Students' Self-Directed Online Learning Skills in Distance Higher Education: Students' Voice and Faculty Members' Supports

Fatih Demir, Assist. Prof. Dr., Bayburt University, fatihdemir1@gmail.com
0000-0002-2013-4626

Elif İlhan, Assist. Prof. Dr., Ankara Hacı Bayram Veli University, elif.ilhan00@hbv.edu.tr
0000-0002-8536-1571

Abstract

This study aims to examine self-directed online learning skills of undergraduate students and the ways of support provided by the faculty members. In this mixed-method study, the participants consisted of 399 undergraduate students studying at a state university in Turkey during the 2019-2020 academic-year spring semester, identified using convenient sampling and 12 faculty members, determined by maximum variation sampling method. Data collection tools included Self-Directed Online Learning Questionnaire and a semi-structured interview form. Independent Sample T-test from parametric tests, One-Way Analysis of Variance for multiple comparisons and LSD test were performed for the quantitative data analysis. In addition, the qualitative data were analyzed via content analysis. Some of the findings show the students have the highest mean score at time management dimension and the lowest one at help-seeking dimension. Female students have higher scores in general, metacognitive skills, persistence, and environmental structuring dimensions. The sophomore students have significantly higher scores than the senior students in terms of metacognitive skills dimension. Besides, the faculty members support the students to get the self-directed online learning skills, especially metacognitive skills and help seeking. However, their supports are limited to some kind of encouragement at time management, environmental structuring and persistence dimensions. The results show the necessity to support students to have self-directed online learning skills and assist faculty members in developing their students skills.

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INTRODUCTION

Higher education plays a vital role in developing knowledge, skills, attitudes and values that enable people to contribute to all humanity in the face of an increasingly complex, unstable and ambiguous world and in an age characterized by technological developments and recently a worldwide pandemic namely Covid-19. As in all over the world, in Turkey, all higher education institutions immediately started nation-wide distance education without any proper educational planning process. It is disappointing that there are still some problems related to distance education although more than one year has passed after the March, 2020 called as the emergency remote teaching and learning period (Hodges, Moore, Lockee, Trust, & Bond, 2020). Besides some infrastructural problems to be solved at national or institutional levels, there are ones related to the faculty members and the students needed to be examined closely and solved out immediately by the faculty members themselves at course/programme level. One of these problems is associated with students' self-directed learning skills, which is regarded as one of the utmost necessary thing for students to get active, responsible and engaged in their own learning process.

Self-directed learning, called as an amorphous term that lacked precise definition (Jarvis, 1990), an overarching concept (Van Wyk, 2017), has been described in a several ways as a goal of education, a learning aim, a learning skill, a skill to be mastered—all part of a learning process, a learning method, a process, self-planning of work, and the knowledge to understand what, when, and how presumably to learn, a purposive mental process, autonomous learning process, personal characteristic (Alharbi, 2018; Bhat, Rajashekar & Kamath, 2007; Song & Hill, 2007; Van Wyk, 2017; Van Der Walt, 2019). In that study, SDL is accepted as a purposive mental process, where the learners take responsibility for their own learning (Brookfield, 2009), usually accompanied and supported by behavioral activities involved in identification and searching for information (Bhat, Rajashekar & Kamath, 2007).

Self-directed learners have a heightened ability to adapt to changing social and contextual conditions (Jossberger, Brand, Gruwel, Boshuizen, & Van de Wiel, 2010; Morris, 2019), feel more empowered to take action when oppressed (Bagnall & Hodge, 2018). In addition, they are active and constructive in learning process (Ozen & Evin Gencel, 2016), and more likely to reach self-actualization (Arnold, 2017). Therefore, students need to improve their self-directed skills for not only academic success but also social and future professional development. As adults, they are better equipped to learn new skills (Barnes, 2016), remain employed (Morrison & Premkumar, 2014), nurture their own long-term career success (Seibert, Kraimer, and Crant, 2001), and support the personality traits/skills such as goal-setting, information-processing, executive, cognitive processing, and decision-making (Long, 2005).

