TECHNOLOGY-BASED SELF-REGULATED LEARNING STRATEGIES AND ENGLISH SELF-EFFICACY IN ONLINE LEARNING ENVIRONMENTS

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ABSTRACT

Technology-enhanced learning environments (TELEs) have provided language learners with various opportunities to promote their self-sufficient learning outside the classroom lately. Thus, language learners are no longer passive recipients of language; in contrast, they are autonomous learners who apply self-regulated learning strategies through the medium of technology during their English learning process, which in turn can be associated with their English self-efficacy perceptions. Therefore, the current study aimed to present an investigation into the relationship between preparatory school students' use of technology-based self-regulated English learning strategies and their perceived English self-efficacy as well as the predictability of employing the strategies on their self-efficacy beliefs. Applying a quantitative research design, the data were collected through the Technology-based Self-Regulated English Learning Strategies Questionnaire (TSRLSQ) developed by An et al. (2020) and the Questionnaire of English Self-Efficacy (QESE) developed by Wang (2004). A statistically significant positive relationship was found between students' use of technology-assisted English learning strategies and their perceived English self-efficacy beliefs. In addition, regression analysis results showed that goal setting and learner evaluation, motivational regulation, and technology-based song-movie learning strategies were strong predictors explaining the change in students' self-efficacy in four language skills.

Keywords: Self-regulated English learning, technology-based self-regulated learning, English self-efficacy.

INTRODUCTION

Learning English outside the classroom environment has turned into an obligation rather than an option because of the unexpected Corona Virus Disease (Covid-19). In order to prevent the harmful spread, many measurements have been taken in higher education. Higher education institutions have had to continue the education, including foreign language education, with distance learning (Maican & Cocorada, 2021). As a type of distance learning, online learning involves technology-based systems together with the use of ICT, which requires learners to have agency over their learning because instructors have limited control during learning process (Efriana, 2021). This unforeseeable transition from face-to-face language learning to online learning has decreased student-teacher interaction. To this end, language learners have been almost obliged to manage their learning process and be more self-regulated than usual.

Technology-enhanced learning environments (TELEs) present various opportunities to language learners to promote their learning outside the traditional borders of language classrooms with practical learning tools (An et al., 2020). Language learners are more independent and autonomous thanks to almost unlimited

access to language learning sources (Alhafidh & Marcelo, 2020). The remarkable power of TELEs to foster students' use of self-regulation strategies is impressive (Lai, 2013; Zimmerman, 2008). Students who benefit from language learning opportunities in technology-based settings are more willing to take responsibility for managing and self-regulate their language learning process (Lai, 2013). Given the enormous potential of technology-assisted learning environments, it is important to understand how learners benefit from technology to self-regulate their language learning (Lai & Gu, 2011).

There have been numerous studies on technology-use in language classrooms (Garcia et al., 2018; Lai et al., 2018; Lee et al., 2016); however, these studies primarily focused on the effectiveness of specific ICT tools or learners' decontextualized skills in using technology for language learning purposes. Self-regulated learning (SRL) strategies have attracted researchers' attention in also traditional EFL settings (Bai & Guo, 2019; Bai & Wang, 2020; Kim et al., 2015; Shi, 2018; Wang et al., 2013). Still, research specifically focusing on students' strategic self-regulated use of technology for learning English is limited (An et al., 2020, 2021; Lai & Gu, 2011; Su et al., 2018; Wang & Chen, 2020). The number of studies conducted in the Turkish EFL context to examine learners' technology-enhanced SRL strategies in learning English is also sparse. Among this sporadic selection, Bekleyen and Hayta (2015) examined students' language learning strategies through the medium of mobile phones. Similarly, Kizil and Savran (2016) focused on using ICT tools for self-regulation in learning English. Having conducted a quantitative study with 777 EFL preparatory students at a state university in Turkiye, they found out that EFL learners were willing to use ICT tools to self-regulate their language learning. As a result, they stated that explicit instruction on using ICT tools for self-regulated language learning purposes ought to be provided in classroom.

