et al., 2021). Thus, it was disclosed that the learners who self-regulated their online learning more perceived lower degrees of learning ineffectiveness, which means they showed more positivity about the effectiveness of their learning. Furthermore, it was also revealed that learners who academically procrastinated more self-regulated their online learning less, which led to less positive about online education's effectiveness (Hong et al., 2021).

1.1.2. Previous Research

The pre-pandemic research demonstrates a well-established positive correlation between self-regulated learning and academic achievement (Hattie, 2021; Jansen et al., 2019; Malik & Parveen, 2019). It is reported that higher education students who engage in self-regulated learning are actively involved in their learning process (Jansen et al., 2019). And in this regard, as a recent finding, Hattie (2021) shares the fact that self-regulated learning strategies have an above-average effect size on academic achievement (d=0.54) based on a synthesis of 17 relevant meta-analyses.

In terms of gender, previous studies generally tend to give better results on behalf of female learners (Alghamdi et al., 2020; Park, 2019), although some studies report contrary findings (Malik & Parveen, 2019). Zimmerman and Martinez-Pons (1990) identified earlier that female learners showed a much higher propensity than male learners to make use of the strategies of self-monitoring, goal setting, planning, and structuring of their learning environment. Although a recent meta-analysis shows that males still hold a more favorable attitude toward technology use than females (Cai et al., 2017), and display higher stability in attitudes towards online education (Nistor, 2013), the impact of gender on online learning outcomes is said to be questionable and inconclusive (Boyte-Eckis et al., 2018; Jung, 2014; Yu, 2021). Attitudes towards the course taken online could also be effective in online academic achievement and self-regulated learning. It was found by Tran and Duong (2013) that academic achievement and attitudes towards learning English were positively correlated to self-regulated learning; however, only attitudes towards learning English predicted self-regulation. In fact there are some meta-analyses providing an overall effect-size of the effectiveness of online learning practices for the pre-pandemic period. In a recent study, Batdı et al. (2021) revealed that online learning has a positive medium effect on learning achievement, and it also has a positive effect on achieving learning outcomes during the pandemic period. Moreover, it is also highlighted in a pre-pandemic study that online learning environments have a great potential to transform the methodologies in foreign language education (Can, 2009).

In terms of the effectiveness of online learning modes, synchronous and asynchronous, there are some studies pertaining to the pre-pandemic period (Bernard et al., 2004b; Martin et al., 2021; Means et al., 2013). Synchronous online classes run in real-time, with learners and instructors attending together simultaneously from different locations (Wintemute, 2021). Asynchronous online learning, frequently assisted with the use of e-mail and discussion boards, bolsters interactions among students and with instructors, even when they are not able to be online simultaneously, while synchronous online learning, which is commonly backed up by media such as video-conferencing and chat, is said to possess the potential to support online learners in the development of learning communities (Hrastinski, 2008). An earlier meta-analysis by Bernard et al. (2004b) comparing synchronous and asynchronous

distance learning interventions with their classroom equivalents reveals that there is evidence for synchronous distance education, based on an analysis of achievement outcomes, that learners in the distance education condition are not performing as well as their classroom peers, by and large. This effect in favor of the face-to-face condition seems to be even more marked for attitude results. Contrarily, distance education learner receiving asynchronous distance education outperformed their face-to-face equivalents on achievement measures and performed equally successful with regard to attitude outcomes. In another meta-analysis, synchronous learning modality was not found to be a significant moderator of online learning effectiveness (Means et al., 2013). On the other hand, a recent meta-analysis by Martin et al. (2021) reveals that when compared to asynchronous online learning, synchronous online learning has a significantly positive impact on students' cognitive outcomes, but not on affective outcomes. However, the researchers warn that this is a tentative finding due to the shortage of supporting research as well as the existence of publication bias. Moreover, it is reported in an experimental study that not only synchronous but also asynchronous online learning significantly enhanced learners' achievement and skills acquisition in word processing regardless of learners' gender. Nevertheless, learners who received asynchronous education demonstrated higher cognitive achievement, whereas those receiving synchronous online learning exhibited improved skills acquisition (Ogbonna et al., 2019). The limited relevant literature in this sense shows us contradicting findings. Thus, it is discernible that the relevant literature should be supported with more research studies in this regard, and this need is also articulated by some researchers (Martin et al., 2021; Means et al., 2013).