Self-directed learning (SDL) gives learners the freedom and autonomy to choose what, why, how, and where of their learning (Francis, 2017). Those freedom and autonomy are among the most needed things to be successful in distance education because in distance education process, students are expected to take their own learning responsibility (Dembo & Eaton, 2000; Holec, 1981; Vanijdee, 2003; White, 2003) and they play an important role in attaining successful learning (Morris, 2019; Shaikh, 2013). In this process, learners consciously accept the responsibility for making decisions about goals and effort, and hence become their own learning change agents (Long, 2005). Learners' knowledge, attitude, and skill create their positive behaviors to succeed in distance education (Guglielmino & Guglielmino, 2013). If the learners are ready for distance education, the learning process will be an efficient and effective approach (Guglielmino & Guglielmino, 2013).

On the other hand, many kinds of research revealed that traditional learning experiences do not prepare students for the high degree of self-directed learning and control required in especially distance courses (Brooks, Nolan & Gallagher, 2001; Hartley & Bendixen, 2001). Due to the immediate transition to distance learning process where student choice, agency, and responsibility have greater importance, faculty members play greater roles to support their students' SDL skills as in formal

classroom settings where teachers play an important role helping learners develop and apply those skills (Lunyk-Child et al., 2001). They must be able to facilitate and scaffold the learning process in addition to teaching content (Morris, 2019). Previous studies have shown that self-directed learning readiness or the ability to manage self-learning is more significant (Guglielmino & Guglielmino, 2013; Morris, 2019; Shaikh, 2013).

The self-directed learning concept arose in the 1980s as a research problem and, for decades, it has continued to be important for researchers and teachers (Zimmerman & Schunk, 2011). Nowadays life-long learning is increasingly significance and informal learning environments requiring self-direction skills increase (Beishuizen & Steffens, 2011), research in the area of self-directed learning is vast. The related literature includes general models (Caffarella, 1988; Candy, 1991; Garrison, 1997; Song & Hill, 2007), motivational elements, perceptions, and readiness to learn (Ayyildiz & Tarhan, 2015; Lee, Tsai, Chai, & Koh, 2014; Mello, 2016), undergraduate students' levels of self-directed skills (Askın Tekkol & Demirel, 2018; Slater, Cusick, & Louie, 2017) especially teacher candidates' (Gömleksiz & Demiralp, 2012; Kiliç & Sökmen, 2012), predictors of self-directed learning skills (Uysal & Gundogdu, 2019) and how to support them in that process (Çelik, 2012; Sağırlı vd., 2010; Şahin, 2010). Although the increasing emphasis on self-directed learning has continued to mature with attention shifting to the distance education context (Garrison, 2003; Moore & Kearsley, 2012; Song & Hill, 2007) and the number of research about the undergraduate students' self-directed learning skills in the distance learning processes (Bullock, 2013; Hursen, 2016) has increased, there is little to no research to how to support them in distance learning processes. Furthermore, an individual with a high level of readiness for self-direction in one context does not necessarily have the same readiness in a new and unfamiliar context (Fisher, King, & Tague, 2001), which makes it important to investigate students' self-directed skills in distance learning and different contexts like faculty, college or even country. A study that examines the students' level of self-directed skills and the level of support provided by the faculty members is necessary to provide further insight into how to support students' SDL in higher education context. The level of support provided by the faculty members is also an important issue at distance higher education like face-to-face one. Because faculty members need to create learning environments that favor independent and self-directed learning, in which students have opportunities to seek challenges, to reflect on their progress, and to take responsibility and pride in their accomplishments (Paris & Paris, 2001). It does not matter distance or face-to-face learning environment, faculty members need to apply appropriate methods that can improve academic self-direction but also present teaching models that promote SDL (Cazan, 2013; Núñez et al., 2011).

This study aims to investigate the undergraduate students' level of self-directed online learning skills and the ways of support provided by the faculty members. The following research questions guided the study:

1. What levels of the undergraduate students have self-directed online learning skills and are there any differences among those levels based on their gender, departments, and grade levels?

2. How do the faculty members support students' self-directed online learning skills in distance education?

METHOD

RESEARCH DESIGN

Mixed methods explanatory sequential design was conducted in this study. In explanatory sequential design, the researcher first collects quantitative data and then qualitative data, so the design is to begin with an objective quantitative study and to describe the results obtained at this stage in qualitative studies (Creswell, 2017). In that study, the quantitative data was firstly analyzed. Then,

the qualitative data were collected and analyzed. Finally, quantitative and qualitative data were interrogated (Creswell, 2017).