Self-regulated language learning positively affects language learning performance and achievements (Bai & Wang, 2020; Chen & Hsu, 2020; Sun & Wang, 2020; Wang et al., 2013). Moreover, using self-regulation strategies during language learning experience increases learners' English self-efficacy (Magogwe & Oliver, 2007; Saito, 2020; Yusuf, 2011; Zimmerman 2002). In Bandura's (1997) framework, self-efficacy is an individual's beliefs in their capacity to plan and carry out the actions required to accomplish specific goals. According to Bandura (1997), self-efficacious learners believe in their own capabilities. They try hard until they succeed with a high motivation level as their self-efficacy shapes the way they overcome challenges. Learners with low self-efficacy beliefs, on the other hand, do not tend to persist longer when faced with difficulties. As learners' beliefs shape their actions and experiences, self-efficacy is an important construct in language learning (Williams & Burden, 1997). Brown (2007) states that it is crucial to increase learners' self-efficacy during language learning which is a long journey with many challenges. Although studies on students' English self-efficacy have been conducted around the world (Gan, 2019; Kim et al., 2015; Wang et al., 2013) and in the Turkish EFL context among preparatory students (Hol & Guc, 2020; Ilbegi & Celikoz, 2020; Karafil & Ari, 2016; Sener & Erol, 2017), there has not been any research that examined Turkish preparatory students' English self-efficacy beliefs during Covid-19 period when they have primarily online lessons away from conventional classrooms.

Self-efficacy has a vital role in students' using self-regulation strategies during language learning (Balaman, 2021; Chung, 2015; Kim et al., 2015; Lee et al., 2021; Teng, et al., 2018; Wang & Bai, 2017; Wang et al., 2013). As a result, understanding language learners' self-efficacy beliefs and their use of self-regulated English learning strategies could contribute to language learners' achievements (Wang et al., 2013; Zimmerman, 2006). Pintrich's model, which is based on socio-cultural theory, is widely recognized as one of the most influential SRL models in the field of education (Schunk, 2005). Pintrich (2000) developed this framework by taking into account the perspectives of other theorists, including Zimmerman and Schunk's (2001) cognitive information processing approach. The model emphasizes that learners are active agents who have control over their learning activities and self-regulatory processes. Furthermore, Pintrich (2000) stresses the importance of learners' ability to adjust the relationship between personal factors and learning outcomes.

For incorporating self-regulation into English language learning, Oxford (2011) developed the Strategic Self-Regulation (S2R) Model of Language Learning. According to the S2R Model, language learning is facilitated through the interplay between strategies and metastrategies. Learners are active participants who use strategies to manage their own learning. The S2R Model categorizes strategies into three groups: cognitive, affective, and sociocultural-interactive. Cognitive strategies enable learners to manipulate and apply L2 information, while affective strategies help them stay positive and motivated. Sociocultural-interactive strategies aid

them in negotiating communication and identity. Oxford (2011) argues that learners require sub-skills of metaknowledge, namely self-awareness, planning and using sources, organizing, implementing plans, understanding how learning strategies and metastrategies function, and monitoring and evaluating, to apply the strategies and metastrategies in language learning. Oxford's (2011) S2R Model is taken as the framework of this study in an attempt to investigate language learners' self-regulation capacity and behaviors.

A number of studies in the related literature demonstrated a positive correlation between self-regulated English learning and English self-efficacy (Bai & Guo, 2018; Megogwe & Oliver, 2007; Saito, 2020; Shi, 2018; Teng & Zhang, 2020; Wong, 2005). On the other hand, the number of studies focusing on the relationship between technology-assisted self-regulated English learning strategies and English self-efficacy is limited (An et al. 2020, 2021; Lai & Gu, 2011; Su et al., 2018; Wang & Chen, 2020) What is more, these studies only investigated the correlation between the two concepts. Given the results of the related studies which showed a positive strong correlation between two concepts, there was a need to examine the predictor effect of technology-assisted self-regulated English learning strategies on English self-efficacy beliefs of students for four main skills to contribute to the existing literature.

With the breakout of the Covid-19 pandemic, online teaching and learning has replaced face-to-face education to a great extent in higher education worldwide. This situation has left the learners with a great necessity to take responsibility of their own learning, in other words, to self-regulate their learning processes (Hung, 2022). In order to adjust themselves to technology-enhanced learning environments (TELEs), students need to know how to manage their learning processes by applying technology-based learning strategies. However, students at preparatory schools are not aware of their capabilities to be autonomous in technology-using settings. They mostly rely on their instructors to guide them, motivate them, and evaluate their progress. Despite being defined as "Digital Natives" (Prensky, 2001), who are the natural users of digital technologies, they do not employ SRL strategies effectively (Alhafidh & Marcelo, 2020). In addition, classes at preparatory schools in Turkiye do not usually go beyond being only "technologized" classrooms (Shen et al., 2015). To state it clearly, students are not equipped with strategy instruction on exploiting technology to set goals, manage their language learning efforts, and self-evaluate the whole process on their own for future experiences. SRL is an essential 21st century competence (European Council, 2002) that is needed in every domain of education, including language learning, and it is "in the same line with lifelong learning" (Karatas et al., 2021, p. 57). Therefore, the problem the current study aims to solve is to demonstrate the current status of preparatory students in relation to this concept to suggest pedagogical implications on what could be brought to language classes to develop autonomous and self-efficacious students. Within this context, this study aims to investigate:

1. the average uses and types of Turkish preparatory students' technology-based self-regulated English learning strategies and their average English self-efficacy levels,
2. whether by a) gender b) high school type or c) level of English affects Turkish preparatory students' use of technology-based self-regulated English learning strategies and their English self-efficacy beliefs,
3. if there is a statistically significant relationship between preparatory students' technology-based self-regulated English strategies and their English self-efficacy beliefs in all four skills.
4. whether Turkish preparatory students' use of technology-based self-regulated English strategies predicts their English self-efficacy beliefs in all four skills.

METHOD

To be able to address the research questions, a quantitative research method was adopted in this study. 216 preparatory school students studying at a foundation university in Istanbul, Turkiye participated in this study. Purposive, convenient sampling technique, which falls under the non-probability sampling category was used for the inclusion of participants. The sampling method was purposive because the preparatory school students were chosen as they were in a hybrid educational system due to the ongoing Covid19 pandemic. The students had 24 hours of English classes every week during the module. However, all the lessons were not face-to-face. The students had 14 face-to-face lessons, and 10 online lessons which took place on Zoom. This was the reason why English preparatory students were chosen for the study as they were more likely to be exposed to technology and benefit from it more than students with full-time face-to-face classes which could give more insights related to students' experiences about using technology-based English learning

strategies while they were learning English. The sampling method was also convenient since the participants were readily available since one of the researchers was already working at the instution and had easy access to the participants. There were five modules in an academic year, each of which lasts nearly 8 weeks, and the study took place in the first semester of the academic year during the first module from mid-October to the end of November. At the beginning of the year, students took the Oxford Placement Exam, and they were placed according to their placement exam scores ranging from A1 level to B2 level. Therefore, students at all levels were competent enough to understand and complete the questionnaires given in English.

Table 1. Demographic characteristics of the participants

	Groups	N	%
Gender	Female	118	54.6
	Male	98	45.4
	Total	216	100.0
Level of English	A2	183	84.7
	B1	29	13.4
	B2	4	1.9
	Total	216	100.0
Type of High School	Private High School	97	44.9
	State High School	119	55.1
	Total	216	100.0

Instruments

Two self-report questionnaires, namely, the Technology-based Self-Regulated English Learning Strategies Questionnaire (TSRLSQ) developed by An et al. (2020) and the Questionnaire of English Self-Efficacy (QESE) developed by Wang (2004) were used in the study. The scales were administered via an online Google form. Within the online form, items about participants' demographic characteristics (gender, age, level of English) were also included to the introduction part.

The TSRLSQ has 26 items consisting of five subdomains, namely motivational regulation strategies (9 items, α= .81), goal setting and learner evaluation (5 items, α= .78), social strategies (4 items, α= .66), technology-based English song and movie learning (5 items, α= .76) and technology-based vocabulary learning (3 items, α= .63). The Cronbach's alpha reliability coefficient for the whole scale was 0.89, which confirmed the solidity of the questionnaire's reliability. In the questionnaire, there were Likert type answers ranging from 1 (not at all true of me) to 7 (very true of me) points. Skewness and kurtosis coefficients are between + 1.5 and - 1.5 for all the subscales, so the distribution can be accepted as normal (Tabachnick et al., 2011).

For QESE, the reliability and validity of were reported to be high (Wang et al., 2013). It had an internal consistency of. 96, test-retest reliability of .82, concurrent validity of .55, and predictive validity of .41. The scale is comprised of four areas to be measured: self-efficacy for listening (8 items, α= .9), self-efficacy for reading (8 items, α= .89), self-efficacy for speaking (8 items, α= .89) and self-efficacy for writing (8 items, α= .87). In total, there are 32 items in the questionnaire graded on a seven-point scale ranging from 1 (I am totally unable to do this) to 7 (I am able to do this well). Each item requires students to assess their abilities to perform certain tasks in English in all four skills, and the overall reliability of the scale for the current study was .97. Descriptive statistics for the total scale and the subscales showed that skewness and kurtosis values are between -1.5 to +1.5. Therefore, the data was normally distributed and parametric tests were applied.