1.1.3. The Present Study

This study aimed to understand to what extent higher education students self-regulated their learning online, and what kind of a relationship their self-regulation had with such variables as academic achievement, gender, preferred online learning environment, and attitudes towards the online course (English in this instance). The study also aimed to conduct the validity and reliability analyses of the Turkish version of the scale *Self-Regulated Online Learning Questionnaire* (SOL-Q) developed by Jansen et al. (2017). In the light of the above-mentioned points, this study seeks answers to the research questions given below:

1. To what extent do the participants self-regulate their online learning during the pandemic?
2. How does online self-regulated learning associate with and predict academic achievement in English courses?
3. Does the participants' academic achievement in English significantly differ in terms of such independent variables as gender, preferred online learning modes (synchronous and asynchronous), and attitudes towards English courses?
4. Does the participants' self-regulated online learning significantly differ in terms of such independent variables as gender, preferred online learning modes (synchronous and asynchronous), and attitudes towards English courses?

2. Method

2.1. Research Design

This study takes a correlational research design aiming to identify dissimilarities in the qualities of a population-based on whether or not its subjects are exposed to an event of interest in the naturalistic environment. In correlational studies, the relationships among two or more variables are studied without any attempt to influence them (Cohen et al., 2007; Fraenkel et al., 2012; Lau, 2017).

2.2. Participants

The study was carried out on A1 level undergraduate students studying in various departments of Fırat University in eastern Turkey during the 2020-2021 academic term, when the face-to-face education was already changed with fully online learning due to the pandemic precautions. As with all other courses, the participants took a compulsory English Language course the researcher gave online. While creating the sample of the research, convenient sampling from non-probability sampling methods used. In this sampling method, the researcher works on a situation that is attainable and will provide maximum savings (Büyüköztürk, 2011). Table 1 shows the distribution of the participants according to their demographic characteristics.

Table 1.

Distribution of Participants by Demographic Characteristics

Demographic Variables	Groups	n	%
Sex	Female	81	51.3
	Male	78	48.7
Instructional Mode	Asynchronous	87	55.1
	Synchronous	71	44.9
Attitude toward English	Positive	44	27.8
	Neutral	72	45.6
	Negative	42	26.6

51.3% of the 158 students participating in the study were female, and 48.7% male. 55.1% of students preferred asynchronous learning mode, and 44.9% preferred synchronous learning mode. 27.8% of the students had a positive attitude towards English, 45.6% had a neutral attitude, and 26.6% had a negative attitude. The data were collected through e-mail based on voluntary participation at the end of the first term during the final make-up examinations. The online education was being provided synchronously and asynchronously with the learning management system Blackboard and Zoom. The synchronous activities included live virtual classes on either Blackboard or Zoom and discussion forums, while asynchronous activities contained pre-recorded course videos, the recorded version of virtual classes, pdf notes, open forums, WhatsApp groups, and assignments. The learners interacted with the instructor synchronously in live virtual classes and by chatting either on WhatsApp or Blackboard forums, whereas they could interact with the instructor and each other asynchronously with e-mails, open discussion forums and whatsup.

2.3. Data Collection and Analysis

SPSS 21.0 and AMOS 22.0 statistical programs were utilized in order to analyze the data in this study. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), item-total correlation, and Cronbach Alpha methods were used within the scope of validity and reliability studies of the scale. EFA can be defined as a method in multivariate statistics aiming to find and discover conceptually meaningful fewer new variables by bringing together a large number of interrelated variables (Çokluk et al., 2010). The normality test of the sub-dimension and total scores resulting from the reliability and validity analyzes of the scale were examined with the skewness and kurtosis coefficients. For the correlation analysis between self-regulated online learning and English academic achievement score, multiple regression analysis was used to determine the effect of self-regulated online learning on

English academic achievement. An independent two-sample t-test was used to compare the variables according to gender and educational environment; an ANOVA test was used to compare the variables according to their attitudes toward English. The confidence interval for the analysis was determined as 95% (significance level 0.05 $p<0.05$).

