sciendo

Acta Educationis Generalis
Volume 13, 2023, Issue 1

DOI: 10.2478/atd-2023-0006

Online Self-Regulated Learning and Cognitive Flexibility through the Eyes of English-Major Students

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Received: April 8, 2021; received in revised form: June 2, 2021;
accepted: June 3, 2021

Abstract:

Introduction: Assuming responsibility of learning and showing flexibility in case of changes and problems in learning could make this process more conscious and fruitful. This is significant, particularly at a time when traditional universities are increasingly moving into online education. To address the gaps in previous self-regulated learning and cognitive flexibility research, the current study examined the students' perceived online self-regulated learning and cognitive flexibility, and looked into the probable relationship between them.

Methods: The present study used mixed-research design. The data were gathered from 115 English-major students both quantitatively and qualitatively. The quantitative data were collected through two different scales as Online Self-regulated Learning Questionnaire (OSLQ) and the Cognitive Flexibility Scale. Two open-ended questions probing into both online self-regulation and coping skills of the students constituted the qualitative data.

Results: The results revealed that online self-regulated learning and cognitive flexibility correlated positively although the relationship was found to be quite slight, and the students had online self-regulated learning and cognitive flexibility at relatively high level. Students also provided examples of online self-regulated learning strategies they used, and they presented probable solutions to their problems they experienced in improving their level of English.

Discussion: Online self-regulated learning and cognitive flexibility, which were positively correlated, are likely to feed the language learning and improving processes since both variables could enable students to take decisions multi-dimensionally, without confining them to only one type of study skill. Higher level of cognitive flexibility which is associated with adapting to new situations and problem solving could help students to better manage their online learning. However, it should be noted that both self-regulation and flexibility require time and effort, and they are not products, but processes, in the journey of learning; therefore, they could be achieved through raising awareness, providing

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opportunities for students to self-direct their own learning and to cope with their problems, and undoubtedly instructors' role-modelling. Higher self-regulation and cognitive flexibility could turn students into autonomous and lifelong learners.
Limitations: The study was conducted among undergraduate students in Turkish context. The participants were English majoring students. It could also be carried out among non-English major students because self-regulation and coping skills should be supported in every department at tertiary level. The number of participants could be increased, and students in different departments or in different years of education could be compared. Different variables such as age, gender and language proficiency levels could be included into the study to measure the influences of various elements.
Conclusions: Transition into online education at tertiary level brings both advantages and disadvantages; hence, it becomes a must to promote positive aspects and to minimize negative sides. Since online education necessitates more learner autonomy, students should be trained on how to use self-regulatory strategies in language learning. Likewise, such a change in learning setting could require students to be more cognitively flexible to be able to cope with probable difficulties and to expand their thinking skills. Thus, cognitive flexibility should be instilled into the curriculum. The last but not the least, the importance of taking responsibility of learning and seeking for alternatives in the face of problems should be reminded frequently. The study aimed to provide insights and implications for all stakeholders to consider self-regulation and cognitive flexibility in designing online courses.

Key words: online self-regulated learning, cognitive flexibility, English-major students.

Introduction

As a lifetime act, learning presents itself in various forms in different settings, and each form adds a variety of dimensions to the learning process, which in turn renders learning more sophisticated. One of these forms is undoubtedly self-regulated learning. Self-regulation, rather than being a mental ability or academic performance skill, constitutes a self-directive process through which academic skills are shaped by the learners' mental abilities, and the component skills include goal setting, adopting strategies, monitoring performance, restructuring physical and social context, managing time, self-evaluating, attributing causation to results and adapting future methods (Zimmerman, 2002), and self-regulated learning occurs from the students' self-generated actions that show a systematic orientation towards the fulfilment of their goals (Schunk, 1989). In other words, self-regulation constitutes the students' control over their cognition, behaviour, emotion and motivation through the use of personal strategies to attain their pre-set goals (Panadero & Alonso-Tapia, 2014).

Therefore, self-regulated learning embodies cognitive, metacognitive, behavioural, motivational and affective sides of learning, and it includes a number of variables such as self-efficacy and volition (Panadero, 2017). Considering all these aspects, it can be said that self-regulated learning is associated with social cognitive theory of Albert Bandura (1997), and this theory gives importance to the self-system that allows individuals to exercise control over their opinions, emotions and actions (Schunk & Pajares, 2010). Bandura (1991) suggests that basic self-regulative mechanisms are activated through self-monitoring, self-judgement and affective self-reaction. In addition, reciprocal determinism, which is a central notion in this theory, highlights the continual interplay between personal factors and environmental factors (Little, 2018). Accordingly, based on the social cognitive theory, self-regulated learning could be attained in various ways such as self-monitoring, goal-setting, feedback, self-reward, self-instruction and social support (Laranjo, 2016). Apparently, self-systems and environment both take a role in self-regulated learning.