Data Collection and Analysis

In order to collect the quantitative data, the questionnaires were prepared on Google Forms. Then, an online link (https://forms.gle/ExXg1LrVmXtYribG8) and a QR code for the questionnaire (Figure 1) were created so that it would be distributed to the participants easily. Upon creating the link and QR code for the questionnaire, the researchers asked for help from the colleagues to share the link and the QR code with the students in their

classes. The participants were informed about the aim of the study. They were ensured that the participation was on a voluntary basis upon taking their informed consents. They were also told that their responses to the questionnaire and their personal information would be kept confidential. Data collection lasted for approximately five weeks.

For the analysis of the descriptive data of the scales, percentage and frequency analyses were used, which included the minimum and maximum values, mean, standard deviation, skewness and kurtosis values of the sample population. With regard to the analysis of the role of gender and high school type on the use of technology-based self-regulated English learning strategies and English self-efficacy beliefs, Independent Samples T-test were conducted. However, Kruskal Wallis H test was conducted to explore whether level of English had an effect on students' use of technology-based self-regulated English learning strategies and their English self-efficacy beliefs because there were less than 30 students in B1 and B2 levels which required the conduct of a non-parametric test.

Figure 1. QR Code for the Questionnaire

In order to investigate the relationship between students' technology-based self-regulated English learning strategies and their English self-efficacy beliefs, Pearson's Product-Moment Correlation was conducted. As the normality assumptions of both scales are met (see above) and as a linear relationship was observed in the scatterplots, correlation and regression analyses were run. Previous studies (e.g. Bai & Guo, 2018; Saito, 2020; Shi, 2018; Teng & Zhang, 2020) already found both variables to be related to each other, thus in order to find out if technology-based self-regulated English learning strategy use predicted preparatory students' English self-efficacy beliefs, Multiple Linear Regression Analysis tests were applied. Based upon the studies which investigated the predictor effects of technology-based self-regulated English strategies on self-efficacy perceptions, TBSRLSQ was set as the predictor variable within the current model. In line with this, it was hypothesized that technology-based self- regulated English learning strategies scores would predict the listening, reading, speaking, writing and overall self-efficacy levels of the participants. While constructing the regression model, the 'Stepwise' method was preferred. As a result of the analysis, a single model was obtained.

FINDINGS

To start with the descriptive statistics, the results show that students' technology-based self-regulated English learning strategy use was medium, and the technology- based vocabulary learning was the most frequently used strategy by the participants.

Table 2. Means and Standard Deviation Scores for TSRLSQ and QESE Scales

Scales	Min	Max	$\bar{x}$	SD
Motivational Regulation Strategies	1.44	7.00	5.00	1.00
Goal Setting and Learner Evaluation	1.00	7.00	4.26	1.36
Social Strategies	1.50	7.00	4.56	1.18
Technology-based English Song- Movie Learning	1.00	4.20	3.19	.75
Technology- based Vocabulary Learning	1.67	7.00	5.32	1.26
TSRLSQ	1.92	6.46	4.48	.83
Listening	2.25	7.00	4.81	1.20
Reading	1.63	7.00	4.76	1.17
Speaking	1.63	7.00	4.99	1.13
Writing	1.75	7.00	4.76	1.14
QESE	2.03	7.00	4.83	1.09

Guo and Wei (2019) stated that for a 7-point Likert scale, a mean score in the range of 4.9–7.0 is regarded as high level, 3.5–4.89 medium level, and 1.0–3.4 low level. Hence, with regard to English self-efficacy scores, it was found that students' overall English self-efficacy is at a medium level, and students reported to be the most self-efficacious in speaking skill, followed by listening, reading and writing skills.