2.3.1. Validity and Reliability of the Self-Regulated Online Learning Questionnaire

In order to collect data, the Turkish version of the Self-regulated Online Learning Questionnaire developed by Jansen et al. (2017) was utilized. Although the Turkish adaptation and validity-reliability study of the scale used in this study (SOL-Q) were published by Yavuzalp and Özdemir in April 2020; the sample of their study (569 university students) was reached in the 2018-2019 academic year, and compulsory online education applications had not yet started due to the global epidemic at the time of their study. Thus, the validity and reliability of the Turkish version of the scale became a need. The most important reason for the need for exploratory factor analysis in this study is that the period of time in which the online education research was conducted was during the period when online education was compulsory due to the global pandemic.

2.3.1.1. Exploratory Factor Analysis

KMO was 0.92 in the exploratory factor analysis of the Self-Regulated Online Learning scale; Since the significance level of Bartlett's sphericity test was determined as $p<0.01$, it was observed that the sample was sufficient for explanatory factor analysis. According to the results of the EFA, the total variance explained by the 36 items in the scale was 57.29%; it was observed that the variance explained by the factors was between 5.69% and 24.15%. Although the explained variance seems high, it was determined that 13 items in the scale had low factor loadings in the factors they belonged to, high factor loadings in other factors, and the load values between the factors were lower than 0.10. In addition, it was determined that five of the said items (m17, m28, m29, m30, m31) were items in the dimension of "perseverance". Since all items in the perseverance dimension were removed by removing the problematic items, the EFA was repeated with four dimensions and 23 items. In the second step of the EFA, the total variance explained by the remaining four dimensions and 23 items in the scale increased to 75.08%. In other words, a much higher total variance was obtained than the 57% total variance obtained with 36 items. In the second step of the EFA, the factor loads of the remaining 23 items were higher than 0.40, they had a high factor loading only in their own factors, and the difference in factor loads in other factors was higher than 0.10 (Büyüköztürk, 2011).

2.3.1.2. Confirmatory Factor Analysis

The fit indices were obtained as a result of the confirmatory factor analysis (CFA) performed with the remaining 23 items as a result of EFA in the Self-Regulated Online Learning scale. Since the model fit indices were not at acceptable levels but the factor loads were high, the results were obtained by establishing covariance connections first. In the first stage of the CFA, the inappropriate model fit indices did not reach a sufficient level with appropriate covariance connections, but item factor loads were higher than 0.40. The number of covariance connections (15 connections) was close to the number of items; however, not all of the fit indices reached the appropriate levels. The item that needs a large number of covariance connections indicates a high correlation relationship with a large number of items. For this reason, when the model fit indices of the remaining 19 items were examined by removing four items (i3, i14, i22, i34) with a large number of covariance connections, all

items reached a good fit level, except for the GFI, which is sensitive to the number of samples.

2.3.1.3. Reliability Analysis

According to the reliability findings, the Cronbach Alpha coefficient of the scale was 0.95; The Cronbach Alpha coefficients of the sub-dimensions were found to be between 0.76 and 0.95, and the item-total correlation was above 0.20 (between 0.23 and 0.83) for all items. According to the findings of the validity and reliability analysis of the Self-regulated Online Learning Questionnaire, the scale is a valid and reliable scale with a structure consisting of 4 dimensions and 19 items.

3. Findings

3.1. Descriptive Findings

In Table 2, descriptive statistics of self-regulated online learning and academic achievement scores are given.

Table 2.

Descriptive Statistics of Scale and Sub-Dimensional Scores

Sub-Dimensions	N	Min.	Max.	$\overline{X}$	SD	Skewness
Academic Achievement Score	158	8.00	86.00	37.59	11.34	1.83
Meta-cognitive Skills	158	1.00	7.00	3.95	1.58	-1.05
Time management	158	1.00	7.00	3.96	1.72	-0.89
Environmental structuring	158	1.00	7.00	4.34	1.56	-0.68
Help Seeking	158	1.00	7.00	4.10	1.65	-1.06
Self-Regulated Online Learning	158	1.78	6.64	4.09	1.04	-0.77

According to Table 2, the final grade of the students participating in the research was determined as 37.59±11.34. The self-regulated online learning scores of the students were determined as 4.11±1.27. According to the lowest (1: not true for me) and highest (7. Very true for me) scores that can be obtained, it can be said that students' self-regulated online learning skills are at a moderate level. When the sub-dimensions were examined, it was determined that the highest level of self-regulated online learning skill was environmental structuring (4.34±1.56), and the lowest level of self-regulated online learning skill was metacognitive skills (3.95±1.58).