Studies on self-regulated learning has focused of knowledge, motivation and volition in relation to various academic subjects, tasks and learning environments, and accordingly, a number of schematic models of self-regulated learning have been put forth, including relationships among task environments and learners' behavioural, cognitive, metacognitive and affective strategies (Martin, 2004). One of these models is Zimmerman's (1989) social cognitive view of academic self-regulated learning, and this model proposes three self-regulatory processes as self-observation, self-judgement and self-reaction, and focuses on triadic influences of person, behaviour and environment. Zimmerman's Cyclical Phases Model, which is another model put forward by Zimmerman (2000), presents itself in three phases as forethought, performance or volitional control and self-reflection. Forethought phase includes task analysis, goal-setting, planning and motivation while in performance phase students actually execute the task while self-observing their progress, and finally self-reflection phase paves the way for students' assessing their own performance and making attributions about success and failure (Panadero, 2017). Sarı and Akınoğlu (2009) provide sub-categories for each phase; to illustrate, task-analysis and self-motivation for forethought phase, self-control and self-observation for performance phase, self-judgement and self-reaction for self-reflection phase are presented as possible processes. Another model inspired by the same background, that is social cognitive theory, is the one proposed by Pintrich. Puustinen and Pulkkinen (2010) found the models by Zimmerman and Pintrich resembled most, considering the four criteria as background theories, definitions of self-regulated learning, components included in the models and empirical work, and theoretical background constituted a significant distinctive feature in this identification. According to Pintrich (2000), self-regulated

learning is an active, constructive process and learners are not the passive recipients of information in this process because they set goals for their own learning and then endeavour to have a control over their cognition, motivation and behaviour influenced by the contextual factors in the environment; therefore, these self-regulatory acts can take the role of a mediator between the learner and the environment. Based on Pintrich model (2000), self-regulated learning appears to be composed of four phases: 1) Forethought, planning and activation; 2) Monitoring; 3) Control; and 4) Reaction and reflection, in addition, each phase embodies different areas for regulation: 1) cognition, 2) motivation/affect, 3) behaviour and 4) context. These four phases represent a general sequence although they are not linearly or hierarchically arranged, and they can show simultaneous and dynamic occurrence (Torrano Montalvo & González Torres, 2004). Accordingly, given the assumptions of Pintrich model, self-regulated learners go beyond the passive consumption of information, they can track and influence their own learning behaviours, then they can evaluate sufficiency of their learning, and they can mediate external and personal factors to boost their achievement (Ozan, Gundogdu, Bay, & Celkan, 2012). The extent to which students are able to demonstrate such self-regulatory behaviours considerably promotes their learning outcomes (Beishuizen & Steffesn, 2011). Different studies identified a positive effect of self-regulation on academic performance, as well. (Agustiani, Cahyad, & Musa, 2016; Kitsantas, Winsler, & Huie, 2008; Nota, Soresi, & Zimmerman, 2004; Schunk & Zimmerman, 1998; Young, 2005). In addition to higher academic achievement, self-regulated learners are likely to have higher self-satisfaction, awareness and control on their actions (Peng, 2012), and they are able to construct sound attributions for poor performance (Lapan, Kardash, & Turner, 2002). The critical role of such self-regulatory behaviours in success presents itself not only in traditional but also online learning settings. Self-regulation is more needed in online learning environments where students are required to be autonomous learners (Artino & Stephens, 2009; Barnard, Lan, To, Paton, & Lai, 2009; Dabbagh & Kitsantas, 2004). Removal of traditional classrooms, and thus, lack of direct instructor interaction in e-learning settings requires students to use their personal skills to control and manage their own learning (Sharma, Dick, Chin, & Land, 2007).

Despite the steady increase in undergraduate student enrolment in online courses, online learning is undoubtedly not free of challenges (Wandler & Imbriale, 2017), and dropout rates could be higher in online learning settings than traditional classrooms (Levy, 2007). Student factors, course factors and environmental factors could influence students' decision to dropout (Lee & Choi, 2011). Hence, cognitive flexibility which refers to humans' ability to show flexible adaptation to the changing environments (Cools, 2015; Önen & Koçak, 2015) could be a contributing factor to increase persistence in online learning.

Awareness of different alternatives in any given context, willingness to adapt to the situations and self-efficacy in being flexible constitute the basic components of cognitive flexibility (Martin & Rubin, 1995). Therefore, cognitive flexibility relates to utilizing knowledge selectively to adaptively fulfil the requirements of understanding and decision-making within a particular context (Spiro, Feltovich, Coulson, & Anderson, 1988). Martin and Anderson (1998) state that one component of the cognitive flexibility is willingness to adapt to the situation; thus, cognitively flexible individuals are more likely to accept possible behavioural changes depending on the social factors in order to meet the contextual needs. Higher education institutions in different countries including Turkey have faced a sudden transition to distance education due to Covid-19 Pandemic, and this abrupt transition has posed students a new learning context to which they need to show adaptation. Distance learning could be challenging and demanding itself on both students and instructors (Rurato, 2011), which might require adoption of cognitive flexibility to cope with the different requirements than traditional classrooms. Cognitive flexibility enables individuals to find adaptable solutions to the changing demands (Ionescu, 2012), and they become eager to handle unfamiliar situations and try new ways of communication (Demirtaş, 2020). In addition, some students are more likely to be willing to cope with the problems faced in learning process whereas some incline to show avoidance (Akbaba, 2006), which, according to Bertiz and Karoğlu (2020) could be related to different cognitive flexibility levels of the students. Considering the cognitive flexibility as a fundamental dimension of problem solving and coping skills (Altunkol, 2011), it could have a dramatic role in adapting to the emergent transition into the online learning due to the Covid-19 Pandemic. Accordingly, Chokri (2012) suggests the adoption of cognitive flexibility in the design of e-learning process to solve the students' probable problems. Furthermore, cognitive flexibility requires flexible learning environments (Bertiz & Karoğlu, 2020), and given the flexible nature of distance education (Odabaş, 2003; Ali, Joyes, & Ellison, 2013), these learning settings could be appropriate platforms to promote cognitive flexibility.