Table 3. Independent Samples t-Test Results for Comparison of the TSRLSQ and QESE Scales by Gender

Scales	Groups	$\bar{x}$	Sd	t	p	Groups	$\bar{x}$	Sd	T	p
Motivational Regulation Strategies	Female	45.81	8.35	1.498	.135	Private High School	46.19	8.72	1.797	.074
	Male	43.96	9.75			State High School	43.97	9.21		
Goal Setting and Learner Evaluation	Female	21.94	6.79	.806	.214	Private High School	22.61	6.60	2.621	.009**
	Male	20.49	6.77			State High School	20.20	6.80		
Social Strategies	Female	18.64	4.71	1.362	.175	Private High School	18.77	5.06	1.509	.133
	Male	17.76	4.75			State High School	17.80	4.43		
Technology-based English Song- Movie Learning	Female	28.64	5.24	2.289	.023**	Private High School	28.06	5.39	.486	.628
	Male	26.91	5.89			State High School	27.69	5.79		
Technology-based Vocabulary Learning	Female	16.50	3.46	2.342	.020**	Private High School	16.26	3.26	1.080	.281
	Male	15.31	4.03			State High School	15.71	4.13		
TSRLSQ- Total	Female	119.38	20.56	2.246	.026**	Private High School	120.08	21.57	2.284	.023*
	Male	112.82	22.34			State High School	113.40	21.22		
Listening	Female	39.70	9.71	2.033	043*	Private High School	39.63	9.89	1.563	.119
	Male	37.05	9.34			State High School	37.58	9.33		
Reading	Female	39.16	9.38	1.821	.070	Private School	38.91	8.97	1.131	.259
	Male	36.85	9.20			State High School	37.46	9.64		
Speaking	Female	40.52	9.25	1.081	.281	Private High School	40.79	8.88	1.298	.196
	Male	39.18	8.74			State High School	39.19	9.13		
Writing	Female	38.95	9.22	1.608	.109	Private High School	38.45	8.66	.594	.553
	Male	36.96	8.85			State High School	37.71	9.44		
QESE-Total Score	Female	158.33	35.50	1.750	.082	Private High School	157.78	33.74	1.226	.222
	Male	150.04	33.62			State High School	151.95	35.62		

Pairwise comparison test results showed that female participants had higher TSRLSQ total scores, Technology-based English Song- Movie Learning and Technology-based Vocabulary Learning scores than male participants. As for the findings from the QESE scale, pairwise comparison tests depicted those female participants had significantly higher listening self-efficacy scores than male participants. Regarding the effect of high school type, it was found that participants who graduated from a private high school had higher TSRLSQ total scores, and goal setting and learner evaluation scores than students who graduated from public high schools.

Table 4. Kruskal Wallis H Test Results for Comparison of The Questionnaire of Technology-based Self-regulated English learning Strategies Scores by Level of English

Scales	Groups	Mean Rank	H	df	p	Difference
Motivational Regulation Strategies	Step-2 (A2)(1)	103.25	8.845	2	.012*	2>1
	Step-3 (B1)(2)	135.10				
	Step-4 (B2)(3)	155.75				
Goal Setting and Learner Evaluation	Step-2 (A2)(1)	103.67	7.403		.025*	ND
	Step-3 (B1)(2)	133.31				
	Step-4 (B2)(3)	149.50				
Social Strategies	Step-2 (A2)(1)	103.95	6.399		.041*	2>1
	Step-3 (B1)(2)	134.40				
	Step-4 (B2)(3)	128.75				
Technology-based English Song- Movie Learning	Step-2 (A2)(1)	103.00	9.431		.009**	2>1
	Step-3 (B1)(2)	140.36				
	Step-4 (B2)(3)	129.13				
Technology-based Vocabulary Learning	Step-2 (A2)(1)	105.66	4.680		.096	-
	Step-3 (B1)(2)	130.21				
	Step-4 (B2)(3)	81.25				
TSRLSQ-Total	Step-2 (A2)(1)	103.01	9.258		.010*	2>1
	Step-3 (B1)(2)	139.24				
	Step-4 (B2)(3)	136.88				
Listening	A2(1)	99.79	23.537		.000**	2>1
	B1(2)	154.91				
	B2(3)	170.63				
Reading	A2(1)	100.83	19.177		.000**	2>1
	B1(2)	146.81				3>1
	B2(3)	181.75				
Speaking	A2(1)	102.01	15.206		.000**	2>1
	B1(2)	138.43				3>1
	B2(3)	188.50				
Writing	A2(1)	103.00	10.117		.006**	2>1
	B1(2)	135.36				
	B2(3)	165.50				
QESE-Total Score	A2(1)	100.94	18.723		.000**	2>1
	B1(2)	146.05				3>1
	B2(3)	182.25				

*Note. *<0.05; **<0.01; NA2= 183, NB1=29, NB2= 4*

Pairwise comparison test results showed that TSRLSQ-Total scores, Motivational Regulation Strategies, Social Strategies and Technology-based English Song- Movie Learning subscale scores of the participants at B1 level were higher than the participants at A2 level. On the other hand, no statistically significant difference was found among Technology-based Vocabulary Learning subscale scores according to level of English (p>.05). As for the self-efficacy, listening and writing self-efficacy scores of the participants at the B1 level were higher than the participants at the A2 level. Also, reading and speaking self-efficacy scores and QESE-Total scores of the participants at the B1 and B2 levels were higher than the participants at the A2 level.