3.2. Findings Regarding the Relationship between Academic Achievement and Self-Regulated Online Learning

Pearson correlation test results of the relationship between self-regulated online learning and academic achievement are given in Table 3.

Table 3.

Relationship between Academic Achievement and Self-Regulated Online Learning

Variable	2	3	4	5	5
1- **Academic achievement**	0.27**	-0.12	0.27**	0.12	0.16*
2- Meta-cognitive skills		0.21**	0.72**	0.77**	0.85**
3- Time management			0.26**	0.29**	0.58**
4- Environmental structuring				0.68**	0.84**
5- Help seeking					0.87**
6- Self-regulated online learning					1

*p<0.05 **p<0.01

A positive and significant relationship was found between academic achievement score and metacognitive skills (r=0.27; p<0.05), environmental structuring (r=0.27; p<0.05) and self-regulated online learning scale score (r=0.16); p<0.05). In Table 3, multiple regression test results of the effect of self-regulated online learning on English academic achievement are given.

Table 3.

The Effect of Self-Regulated Online Learning on Academic Achievement

Independent Variable	B	SH	β	t	p	Tolerance	VIF
Fixed	22.415	3.834		5.846	0.000		
Meta-cognitive skills	2.082	0.925	0.290	2.252	**0.026**	0.338	2.958
Time management	1.266	0.519	0.192	2.441	**0.016**	0.902	1.109
Environmental structuring	1.878	0.823	0.258	2.281	**0.024**	0.436	2.292
Help seeking	-1.511	0.852	-0.220	-1.774	0.078	0.366	2.736
SROL-Q	22.415	3.834		5.846	**0.000**		

R^2=0,144 ΔR^2=0,121 $F_{(4; 153)}$=6.412 p=0.000

The first model of the effect of self-regulated online learning on English academic achievement is appropriate (F(4; 153)=6.41 p<0.05), there is no problem of multicollinearity between the variables (Tolerance>0.20; VIF<10) detected. Self-regulated online learning skills explain approximately 12% of the variation in English academic achievement (ΔR2=0.121).

According to the results of the standardized regression coefficients (β) in the model and the t-test for the significance of the coefficients, the most important effects on English academic achievement were respectively metacognitive skills (β=0.54; t=4.52; p<0.05), environmental structuring, (β=0.26; t=2.28; p<0.05) and time management (β=0.19; t=2.44; p<0.05) skills. According to the model, high self-regulated online learning skills lead to an increase in academic success in English.

3.3. Findings of the Comparison of Academic Achievement and Self-Regulated Online Learning Scores by Demographic Variables

In Table 4, the results of the independent two-sample t-test for the comparison of scale scores in terms of gender are given.

Table 4.

Comparison of Scores in terms of Gender

Variable	Gender	n	$\bar{X}$	Sd	t	p
Academic achievement score	Female	81	40.07	11.75	2.88	0.004*
	Male	77	34.99	10.34		
Meta-cognitive scores	Female	81	3.93	1.60	-0.14	0.893
	Male	77	3.97	1.57		
Time management	Female	81	4.23	1.63	2.04	0.043*
	Male	77	3.68	1.78		
Environmental structuring	Female	81	4.31	1.58	-0.27	0.786
	Male	77	4.37	1.55		
Help Seeking	Female	81	3.99	1.61	-0.84	0.402
	Male	77	4.21	1.69		
Self-regulated online learning	Female	81	4.00	1.25	-1.08	0.281
	Male	77	4.22	1.29		

It was determined that academic achievement scores differed significantly by gender ($t=2.88$; $p<0.05$). The English academic achievement scores of female participants are significantly higher than the scores of male participants. Time management scores were found to differ significantly by gender ($t=2.04$; $p<0.05$). The time management score of female participants is significantly higher than the scores of male participants. It was determined that metacognitive skills, environmental structuring, help seeking, and self-regulated online learning scale scores did not differ significantly by gender ($p>0.05$).

In Table 5, the results of the independent two-sample t-test for the comparison of the scale scores according to the online learning environment are given.

Table 5.