Self-regulation in online learning setting and cognitive flexibility levels of the undergraduate students were the main components of the present study. As a conceptual framework, this study used Zimmerman's (1998) model of self-regulated learning through conceptualization of six constructs to gauge online self-regulated learning. Therefore, six constructs which included environment structuring, goal setting, time management, help seeking, task strategies and self-evaluation (Lan, Bremer, Stevens, & Mullen, 2004) constituted the focus of the study within the scope of online self-regulated learning. As for the coping skills and flexibility, the study was grounded on the Cognitive Flexibility Theory. Covid-19 Pandemic has led to emergency distance education in Turkey, and

within the framework of this e-learning setting, the study aimed at addressing the following questions with a view to making a contribution to the relevant literature:

1. What are the online self-regulated learning tendencies of English-major students?
2. What are the cognitive flexibility levels of English-major students?
3. How do English-major students cope with the difficulties in improving their level of English?
4. Is there a statistically significant relationship between online self-regulated learning and cognitive flexibility?

1 Methodology

1.1 Research design and participants

This descriptive study used mixed research design. It bore both quantitative and qualitative features. A state university in Turkey constituted the context of the present study. 115 undergraduate students enrolled in Translation and Interpreting Department participated in the study. Purposive sampling method was utilized in identification phase of the groups to be included in the study. Since the objective of the study was to measure online self-regulation and cognitive flexibility in EFL setting, only the students majoring in an English language department were selected. Although they were in different grades at university ranging from prep class to the 4th year, the study did not take the probable differences among the groups.

1.2 Data collection instruments

Three different data collection instruments were administrated to the participants. Both quantitative and qualitative tools were used in the study to ensure triangulation and to gather data from different perspectives. A Turkish version of Online Self-regulated Learning Questionnaire (OSLQ) developed by Lan, Bremer, Stevens and Mullen (2004) was given to the students. The questionnaire was adapted into Turkish by Kilis and Yıldırım (2018), with Cronbach Alpha coefficient as 0.95. Given the context-specific nature of self-regulated learning and the differences in online and traditional learning, an instrument that is valid in traditional learning environment could be invalid in online setting (Barnard et al., 2009). Therefore, the questionnaire used in this study especially focused on self-regulation in online learning environment. It consisted of 24 items with a 5-point Likert response format with a 5-point Likert-type response format having values ranging from strongly agree (5) to strongly disagree (1). Higher average scores indicated better self-regulation by students. Another quantitative tool was Cognitive Flexibility Scale (Martin & Rubin,

1995) to determine the cognitive flexibility levels of the students. However, the participants were administrated the Turkish version of the scale adapted by Altunkol (2011) with Cronbach Alpha coefficient as 0.81. This Likert type scale involved six points ranging from strongly agree (6) to strongly disagree (1). The scale was composed of 12 items, and the scores were calculated by averaging the individual item scores. That is, the lowest score of the scale was 12 whereas the highest one was 72; therefore, higher scores indicated high level of cognitive flexibility while lower ones referred to low level of cognitive flexibility. In addition, the students were asked two open-ended questions to gain further insight into their tendencies for online self-regulation and coping skill within the frame of cognitive flexibility. The first open-ended question focused on whether the students could manage their own learning in online classes. The second-question dwelled upon the students' probable problems in improving their English and their probable solutions. The questions were: 1) Can you manage your own learning in online classes? Can you give an example? (goal-setting, strategy-identification, self-motivation, self-observation and making effort, and self-evaluation); 2) What kind of problems do you experience in improving your English as required by your department? How do you cope with these problems? The word "improve" instead of "learn" was intentionally chosen for the second question since they were English-major students. Both questions aimed at reflecting students' own perceptions concerning the issue.

1.3 Data analysis

Both the Online Self-Regulated Learning Questionnaire (OSLQ) and the Cognitive Flexibility Scale were analysed quantitatively using Statistical Packages for Social Sciences (SPSS 21.0 version for Windows). The data were presented descriptively. Students' levels of online self-regulated learning and cognitive flexibility were presented with their percentages and frequencies. Then, the relationship between online self-regulated learning and cognitive flexibility was detected using correlation analysis. To support the related data, the open-ended questions were analysed qualitatively. The qualitative data were subjected to content analysis, and codes and themes were identified for online self-regulation and coping skill. Directed content analysis, which starts with a theory or relevant research findings as guidance for initial codes (Hseieh & Shannon, 2005) was applied for the first question relating to online self-regulation. Directed content analysis was conducted in four steps as in Barak, Hussein-Farraj and Dori (2016). First, students' responses were gathered, read and re-read, organizing them in two lists. Second, the things students did to manage their online learning were divided into short segments. Third, based on the Online Self-regulated Learning Questionnaire (OSLQ), each segment was categorized under the sub-scales of the QSLQ. Finally, responses were coded,

assigned with nominal numbers and frequencies were calculated. The second question on cognitive flexibility was analysed through conventional content analysis. All the responses to the each open-ended question were put into analysis without limiting the number of the participants. That is, answers of 115 participants were analysed qualitatively, as well.