The Relationship between Technology-based Self-regulated English Learning Strategies and English Self-efficacy

Statistically significant positive relationships were found among and across all the scales of two questionnaires (see Table 5). More specifically, all subgroups under the TSRLSQ questionnaire moderately correlated with the overall English self-efficacy of students except for technology-based vocabulary learning strategies. Interestingly, among five groups of technology-based SRL strategies, technology-based vocabulary learning was the least correlated with overall English self-efficacy, although they were reported to be used the most frequently by the students.

Table 5. The Pearson Correlation Analysis between Students' Technology-Based Self-Regulated English Learning Strategies and their English Self-Efficacy

Scales	1	2	3	4	5	6	7	8	9	10
MRS	1									
GSLE	.636**	1								
SS	.547**	526**	1							
TBESML	.499**	.465**	.467**	1						
TBVL	.320**	.265**	.404**	.449**	1					
TSRLSQ Total Score	.851**	.790**	.755**	.615**	.655**	1				
Listening	.530**	.586**	.460**	.581**	.266**	600**	1			
Reading	.584**	.627**	.497**	.597**	.332**	.667**	.895**	1		
Speaking	.460**	.433**	.487**	.561**	.284**	.535**	.809**	.810**	1	
Writing	.506**	.526**	.451**	.573**	.295**	.580**	.793**	.878**	.871**	1
QESE*	.555**	.580**	.504**	.616**	.313**	.635**	.933**	.955**	.927**	.942**

Note. *<.05; **<.01 MRS: Motivational Regulation Strategies, GSLE: Goal Setting and Learner Evaluation, SS: Social Strategies, TBESML: Technology-based. English Song- Movie Learning, TBVL: Technology-based Vocabulary Learning

Table 6. Regression Analyses for Predicting QESE Subscales by TSRLSQ Scores

Dependent Variable	Independent Variable	B	Standard Error B	Beta	t	p
	Constant	4.715	2.807		1.680	.094
Listening	GSLE	.466	.093	.330	4.992	.000**
	TBESML	.613	.101	.357	6.073	.000**
	MRS	.151	.072	.142	2.106	.036**
R= .690 R2= .476 df: 3/212 F: 64,237 p=.000						
	Constant	3.148	2.577		1.222	.223
Reading	GSLE	.474	.086	.345	5.525	.000**
	TBESML	.567	.093	.340	6.119	.000**
	MRS	.202	.066	.196	3.069	.002**
R= .730 R2= .533 df: 3/212 F: 80.705 p=.000						
	Constant	8.312	2.834		2.933	.004
Speaking	TBESML	.615	.103	.382	5.952	.000**
	SS	.438	.126	.230	3.461	.001**
	MRS	.144	.068	.144	2.132	.034**
R= .626 R2= .392 df: 3/212 F: 45.614 p=.000						

	Constant	6.696	2.772		2.415	.017
Writing	TBESML	.612	.100	.377	6.142	.000**
	GSLE	.332	.092	.249	3.601	.000**
	MRS	.161	.071	.160	2.268	.024**
R= .654 R2= .428 df: 3/212 F: 52.851 p=.000						
	Constant	24.510	9.874		2.482	.014
QESE- Total Score	TBESML	2.460	.355	.396	6.932	.000**
	GSLE	1.449	.328	.283	4.411	.000**
	MRS	.683	.253	.177	2.703	.007**
R= .654 R2= .428 df: 3/212 F: 72.377 p=.000						

Note. GSLE: Goal Setting and Learner Evaluation; TBESML: Technology-based English Song- Movie Learning, MRS: Motivational Regulation Strategies

When the results are evaluated, goal setting and learner evaluation, technology-based English song- movie learning and motivational regulation strategies subscale scores were found as predictors of the QESE listening, reading and writing subscales (see Table 6). However, for speaking and writing subscales of the QESE, social strategies instead of goal setting and learner evaluation acted as the predictor.