Comparison of Scores by Online Learning Environment

Variable	Learning Mode	n	$\bar{X}$	Sd	t	p
Academic achievement score	Asynchronous	87	38.32	9.01	0.89	0.374
	Synchronous	71	36.70	13.69		
Meta-cognitive skills	Asynchronous	87	3.92	1.63	-0.23	0.820
	Synchronous	71	3.98	1.52		
Time management	Asynchronous	87	3.99	1.73	0.24	0.812
	Synchronous	71	3.92	1.73		
Environmental structuring	Asynchronous	87	4.43	1.50	0.82	0.412
	Synchronous	71	4.23	1.64		
Help-seeking	Asynchronous	87	4.01	1.75	-0.76	0.450
	Synchronous	71	4.21	1.52		
Self-regulated Online Learning	Asynchronous	87	4.09	1.24	-0.14	0.886
	Synchronous	71	4.12	1.31		

It was determined that academic achievement scores did not differ significantly according to the preferred online learning mode ($p>0.05$). It was determined that the total and sub-dimension scores of the self-regulated online learning scale did not differ significantly according to the preferred online learning mode ($p>0.05$).

Table 6 shows the results of the ANOVA test for the comparison of the scale scores according to the attitude towards English.

Table 6.

Comparison of Scores by Attitude towards English

Sub-dimension	Attitudes	n	$\overline{X}$	Sd	F	p	Sig. Dif.
Academic achievement score	A-Positive	44	41.27	9.56	3.43	0.035*	A>B, C
	B-Neutral	72	35.78	11.19			
	C-Negative	42	36.86	12.61			
Meta-cognitive skills	A-Positive	44	4.82	1.27	11.55	0.000*	A>B, C
	B-Neutral	72	3.76	1.59			
	C-Negative	42	3.36	1.49			
Time management	A-Positive	44	4.05	1.78	0.09	0.916	
	B-Neutral	72	3.94	1.69			
	C-Negative	42	3.89	1.76			
Environmental structuring	A-Positive	44	5.13	1.24	8.97	0.000*	A>B, C
	B-Neutral	72	4.12	1.49			
	C-Negative	42	3.89	1.70			
Help seeking	A-Positive	44	5.04	1.33	13.54	0.000*	A>B, C
	B-Neutral	72	3.96	1.66			
	C-Negative	42	3.36	1.49			
Self-regulated online learning	A-Positive	44	4.74	1.07	9.02	0.000*	A>B, C
	B-Neutral	72	3.97	1.28			
	C-Negative	42	3.68	1.23			

It was determined that academic achievement scores differed significantly according to the attitude towards English ($F=3.43$; $p<0.05$). According to the results of the LSD post hoc test, which was conducted to determine between which groups the difference was, the academic achievement scores of the students with a positive attitude towards English were significantly higher than the scores of the participants whose attitudes towards English were neutral and negative. Metacognitive skills ($F=11.55$; $p<0.05$), environmental structuring ($F=8.97$; $p<0.05$), help seeking ($F=13.54$; $p<0.05$) sub-dimensions scores and self-regulated online learning scale score ($F=9.02$; $p<0.05$) were found to differ significantly according to the attitude towards English. According to the results of the LSD post hoc test: the metacognitive skills, environmental structuring, help-seeking skill scores, and self-regulated online learning scale scores of students with positive attitudes towards English are significantly higher than the scores of the participants with neutral and negative attitudes.

4. Discussion

The sudden transition to online education during the pandemic, which is distinctively called *emergency remote teaching/ learning* rather than online education by some researchers (Bates, 2020; Bond et al., 2021; Hodges et al., 2020), seems to have doubled the self-regulatory responsibilities of higher education learners. However, this study revealed that Turkish students moderately self-regulated their learning online during the pandemic period. The highest level of self-regulated online learning skill was environmental structuring, and the lowest level of self-regulated online learning skill was metacognitive skills. In fact, the effect of cultural differences on online learning outcomes is already highlighted in the literature (Jung, 2014; Milheim & Fraenza, 2014). In line with this finding of the study, in Korkmaz

and Kaya (2012)'s study, it is reported that students' online self-regulated learning skills are generally higher and their highest level of skills is "structuring the environment", whereas the lowest skill is "goal setting". However, some studies report a lower level of self-regulation in terms of foreign language learning (Tran & Duong, 2013; Yüce, 2019). In terms of undergraduate students' general self-regulation skills in foreign language learning, a study by Yüce (2019) reveals that the majority of students had difficulties in environmental structuring, time management, and affective processes, while they tried to demonstrate enough perseverance.