SAMPLE

FOR THE QUANTITATIVE PART OF THE STUDY

Generally, the universe in quantitative studies is an abstract concept that is easy to define but difficult to reach. On the other hand, the term "restricted universe (study group of the research)" which consists of the accessible and concrete samples (Buyukozturk et al., 2012; Karasar, 2014) is preferred widely. From the restricted universe (a state university in Turkey), the sample consisted of the 399 undergraduate students who attended different departments of education faculty, selected through a simple random sampling method.

Table 1. *Demographic Information and Distribution of Students*

Gender	f	%
Male	105	26,44
Female	294	74,05
Grade	*f*	*%*
First	39	9,82
Second	163	41,05
Third	120	31,02
Fourth	77	19,39
Departments	*f*	*%*
Guidance & P. Counseling	132	33,24
Primary School	23	5,79
Turkish Language	49	12,34
Social Sciences	76	19,14
Math	47	11,83
English Language	31	7,80
Pre-school	41	10,32
Total	*399*	*100,0*

Given in Table 1, of the participants, there were more females (74.05%) than males (26.44%) involved in this study. Regarding school grade classification, 9.82% were freshmen, 41.05 % were sophomores, 31.02 % were juniors and 19.39% were seniors. About departments, 33,24% were guidance & psychological counseling , 5,79 % were primary school, 12,34% were Turkish language, 19,14 % were social sciences, 11,83% were math, 7.8 % were English language, and 10.32 % were pre-school teaching departments of the educational faculty. Those surveyed, all of them had been taking more than eight online courses previously while the research was being conducted.

FOR THE QUALITATIVE PART OF THE STUDY

The study group for the qualitative part of the study included twelve faculty members from the same faculty as the students studied determined by the maximum variation sampling method. Four female and eight male faculty members have PhD in different departments of educational faculty. Their professional experience year ranges from four years to twelve years. They all were responsible for at least one online course for the included departments. Three of them had coursed for all departments because they were responsible for common courses of the educational faculty, namely foreign language, introduction to education, and teaching methods/principles.

DATA COLLECTION TOOLS AND PROCESS

The quantitative data in the study were collected via the "Self-Directed Online Learning Questionnaire (SOLQ)" developed by Jansen, Leeuwen, Janssen, Kester, and Kalz (2016). The SOLQ was adapted into Turkish and proven as valid and reliable by Yavuzalp and Özdemir (2020). The scale

involves five dimensions, namely metacognitive, help-seeking, time management, persistence and environmental structuring and has 36 items. The scale is in the form of a seven-point Likert scale ranging from one (Strongly Disagree) to seven (Strongly Agree). Exploratory and confirmatory data analysis were applied for the adaptation of the scale into Turkish. Exploratory factor analysis resulted in five factors. The factor loadings was corresponded between .393 and .906, the total eigenvalue of the scale was 22.34 and the total variance explained by the sample was 62.06%. Cronbach's alpha values were ranging between .70 and .95 for each dimension of the scale.

In that study, the reliability coefficient of this scale was re-calculated and found as .942 and concluded that the scale is a reliable one for determining skills. Besides, since the target group and sample group of the scale coincided with the sample of the research, there was no need for revalidation and confirmatory factor analysis.

The qualitative data in the study were collected via a semi-structured interview form developed by the researchers. The items of SOLQ and the findings in the quantitative study have guided the formation of research questions addressed in the qualitative phase (Creswell et al., 2013). For the credibility and transferability of the semi-structured interview forms, views about the forms were obtained from two different experts in the field of educational sciences. Based on their suggestions, the extra information about self-directed learning strategies were inserted in each question in parentheses.

The SOLQ was administered at the end of the spring term of 2019-2020 academic year, in the COVID-19 emergency remote teaching terms. It took nearly two weeks to obtain all the quantitative data because of the variance of the sampling. The collected data were subjected to comparative analysis according to gender, grade level, departments attended and academic achievement.

The interviews were made online at the end of the spring term of 2019-2020 academic year, in the COVID-19 emergency remote teaching terms. It took nearly three weeks to obtain all the data due to the heavy end of term workload of the faculty members. The obtained data were analyzed via content analysis.

DATA ANALYSIS

In the explanatory sequential design, the data analysis should proceed as "quantitative data analysis → qualitative data analysis → associating quantitative and qualitative data" (Creswell, 2017). The analysis process started with the analysis of quantitative data, then the analysis of qualitative data and followed by the relation of quantitative and qualitative data. The analysis of the quantitative part of this study was implemented using descriptive and inferential statistics. In the qualitative part, content analysis was applied. Finally, qualitative and quantitative data have been related to each other and discussed in detail.