2 Findings

Quantitative and qualitative findings of the data were presented respectively in different sections.

2.1 Findings of the Online Self-Regulated Learning Questionnaire

Online Self-regulated Learning Questionnaire was composed of 6 subscales as Environment structuring (ES), Goal setting (GS), Task strategies (TS), Time management (TM), Help seeking (HS) and Self-evaluation (SE).

Table 1

Online Self-Regulated Learning Questionnaire (OSLQ) (Barnard et al., 2008, as cited in Handoko, 2017)

Subscale	*Definition*
Goal setting (5 items)	The statements that indicate student-initiated efforts of setting educational goals or sub-goals and planning for sequencing, timing, and completing of activities related to those goals, e.g., *"I set standards for my assignments in online courses."*
Environment structuring (4 items)	The statements that indicate student-initiated efforts to select or arrange the physical setting to make learning easier, e.g., *"I choose the location where I study to avoid too much distraction."*
Task strategies (4 items)	The statements that indicate student-initiated efforts of using various learning strategies to achieve the learning goals, e.g., *"I try to take more thorough notes for my online courses because notes are even more important for learning online than in a regular classroom."*
Time management (3 items)	The statements that indicate student-initiated efforts to schedule, plan, and manage study time to achieve the learning goals, e.g., *"I allocate extra studying time for my online courses because I know it is time-demanding."*
Help seeking (4 items)	The statements that indicate student-initiated efforts to solicit help from classmates or instructors, e.g., *"I find someone who is knowledgeable in course content so that I can consult with him or her when I need help."*
Self-evaluation (4 items)	The statements that indicate student-initiated evaluations of the quality or progress of their work, e.g., *"I summarize my learning in online courses to examine my understanding of what I have learned."*

While all the items were analysed statistically, Table 2 below shows the means scores and standard deviations of each subscale.

Table 2

Mean scores of subscales

Sub-Scales	$\bar{x}$	*Sd*
Goal Setting (1-5 items)	18.0	3.75
Environment Structuring (6-9 items)	15.6	3.09
Task Strategies (10-13 items)	13.7	2.73
Time Management (14-16 items)	13.1	3.41
Help Seeking (17-20 items)	11.8	3.24
Self-Evaluation (21-24 items)	9.6	2.83

Goal-setting was found to have the highest mean score while self-evaluation appeared to have the least mean score among all the subscales. Goal setting was followed by environment structuring with 15.6 mean score while task strategies and time management had quite similar scores. Given the total score obtained from the scale, which was 82.1, students seemed to have high tendency to online self-regulated learning. In addition to the average scores of each subscale, Table 3 below showed the scores related to the each item in QSLQ.

Table 3

Mean scores of the items in QSLQ

ITEMS	*Min.*	*Max.*	$\bar{x}$	*Sd*
SLQ7 (ES)	1	5	3.99	1.004
SLQ8 (ES)	1	5	3.95	.935
SLQ6 (ES)	1	5	3.89	.971
SLQ9 (ES)	1	5	3.81	1.016
SLQ18 (HS)	1	5	3.77	1.079
SLQ1 (GS)	1	5	3.69	.862
SLQ2 (GS)	1	5	3.66	1.050
SLQ3 (GS)	1	5	3.61	.980
SLQ17 (HS)	1	5	3.60	1.033
SLQ4 (GS)	1	5	3.60	.972
SLQ21 (SE)	1	5	3.57	1.060
SLQ5 (GS)	1	5	3.50	1.209
SLQ16 (TM)	1	5	3.45	1.164
SLQ20 (HS)	1	5	3.43	1.117
SLQ14 (TM)	1	5	3.41	1.146
SLQ22 (SE)	1	5	3.37	1.047
SLQ10 (TS)	1	5	3.33	1.197

SLQ24 (SE)	1	5	3.20	1.186
SLQ13 (TS)	1	5	3.13	1.096
SLQ23 (SE)	1	5	3.03	1.224
SLQ19 (HS)	1	5	2.95	1.107
SLQ12 (TS)	1	5	2.81	1.075
SLQ15 (TM)	1	5	2.79	1.158
SLQ11 (TS)	1	5	2.59	1.050

Considering the findings of the QSLQ, roughly 70% of the students were seen to set standards for their assignments in online courses. More than half of the students (58.2%) were found to set short-term (daily or weekly) as well as long-term (monthly or for the semester) goals. Likewise, slightly more than 60% of them thought that they did not compromise the quality of their work because of its being online.

When it comes to environment structuring, nearly 80% of the students were found to avoid too much distraction and prefer a comfortable place to study. Similarly, more than half of the students (75.7%) seemed to know where they could study most efficiently for online courses.

As to the task strategies, more than half of the students tried to take notes for online courses since they thought notes as more important for online courses than regular classes. However, less than one third of the students (31.3%) had a tendency to prepare questions before joining in the chat room or discussions. Working extra problems in addition to assigned ones in online courses seemed to interest only less than half of the students (42.6%).