DISCUSSIONS AND CONCLUSION

Considering the TSRLSQ and QESE levels of the students, the results showed that students had a medium-level use of strategies and medium-level English self-efficacy beliefs. The mean scores for subscales of TSRLSQ demonstrated that students used lexical applications, online dictionaries, and vocabulary applications to learn English vocabulary the most frequently. This finding aligns with An et al.'s (2021) study in which students preferred technology-based vocabulary learning strategies more than others. It was also found that the students did not use technology-assisted social strategies at a high level. This finding is congruent with related previous research findings, which either reported social strategies to be the least frequently used among others (An et al., 2020, 2021; Bekleyen & Hayta, 2015) or to be seldom preferred (Lai & Gu, 2011; Wang & Chen, 2020). One possible explanation might be related to students' low proficiency levels as %84,7 of the them were A2 level learners. Hence, they may not feel confident enough to use technology to create interactions with native speakers. This lack of confidence may also cause them to seek help face-to-face and in their L1 rather than through technology.

Regarding the perceived English self-efficacy levels, the results indicated that students did not consider themselves highly self-efficacious in English. This result is in accordance with studies that investigated preparatory students' English self-efficacy levels at universities in Turkiye (e.g. Hol & Guc, 2020; Ilbegi & Celikoz, 2020; Karanfil & Ari, 2016; Sener & Erol, 2017) all showing that preparatory students had moderate levels of English self-efficacy. One possible reason why students had medium-level overall English self-efficacy in the current study might be the lack of vicarious experiences, one of the primary sources of creating self-efficacy (Bandura, 1997). Due to the Covid-19 pandemic, students do not have full-time face-to-face lessons. They do not have the opportunity of working in groups in class; therefore, they usually study individually. They may feel isolated, which could decrease their self-belief in what they can do. In terms of the specific skills areas, students' writing self-efficacy level was found to be the lowest among all skills confirming prior research findings (Ilbegi & Celikoz, 2020; Karafil & Ari, 2016). Considering that Turkish preparatory students do not usually practice academic English writing before they enter university, this finding could be explained by the lack of mastery experiences which is one of the main sources of self-efficacy.

Another aim of the study was to reveal the effects of demographic variables (i.e. gender, high school type, and level of English) on the TSRLSQ and QESE levels of the students. In general, females were found to be more self-regulated in using English learning strategies assisted by technology. Similarly, Kizil and Savran (2016) showed that female students tend to have greater use of ICT for self-regulated English learning than males. Furthermore, the quantitative study of Schwam et al. (2021) revealed that females had higher uses of online SRL strategies than males. In a similar vein, female students' listening self-efficacy was significantly higher than male students. Likewise, Bozkurt and Eksioglu (2018) also found a statistical difference between genders regarding listening skills in favour of females. Besides, females' use of technology- based song-movie and vocabulary-learning strategies was significantly higher than males. Since they use more technology-based self-regulated strategies in general, this might help them adopt some strategies specifically targeting listening skill, which in turn increased their self-efficacy perceptions.

In relation to the effect of level, the findings showed that B1 level students used technology-based SRL strategies more than students at A2 level, implying that the higher the level of English is, the more technology-based SRL English strategies students use. This finding is in line with the study conducted by Nikoopour and Khoshroudi (2021) in Iranian context, which demonstrated that language proficiency level affects EFL learners' self-regulation. Similarly, in terms of the effect of level of English on self-efficacy perceptions it was observed that the higher the students' levels are, the more efficacious they feel in English. This finding lends credence to Ilbegi and Celikoz (2020) who observed that B2 level students had higher self-efficacy perceptions than B1 level students, and B1 level students, in turn, reported firmer self-efficacy beliefs than A2 level students.

As an answer to the third research question, a statistically significant positive relationship between students' use of technology-assisted English learning strategies and their perceived English self-efficacy beliefs was detected. This result depicts that the more learning strategies students employ, the more self-efficacious they feel. Likewise, students with high self-efficacy levels tend to use effective learning strategies more than students who feel less self-efficacious (Schunk, 1994). This result is in line with the results of previous studies that presented a positive correlation between the two concepts, showing that self-efficacy beliefs help students become more motivated to use language learning strategies (Lee et al., 2021; Shi, 2018). The finding is also in line with studies that demonstrated a significant positive relationship between technology-based English SRL strategies and English self-efficacy (An et al., 2021; Chung, 2015; Su et al., 2018). One intriguing result of this part was the weak correlation between the overall English self-efficacy of students and technology-based vocabulary learning strategies. Despite the high frequency of use reported by the students, it did not seem to increase the self-efficacy perceptions of learners. This finding lends support to An et al. (2020), who showed a weak correlation between technology-based vocabulary learning strategies and the self-efficacy perceptions of the participants. Likewise, An et al. (2021) found that although students used technology-based vocabulary learning strategies the most, it did not positively influence students' English self–efficacy and their learning outcomes. The reason behind this finding might be that preparatory students employ technology-enhanced strategies primarily for their immediate needs in terms of vocabulary learning, such as looking up a new word's meaning in L1when they need. Therefore, as An et al. (2020, p. 12) states, students have "a surface vocabulary learning strategy" which may lack long-term benefits to increase their English self-efficacy.