A positive and significant relationship was identified between academic achievement scores and the scores of metacognitive skills, environmental structuring and self-regulated online learning. Furthermore, self-regulated online learning skills explain about 12% of the variation in academic achievement scores, which means that having high self-regulated online learning skills leads to an increase in academic success in English. And, the most important effects on English academic achievement were respectively metacognitive skills, environmental structure and time management skills. In fact, the mutual relationship between self-regulated learning and academic achievement has been widely researched, and mostly positive correlations have been reported so far (Cleary & Platten, 2013; Sutarni et al., 2021; Tılfarlıoğlu & Özdinç-Delbesoğlugil, 2014; Tran & Duong, 2013; Wang et al., 2013). According to Wang et al. (2013), by using more effective self-regulated learning strategies, one increases his/her levels of motivation, and the increased levels of motivation toward online courses lead to higher levels of course satisfaction and better performance. However, there are also studies reporting no significant difference in this regard (Yükseltürk & Bulut, 2009). In fact, there is a strong emphasis on the teaching of meta-cognitive strategies of self-regulated learning for achievement in language learning (Mahadi & Subramanian, 2013; Yüce, 2019).

4.1. Gender Differences

It was determined that academic achievement scores differed significantly in terms of gender. That is, the academic achievement scores of female learners are significantly higher than those of male learners. Moreover, time management scores were found to differ significantly in terms of gender, as well. In that, female participants had significantly higher time management scores. There are many studies bolstering this finding in the literature (Chyung, 2007; Perkowski, 2013; Rovai & Baker, 2005; Sullivan, 2001). A meta-analysis on the role of gender in distance learning shows that females perform better in terms of academic performance and self-efficacy in online-learning environments (Perkowski, 2013). Moreover, a recent meta-analysis on gender differences in scholastic achievement (Voyer & Voyer, 2014) reveals the female advantage to be the largest for language courses. As a probable explanation for this finding, a study by Altay and Saracaloğlu (2017) reveals that females use memory strategies and critical thinking skills in language learning more, and are more inclined to have an increase in preparedness when they learn a language. Moreover, it is highlighted that successful online learners have time management and elaboration strategies (Broadbent, 2017).

Meanwhile, it was identified that metacognitive skills, environmental structuring, help-seeking, and self-regulated online learning scale scores did not differ significantly in terms of gender. In a similar vein, relevant studies (Ogbonna et al., 2019; Yükseltürk & Bulut, 2009, 2007; Wang et al., 2013) found no gender differences in online self-regulated learning. According to Tang et al. (2021), during the covid-19 pandemic gender differences were

reduced because students were forced to learn more initiatively. Thus, it is clear that both females and males tried to self-regulate their own learning online during the pandemic period. Another study conducted during the pandemic also consolidates this finding in a sense. In that, it displayed no differences between male and female learners in competence beliefs in digital learning, showing that male and female learners had equal levels of perceived abilities in digital learning (Korlat et al., 2021).

On the other hand, a study by Liu et al. (2021) on gender differences in self-regulated online learning during the recent lockdown indicated that females performed better than males in all dimensions of learners' online self-regulated learning since the researchers think that female students pay more attention to their learning and follow their instructors. In another relevant study by Hsiao (2021) comparing online learning with face-to-face learning, it was observed that face-to-face courses are more suitable for males, whereas no significant difference between teaching methods was observed in females. Likewise, in an earlier study conducted by Bidjerano (2005), it was observed that female learners displayed a better ability to utilize self-regulated strategies, including time management skills, which supports the relevant finding of the present study in a sense.