In terms of time management, more than half of the students claimed to allocate extra time for online courses (55.7%) and distribute their studying time evenly across days (59.2%) as in setting short term goals. However, scheduling the same time everyday or every week to study for online courses was not found to have a high frequency with only mean score of 2.79.

Within the frame of help seeking, students seemed to have higher frequencies in finding someone who was knowledgeable in course content to consult (61.8%), share their problems with classmates to find solutions (70.4%) and get help from the instructor through e-mail (52.2%). Nevertheless, meeting the friends face-to-face was found to have the lowest mean score in this subscale.

To perform self-evaluation, great majority of the students (62.6%) also claimed to summarize their learning in online courses to check their own understanding and half of the students to ask themselves a lot of questions while studying for an online course. Communicating with classmates to evaluate their own learning was preferred by only less than half of the students.

2.2 Findings of the Cognitive Flexibility Scale

The Cognitive Flexibility Scale consisted of 12 items. Although the scale was thought to have three subscales as awareness, willingness and self-efficacy, the present study conducted analyses as a whole without separating the subscales as in other studies (Altunkol, 2011; Demirtaş, 2020; Kuyumcu & Kirazcı, 2020). The percentages of the students' responses were presented in Table 4 below.

Table 4

Percentages of the students' responses in CFS

	CFQ1	CFQ2	CFQ3	CFQ4	CFQ5	CFQ6	CFQ7	CFQ8	CFQ9	CFQ10	CFQ11	CFQ12
Strongly disagree	.9	1.7	10.4	2.6	.9	0.0	0.0	1.7	2.6	.9	0.0	1.7
Disagree	2.6	7.8	10.4	7.8	9.6	5.2	1.7	2.6	9.6	7.0	2.6	12.2
Slightly disagree	2.6	25.2	33.0	38.3	17.4	2.6	2.6	3.5	1.7	20.9	.9	1.7
Slightly agree	35.7	12.2	10.4	39.1	13.0	22.6	15.7	28.7	36.5	13.0	13.0	23.5
Agree	40.9	33.9	21.7	12.2	40.9	44.3	48.7	39.1	34.8	35.7	46.1	35.7
Strongly agree	17.4	19.1	13.9	2.6	18.3	25.2	31.3	24.3	14.8	22.6	37.4	25.2

Students' responses revealed that more than 80% of the students believed they could communicate an idea in different ways and they could have possible choices and options when deciding how to behave in any situation. Great majority of the students stated that their behaviour was the result of their conscious decisions. When it comes to coping with their problems, majority of the students claimed to be willing to work at creative solutions to problems (70%) and to consider alternatives for handling a problem (84%). More than half of the students did not seem to avoid new and unusual situations, as well. However, in case of seemingly unsolvable problems, only about 40% of them slightly agreed with finding workable solutions. Likewise, more students (nearly 60%) claimed to have difficulty in using their knowledge in real life situations. Among all the items, the seventh one (In any given situation, I am able to act appropriately) had the highest mean score while the third item (I feel like I never get to make decisions) had the lowest mean score as shown in the following figure:

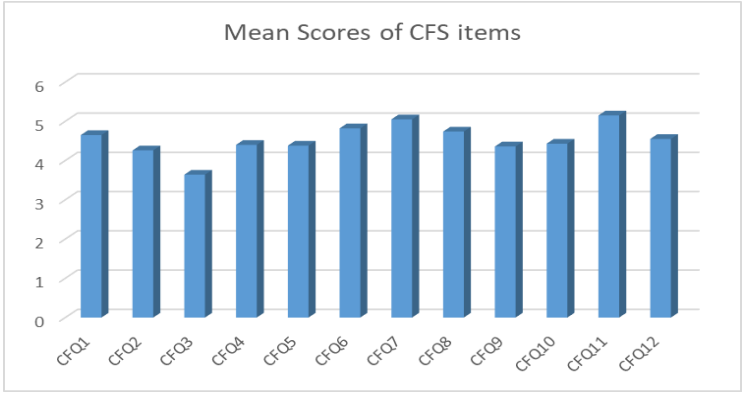

Figure 1. Mean scores of cognitive flexibility scale items.

Considering the mean scores of the items ranging from 3.64 to 5.05, students could be viewed to have seemingly high level of cognitive flexibility, which was also supported by the total score they got from the scale (54.4).
Analyses of both Online Self-regulated Learning Questionnaire and Cognitive Flexibility Scale revealed that the students showed relatively high tendencies to have self-regulated learning in online courses and cognitive flexibility. Nonetheless, high correlation was not found between these variables.

Table 5

Correlation between online self-regulated learning and cognitive flexibility

Variables	*N*	*r*	*p*
Online self-regulated learning	115	.176	.061
Cognitive flexibility			

Although there was a positive relationship between online self-regulated learning and cognitive flexibility, the correlation was found to be quite low, and the relationship was not found to be statistically significant.

2.3 Findings of the qualitative data

The qualitative data were obtained through two open-ended questions, and they were related to their online self-regulated learning and coping skills within the frame of cognitive flexibility respectively. Responses of the all participants were analysed qualitatively for each question. Only 15 responses for each question were not included in the analyses since those participants gave no or irrelevant answers. The findings of the first question were shown in the following table.