QUANTITATIVE DATA ANALYSIS

Due to the normal distribution of the data (Kurtosis= 2.84; Skewness= -1.44) (Tabachnick and Fidell, 2013), Independent Sample T-test from parametric tests for gender-based differences and One-Way Analysis of Variance (ANOVA) for department and grade level based multiple comparisons were performed in addition to descriptive statistics such as frequency, percentage. Least Significant Difference (LSD) test was also applied to determine the source of the difference when necessary. Accepting the significance level as 0.05, the analyses of quantitative data were performed comparatively.

QUALITATIVE DATA ANALYSIS

The qualitative data was analysed using a conventional content analysis method (Fraenkel & Wallen, 2000). Firstly, the data were coded, then grouped into emerging sub/themes. Finally, the themes obtained are discussed in the light of relevant research in the literature.

In order to ensure confirmability, 20 % of the data was firstly coded by two researchers separately- both have PhD on curriculum and instruction and experience in quantitative analysis. Then, in a meeting with the focus of inter-coder reliability, the variation of codes, subthemes and themes which were determined separately were discussed and a consensus was reached. When the first coding process was over, the rest of the data was coded by one of the researchers alone but by making multiple checks afterwards. At the end of the process, two researchers met again to make a final check. Additionally, all data was stored in order to maintain confirmability. The method of the text should mainly give information about the methodological construction and the process followed throughout the study.

FINDINGS

FINDINGS of QUANTITATIVE DATA ANALYSES

THE LEVEL OF UNDERGRADUATE STUDENTS' SELF-DIRECTED ONLINE LEARNING SKILLS

The data obtained from the scale were examined, and the undergraduate students' self-directed online learning skills are presented in Table 2.

Table 2. *Mean scores of undergraduate students' self-directed online learning skills for the dimensions and in general*

Dimensions	Number of items	N	$\overline{\mathrm{x}}$	Percentage of scores (%)	Standard deviation	Minimum and maximum scores that can be achieved
Metacognitive Skills	18	399	89,98	71,71	19,89	18-126
Help Seeking	3	399	13,45	64,04	3,25	3-21
Time Management	5	399	27,59	78,82	6,12	5-35
Persistence	5	399	25,61	73,17	6,31	5-35
Environmental Structuring	5	399	25,59	73,11	5,96	5-35
Total	36	399	182.24	72,31	49,09	36-252

Table 2 shows the general mean score percentage of the whole dimensions (72,31). The mean score percentages of the Metacognitive Skills and Help Seeking dimensions are below the general mean score. The highest mean score percentage belongs to time management dimension.

A GENDER-BASED COMPARISON OF SELF-DIRECTED ONLINE LEARNING SKILL SCORES OF UNDERGRADUATE STUDENTS

A gender-based distribution of self-directed online learning scores of undergraduate students is presented in Table 3.

Table 3. *A gender-based distribution of self-directed online learning scores of undergraduate students*

Dimensions	Gender	N	Mean	Std. Error
Metacognitive skills	Male	105	85.31	2,11
	Female	294	91.64	1,10
Help seeking	Male	105	13.30	,32
	Female	294	13.50	,18
Time management	Male	105	26.82	,60
	Female	294	27.86	,35
Persistence	Male	105	23.99	,66
	Female	294	26.19	,35
Environmental structuring	Male	105	24.24	,70
	Female	294	26.08	,31
General mean	Male	105	173.69	1,72
	Female	294	185.30	1,81

When the scores of the students are examined based on their gender, it is seen that the highest mean score belongs to female students at all dimensions. To understand whether the difference among the gender based scores is significant or not, an independent sample t-test was made and the findings are presented in Table 3.

Table 4. *Gender based differences of undergraduate students' skill scores self-directed online learning scores*

Dimensions	Gender	N	$\overline{\text{X}}$	sd	t	p
Metacognitive skills	Male	105	85.31	21.71508	-2,82	,005
	Female	294	91.64	18.95917		
Help seeking	Male	105	13.30	3.33433	-,54	,586
	Female	294	13.50	3.23667		
Time management	Male	105	26.82	6.19624	-1,49	,136
	Female	294	27.86	6.08636		
Persistence	Male	105	23.99	6.80568	-2,92	,004
	Female	294	26.19	6.03724		
Environmental structuring	Male	105	24.24	7.20147	-2,38	,018
	Female	294	26.08	5.38803		
General mean	Male	105	173.69	18.95917	*-3,16*	,016
	Female	294	185.30	21.71508		

Based on the comparison made according to the gender of the students, the differences in scores between female and male students in the general means and three dimensions namely, metacognitive skills, persistence and environmental structuring were significant in favour of female students.