Apart from examining the relationship between technology-based SRL English learning strategies and students' English self-efficacy beliefs, the current study also explored whether employing these strategies predicts students' self-efficacy beliefs. Regression analysis results showed that goal setting and learner evaluation, motivational regulation, and technology-based song-movie learning strategies were strong variables in explaining the change in students' overall English self-efficacy. This finding that the use of strategies on goal setting and learning evaluation was a strong predictor of English self-efficacy supports Su et al.'s (2018) study, where goal setting had a strong effect on participants' self-efficacy in an online self-regulated English learning environment. It was also found in the current study that if students use more technology-assisted strategies to regulate their motivation levels, they can increase their self-efficacy in all four skills. This finding lends strong support to the belief that motivational regulation is a prominent

aspect of self-regulated learning (Teng & Zhang, 2018). Technology-based song-movie learning strategies were the strongest predictor of self-efficacy in overall English, writing, and speaking self-efficacy. In addition, using self-regulated social strategies was a predictor of only speaking self-efficacy. This might be explained with the positive influence of applying social strategies on speaking English. Abbasi et al. (2021) also found that online social strategy instruction had a meaningful effect on improving students' speaking ability. Similarly, Muin and Aswati (2019) reported that using socio-affective strategies can improve students' self-confidence in speaking English.

Pedagogical Implications

Based on the finding that employing technology-based SRL English strategies influences students' English self-efficacy positively, incorporating these strategies in the classroom setting can help students develop higher self-efficacy in English. Self-regulated learning is teachable (Boekaerts, 1997); therefore, EFL instructors can create inspiring learning environments to stimulate the use of technology-based SRL English strategies where students are taught these strategies explicitly. Furthermore, it was found out that use of technology-assisted English learning strategies and perceived English self-efficacy beliefs are related to each other. Hence, enhancing students' English self-efficacy beliefs can help them become more self-regulated in language learning. Preparatory school directors should consider redesigning how online lessons are delivered. Rather than focusing on individual performances, more collaborative projects can be integrated into lessons where students can increase their self-efficacy by observing others' use of technology to self-regulate their English learning. Thirdly, building upon the predictory effects of goal setting and learner evaluation, motivational regulation, and technology-based song-movie learning strategies on self-efficacy beliefs, creating learning environments/activities that increase learner motivation and self-directed learning can be suggested. Overall, it is important for currently working EFL teachers to be aware of technology- based SRL English strategies themselves and have the knowledge and skills of how to stimulate their use. In order to address this need, professional teacher training programs can be designed to provide teachers specifically with the knowledge of using technology-based strategies to self-regulate English learning. When EFL instructors experiment with technology-enhanced SRL, this can impact their pedagogy of strategy instruction.

Limitations and Future Research Directions

When interpreting the outcomes of this research, it is important to keep in mind that there are certain restrictions in this study that need to be addressed in future research. To begin with, the study included only 216 preparatory students from one foundation university in Turkiye, and the distribution of participants was not equal across all levels. While there were 183 participants from the A2 level, the number was 29 for B1 level. Expanding the sample size by equal sampling from each proficiency level and conducting research in different settings, such as state universities, would increase the applicability of the findings. Hence, future studies can be applied to a broader sample size representative enough for each proficiency level which would enhance the validity of the findings for getting more insight into the dynamic relationship between technology-based SRL and English self-efficacy perceptions. Furthermore, the data was collected using self-reported surveys, which are prone to bias. Therefore, to reduce the drawbacks of self-reported data, it is necessary to obtain qualitative data to support the statistical findings presented in this study. Lastly, a longitudinal study focusing on the students' development of technology-based SRL English strategies can be conducted and a training model can be presented as a product to train students how to apply these strategies.

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