Table 6

Students' perceived online self-regulated learning

Can you manage your own learning in online classes?			
YES (71)		*NO (36)*	
Goal Setting	*f*	Goal Setting	*f*
making short or long term plans	8	no goal or strategy setting	1
		inability to realize the goals	1
Environment Structuring		Self-Motivation	
avoiding the distractors	1	lack of motivation	10
getting prepared as if in classroom	1	exam anxiety	2
Task Strategies		Nature of Online Learning	
note taking	13	decrease in concentration	4
studying before class	6	decrease in self-regulation	3
studying extra resources after class	5	difficulty in adaptation	3
making effort	5	difficulty in understanding	2
re-watching the records	5	lots of distractors	1
making revision	4		
listening to the teacher attentively	1		
searching for solutions to the	1		
problems	1		
searching for ways to learn easily	1		
self-questioning			
Time Management		Help Seeking	
attending classes regularly	10	inability to study without instructor	1
submitting the assignments	6		
regularly	2		
studying regularly			
Help Seeking		Other	
following the teacher's feedback	2	technical problems	1
consulting the teacher	1	no time for this	1
		no need for self-regulation	1
		inflexible assignments	1
Self-Evaluation			
self-evaluation before and after	3		
class	1		
needs analysis			
Self-Motivation			
self-motivation	8		
watching the records	2		
love of studying	2		
love of the department	1		
benefit from the content of the	1		
course	1		
anxiety for future	1		

future goals	1
learning with fun	1
self-talk	

The first open-ended question focused on the students' perceived online self-regulated learning skills. Most of the students were found to think that they could manage their own learning in virtual classes. When asked to give examples for the things they did for self-regulation, they appeared to make daily, weekly or monthly plans. Although avoiding distractors and getting prepared physically as if they were in classroom were cited once, the students did not provide different examples for environment structuring. When it comes to task strategies, note-taking (f=13) had the highest frequency, and it was followed by studying before class (f=6) and studying extra resources after class (f=5). Some students posed making effort (f=5) as a general task strategy. Additionally, watching the records of the class (f=5) since the classes were online and making revision (f=4) were given as examples for their perceived self-regulatory leaning skills. Students also seemed to manage their time in online setting through attending classes regularly (f=10), submitting assignments regularly (f=6) and studying regularly (f=2). In terms of help seeking, they were found to prefer their instructors (f=3). Apart from all these, some students noted that they performed self-evaluation before/ after classes (f=3) and needs analysis (f=1). In addition to the six categories structured according to the OSLQ, one more category emerged out of qualitative analyses as self-motivation. Within this category, the mostly cited example belonged to the students' motivating themselves (f=8). They also voiced watching the records again (f=2), love for studying (f=2), future (f=2) and self-talk (f=1) as sources of their motivation. In contrast, lack of motivation (f=10) was mostly cited reason by the students who stated they could not manage their own learning in online setting. They did not also appear to be pleased with the nature of online learning since, for them, it decreased concentration (f=4) and self-regulation (f=3), it caused difficulty in adaptation (f=3) and comprehension (f=2). Lack of goal setting, dependence on instructor and technical problems were also the examples for the absence of self-regulation in online learning.

The second open-ended question dwelled upon coping skills, as an aspect of cognitive flexibility. Table 6 below firstly presented the problems experienced while improving their English.

Table 7

Problems the students experience while improving their English

Themes	*Codes*	*f*
Linguistic	Speaking	31
	Vocabulary	12
	Listening	8
	Grammar	6
	Writing	3
	Pronunciation	2
Translational	Finding correct equivalence	3
	Terminology	2
	Cultural differences	2
	Lack of culture knowledge	1
	Translating long sentences	1
	Translating different text types	1
	Speed in interpreting	1
	Lack of practice in interpreting	1
	Searching in translation field	1
Instructional	Online classes	4
	Too much assignment	2
	Lack of instructors in specific courses	1
	Lack of contact with a supervisor	1
	Too much grammar	1
Personal	Lack of self-confidence	8
	Lack of retention	3
	Anxiety	1
	Laziness	1
	Difficulty in learning	1
	Lack of time	1
	Recession in times of not studying	1
Other	Lack of computer	2
	Technical problems	2
	Difficulty in finding appropriate sources	1

As a result of qualitative analyses, five categories emerged regarding the students' problems in improving their English, a requirement of their major. Speaking (f=31), especially lack of practice in speaking was the mostly cited problem among the students. It was followed by vocabulary (f=12), listening (f=8), grammar (f=6), writing (f=3) and pronunciation (f=2). Translational

problems included equivalence (f=3), culture (f=3), terminology (f=2) and interpreting (f=2). Long sentences and different text types were also viewed as problems. Within the frame of instruction, online classes (f=4) were considered to be problems themselves. Abundance of assignments (f=2) were also difficulties on their path to improve their English. Additionally, lack of self-confidence (f=8) and lack of retention (f=2) were the problems attributed to the self. Lack of required technical tools in general (f=4) were counted as problems, as well. However, students also listed their probable solutions to the problems as shown in Table 8 below.