4.2. Preferred Online Learning Modes

According to the results, 55.1% of the students preferred an asynchronous learning environment, while 44.9% of them opted for a synchronous learning environment in online education during the pandemic. Interestingly, a systematic review by Bond et al. (2021) reported that the educational technology most often employed has been synchronous collaboration tools, mapping the worldwide instructional responses to the pandemic at a higher education level, particularly video-conferencing due to a high potential of simulating face-to-face communication. However, findings show that female students preferred asynchronous activities more (63%), while male students preferred to study synchronous activities more (53%). However, it was determined that academic achievement scores did not differ significantly in terms of the online learning modes (asynchronous or synchronous) the students preferred. Moreover, it was also determined that the total and sub-dimension scores of the self-regulated online learning scale did not differ significantly according to the preferred online learning modes. A more recent meta-analysis comparing synchronous learning with asynchronous learning mode and conventional face-to-face learning (Martin et al., 2021) revealed a statistically significant small effect in favor of synchronous online learning versus asynchronous online learning for cognitive outcomes only. The researchers also found that when synchronous online learning mode made use of interactive lessons instead of only lecturing, it had a significant positive medium effect on students' affective outcomes when compared to asynchronous online learning; indicating that students might not be as engaged if a synchronous online lesson is not interactive and if an instructor chooses to lecture instead. This conclusion also applies to the finding of the present study, which showed that students mostly preferred asynchronous learning modes as the synchronous mode mostly involved instructors lecturing without learners participating via videoconferencing. In this regard, Martin et al. (2012) suggest that learners scheduling time to participate in synchronous classes prefer to have an interactive session. And to further consolidate the finding of the present study about the effect of two online learning modes of delivery, Bernard et al. (2004) found zero effects for both synchronous and asynchronous on achievement. Likewise, a study by Güneş and Alagözlü (2020) also reveals no significant difference in terms of asynchronous distance learners' academic achievement and learner

autonomy. Thus, Lou et al. (2006) conclude that the medium of instruction does not matter; it is how it is used to support instruction and facilitate learning that affects outcomes.

4.3. Role of Foreign Language Learning Attitudes

The findings showed that the majority of the students (45.6%) demonstrated a neutral attitude towards learning English. Further analyses determined that academic achievement scores differed significantly according to the attitude towards English. Accordingly, the academic achievement scores of the students with a positive attitude towards English are significantly higher than the scores of the participants whose attitudes towards English are neutral. When it comes to self-regulated learning, it was determined that metacognitive skills, environmental structuring, help-seeking sub-dimension scores and self-regulated online learning scale scores differed significantly according to the attitude towards English. Thus, the metacognitive skills, environmental structuring, help-seeking skill scores and self-regulated online learning scale scores of students with a positive attitude towards English were significantly higher than the scores of the participants whose attitudes towards English were neutral. In fact, it is discernible from the relevant literature that the attitudes towards the course taken online, towards English in particular, play a predictive and determinant role in learners' self-regulation (Altay & Saracaloğlu, 2017; Cinkara & Bagceci, 2013; Tran & Duong, 2013). However, in a study by Erarslan and Topkaya (2017), it is reported that although the students have partly positive attitudes towards online courses, this does not help students in terms of their overall success in English. These researchers attribute this result to the mode of delivery rather than the content of the course, and suggest that the students feel nervous about completing the tasks on time and they have difficulty in completing the activities and tasks within the given time due to lack of access to computer and internet connection.

5. Conclusion

The sudden change of learning modality due to the emergency conditions caused by the Covid-19 pandemic has not only blindsided educational policy-makers, higher education institutions and instructors, but it has also influenced learners, particularly by increasing their responsibilities of self-regulating their own learning during the whole process. In fact, it is obvious that self-regulated learning has been a significant driving force of the fully online education practices throughout the pandemic, thus this study has been planned to make a contribution to the relevant literature, which provides a plethora of research before the pandemic compared to the limited evidence reported during the pandemic. The study provides some crucial implications for any future lockdown due to emergency situations. In that, it was observed that the asynchronous mode of online learning was found to be preferred more than the synchronous mode. However, studying in synchronous or asynchronous online mode does not make any significant difference in terms of learner self-regulation and academic achievement; thus, it is suggested that instead of imposing students to follow a specific learning mode, it could be more efficient to provide learners with an array of learning materials supported by various learning modalities. It is discernible that in the face of an emergent situation, female learners strived more to regulate their time management skills and turned out to have higher academic achievement. Learners, in general, made use of their environmental structuring skills, implicitly meaning that they were able to adapt to either online learning mode they preferred to study. The results of the present study should be cautiously evaluated together with some limitations. The first limitation is that the study heavily relies on the students' self-reports, and does not include any in-class observations

due to the lockdown during the pandemic period. Another important limitation of the study is that it did not differentiate between the attitudes towards learning English as a language and taking an online English course, having not conducted a questionnaire for measuring attitudes towards learning English. These might have affected the results to a certain extent. Future experimental research is suggested in order to reveal more inferential information about the effects of synchronous and asynchronous instruction on learner readiness and learning outcomes in case of any future emergency teaching.

Note on Ethical Issues

The author confirms that the study does not need ethics committee approval according to the research integrity rules in their country (Date of Confirmation: 30/08/2022).

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