Table 8

Coping Skills for the Problems in Improving English

Themes	*Codes*	*f*
Study skills	More practice in translation/interpreting	6
	Searching	6
	Making more practice in listening	5
	Making more practice in writing (keeping diary/writing story)	1
	Making revision	1
	Improving speaking through	
	Making more practice in speaking	6
	Making practice with foreigners	5
	Making sentence in mind before speaking	1
	Improving vocabulary through	
	Studying vocabulary	5
	Reading different types of texts	2
	Making my own sentence	1
	Making up stories/associations	1
	Benefitting from context	1
	Watching videos on different fields	1
	Using song and serials	1
Materials	Using extra resources	8
	Making practice with audiovisual materials	7
	Looking up in dictionary	4
	Using Google translate to self-check	1
Personal tendencies	Consulting others	6
	Self-talk to calm down	2
	Making plan	1
	Taking a break	1
	Detecting and studying the problematic points	1

The most frequently cited solution was found to be more practice in different skills such as translation, listening, speaking and writing. More specifically, the students highlighted ways of improving speaking skill and vocabulary. Making

search (f=6) was another frequent citation as a coping skills. Furthermore, use of extra sources (f=8), audiovisual materials (f=7), dictionary (f=4) and machine translation (f=1) were listed as material-related solutions. As in self-regulated learning strategies, consulting others (f=6), self-talk (f=2) and making plan (f=1) were among their probable coping skills for the problems in improving their English.

3 Discussion

Given that Covid-19 Pandemic caused higher education institutions in Turkey to transform into emergency remote learning, online classes require more self-regulation, and cognitive flexibility concerns the adaptation to changing situations and coping skills, the present study aimed to reveal a probable relationship between online self-regulated learning and cognitive flexibility in Turkish context. The participants were comprised of English-major students, and the data were gathered both quantitatively and qualitatively.

Students with high cognitive flexibility can employ self-regulation (Denis & Vander Wal, 2009). The present study found a positive relationship between online self-regulated learning and cognitive flexibility; however, the correlation between them was quite low and it was not statistically significant. In another study by Malkoç and Sünbül (2020), cognitive flexibility correlated positively with self-efficacy, as well.

The students were found to have online self-regulated learning at relatively high level. They had the highest score in terms of goal-setting. Both quantitative and qualitative findings indicated that students made short or long term plans to manage their learning in online setting. Goal setting could ensure greater achievement (Moeller, Theiler, & Wo, 2012), enhance self-efficacy and motivation (Mikami, 2020; Munoz & Jojoa, 2014) in addition to increased attentiveness, awareness, language learner autonomy and self-regulation (Miller, 2018). Making plans was also among the students' coping skills for the problems experienced while improving English.

Despite various advantages, online learning embodies different drawbacks, one of which is undoubtedly the possible distractors in the environment. According to Cigognini, Paoletti, Fattorini and Boscarol (2015), it is a must for distant learner to resist to both external (phone calls, noise…) and internal (own thoughts, mind wandering…) distractions. The students in the present study preferred avoiding the distractors and pretending to attend classes as if they were in traditional classroom.

Both quantitative and qualitative findings showed that students benefitted from note-taking as a self-regulated learning strategy. In another study conducted in Web-based setting by Kauffman (2004), note-taking, as a cognitive component, was found to have the strongest influence on information-gathering and

achievement. Studying before class and studying on extra sources after class were found to be other self-regulation indicators. Likewise, making revision constituted both online self-regulated learning strategy and coping skill that students consulted. This way, students could both monitor their progress and detect any probable difficulties they might encounter. Reviewing of one's own learning and revising the approach could be an indicator of self-monitoring and personal commitment to performance (Paris & Paris, 2001). Watching class records again, which is an advantageous aspect of online learning, presented itself as another task strategy. Especially, when video recordings are used as a complementary instrument, they could constitute a valuable supplementary for students (Williams, Birch, & Hancock, 2011). However, as Islam, Kim and Kwon assert (2020), lack of clear deadlines to watch video lectures could end in accumulation of workload, which could be hard to handle before exams. Even watching records may require effective time management.

Although online learners are not restricted to manage their own schedules (Araka, Maina, Gitonga, & Oboko, 2020), the students appeared to manage their time through allocating extra time for online classes and distributing time evenly for each class. Additionally, regular attendance and regular submission of the assignments were identified to be their time management strategies. Loyalty to deadlines and regular work could apparently hint at the students' sense of self-regulation. As Hodge noted (2005), most of the time students will need to depend on their personal abilities to manage their own learning and direct their assignments and deadlines to be successful in distance education.

As for help seeking, students had tendency to consult someone who was knowledgeable in course content, friends and instructors. This could enhance their sense of collaboration, as well. Students with higher self-regulation in online learning seem to have a better perception of online communication and collaboration (Barnard, Paton, & Lan, 2008). Instructor's feedback was also found to be important among the students. Apart from interaction with others, students also performed self-evaluation as another online self-regulated learning strategy. Summarizing, self-questioning and needs analysis allowed them to evaluate themselves. As a matter of fact, self-evaluation occurs at each self-regulated learning phase with different patterns (Yan, 2020), and guiding the learning process, it makes students more self-regulated (Kırmızı, 2015).

Qualitative analyses revealed another strategy as self-motivation. Students tried to motivate themselves to manage their online learning. In addition to intrinsic motivation such as love of studying and love for department, students' extrinsic motivation such as future goals shaped their self-motivation process. As Bandura (1988) put forth, the capability for self-motivation and purposive action is cognitively based, and perceived future events are turned into current motivators and regulators of action. Motivation enables persistence, sustainability and

effort. Actually, motivation as a pre-requisite of student engagement (Saeed & Zyngier, 2012) occupies a significant place in all modes of learning. However, with the recent need to move into online learning due to Covid-19 Pandemic, it has become even more challenging to keep students engaged (Schmidt, 2020). Therefore, students should try different ways to boost their motivation without depending on an instructor to increase their willingness to learn. Those claimed not to self-regulate their online learning complained about lack of self-motivation.

As to the cognitive flexibility, students were found to have relatively high level of flexibility, as well. They believed they were able to communicate an idea in different ways. They seemed to have possible choices and options in their decision-making process, which meant they do not confine themselves to one-sided solutions and they are open to alternatives. They also based their behaviour on their conscious decisions, which also implied autonomy and self-regulation. They were also found to benefit from alternatives in coping with their problems. However, use of knowledge in real life situations was identified to be difficult for the students. In fact, students described as high cognitive flexibility are able to integrate their own experiences and training to use appropriately in a relevant situation (Algharaibeh, 2020).

When it comes to problems experienced in improving English, skills especially speaking and vocabulary were found to have the highest citations respectively. Since they were translation and interpreting department students, they found it difficult to choose appropriate equivalence, cope with terminology and culture-related problems. Similarly, the study conducted among English-major students by Soualmia (2010) found out that the students had difficulty in translating terminology, and another study by Badawi (2008) investigated English-major students' ability to translate the culture-bound items and revealed that most of the students were unable to translate the items. Additionally, lack of self-confidence and lack of retention presented themselves as self-related problems. However, for some students, online learning itself constituted an obstacle against improving English. Likewise, those who failed to self-regulate their learning stated that online classes led to concentration, adaptation and comprehension problems. As a context-specific construct, self-regulatory processes in online education could be different from those in traditional classroom settings (Barnard, Lan, To, Paton, & Lai, 2009), and online learning exposes students to many a complex demand such as need to be self-direct and regulate their own learning (Bol & Garner, 2011); therefore, online learning setting could be more challenging for some students.

Given that cognitive flexibility enables individuals to produce multiple solutions to difficult situations (Denis & Vander Wal, 2010) the present study showed that students posed different, alternative solutions to their problems. Practice in

different skills such as translation, speaking, listening and writing was their most frequently cited solution. They seemed to believe the critical role of practice in learning and improving a language. They also favoured benefitting from audiovisual materials, which was an expected result considering the digitalized world. Likewise, the study done by Kausar (2013) showed that students having problems in learning English at tertiary level found it difficult to learn the language without audiovisual aids. Use of extra sources was a parallel finding with their online-self regulated learning and cognitive flexibility. Since cognitively flexible students are expected to solve the problems more constructively and persistently (Esen-Aygun, 2018) all these efforts to find solutions to their language improving difficulties could also imply students' tendency to benefit from cognitive flexibility.

All in all, online self-regulated learning and cognitive flexibility, which were positively correlated, are likely to feed the language learning and improving processes since both variables could enable students to take decisions multi-dimensionally, without confining them to only one type of study skill. Higher level of cognitive flexibility which is associated with adapting to new situations and problem solving could help students to better manage their online learning. However, it should be noted that both self-regulation and flexibility require time and effort, and they are not products, but processes, in the journey of learning; therefore, they could be achieved through raising awareness, providing opportunities for students to self-direct their own learning and to cope with their problems, and undoubtedly instructors' role-modelling. Higher self-regulation and cognitive flexibility could turn students into autonomous and lifelong learners.

Conclusion

The study was conducted among undergraduate students in Turkish context. The participants were English majoring students. It could also be carried out among non-English major students because self-regulation and coping skills should be supported in every department at tertiary level. The number of participants could be increased, and students in different departments or in different years of education could be compared. Different variables such as age, gender and language proficiency levels could be included into the study to measure the influences of various elements.

Transition into online education at tertiary level brings both advantages and disadvantages; hence, it becomes a must to promote positive aspects and to minimize negative sides. Though some universities had used distant education as an additional method prior to Covid-19 Pandemic, most of them were not ready for a full online experience; hence, optimization of online learning process is essential to maintain proper education (Coman, Țîru, Meseșan-Schmitz, Stanciu,

& Bularca, 2020). Since online education necessitates more learner autonomy, students should be trained on how to use self-regulatory strategies in language learning. Likewise, such a change in learning setting could require students to be more cognitively flexible to be able to cope with probable difficulties and to expand their thinking skills. Technology-based education setting centred on Cognitive Flexibility Theory could promote students' higher order thinking skills (Tavoulari, Paraskeva, & Choustoulakis, 2011). Thus, cognitive flexibility should be instilled into the curriculum. The last but not the least, the importance of taking responsibility of learning and seeking for alternatives in the face of problems should be reminded frequently.

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