A DEPARTMENT-BASED COMPARISON OF SELF-DIRECTED ONLINE LEARNING SKILL SCORES OF UNDERGRADUATE STUDENTS

A department based distribution of self-directed online learning skill scores of undergraduate students is presented in Table 5.

Table 5. *A department based distribution of self-directed online learning skill scores of undergraduate students*

	Departments	N	Mean	Std. Error
General	Guidance & P. Counseling	132	176.23	2.86
	Primary School	23	177.83	6.23
	Turkish Lang.	49	197.82	4.06
	Social Sciences	76	178.12	3.89
	Math	47	175.81	5.06
	English Lang.	31	186.68	5.38
	Pre-school	41	197.12	4.01
	Total	399	182.24	1.64
Metacognitive skills	Guidance & P. Counseling	132	86,71	1,82
	Primary School	23	88,56	3,54
	Turkish Lang.	49	99,04	2,35
	Social Sciences	76	86,67	2,41
	Math	47	88,00	2,79
	English Lang.	31	90,83	3,31
	Pre-school	41	98,21	2,56
	Total	399	89,98	,99
Help seeking	Guidance & P. Counseling	132	13,16	3,48
	Primary School	23	13,78	2,64
	Turkish Lang.	49	13,95	3,65
	Social Sciences	76	13,81	3,35
	Math	47	12,38	3,04
	English Lang.	31	14,06	2,73

Persistence	Pre-school	41	13,68	2,45
	Total	399	13,45	3,25
	Guidance & P. Counseling	132	27,09	6,09
	Primary School	23	27,47	5,31
	Turkish Lang.	49	28,79	6,42
	Social Sciences	76	27,61	6,42
	Math	47	26,36	6,70
	English Lang.	31	28,03	4,74
	Pre-school	41	28,87	5,87
	Total	399	27,59	6,12
Environmental structuring	Guidance & P. Counseling	132	24,56	6,08
	Primary School	23	24,69	6,75
	Turkish Lang.	49	28,20	5,18
	Social Sciences	76	24,78	6,65
	Math	47	23,93	7,35
	English Lang.	31	26,77	6,16
	Pre-school	41	28,97	3,83
	Total	399	25,61	6,31

When the scores of the students are examined based on the departments, it is seen that the highest mean score belongs to the Turkish language teaching department ($\overline{X}$ = 197.82) in general, to the Turkish language teaching department ($\overline{X}$ = 99.04) at metacognition skill dimension, to the English language teaching department ($\overline{X}$ = 14.06) at help seeking dimension, to the pre-school teaching department ($\overline{X}$ = 28,87) at persistence dimension, and lastly to the pre-school teaching department ($\overline{X}$ = 28,97) at environmental structuring dimension. It is also found out the lowest mean score belongs to the Math teaching department in general ($\overline{X}$ = 175.81), at help seeking dimension($\overline{X}$ = 12.38), at persistence dimension($\overline{X}$ = 23,36), and lastly at environmental structuring dimension ($\overline{X}$ = 23,93). At metacognition skill dimension, the lowest mean score belongs to the social sciences teaching department ($\overline{X}$ = 99.04). To understand whether the difference among the scores based on the departments is significant or not, One-Way Analysis of Variance (ANOVA) were implemented and the results are presented in Table 6.

Table 6. *One-Way Analyses of Variance (ANOVA) results for department-based distribution of the self-directed online learning scores of undergraduate students*

Dimensions	Source of Variance	SS	df	MS	F	Sig.
Metacognitive skills	Between-groups	9294,684	6	6	4,098	,001
	Within-groups	148170,194	392	392		
	Total	157464,877	398	398		
Help seeking	Between-groups	103,451	6	6	1,638	,135
	Within-groups	4125,441	392	392		
	Total	4228,892	398	398		
Time management	Between-groups	249,475	6	6	1,110	,356
	Within-groups	14680,751	392	392		
	Total	14930,226	398	398		
Persistence	Between-groups	1183,608	6	6	5,265	,000
	Within-groups	14687,179	392	392		
	Total	15870,787	398	398		
Environmental structuring	Between-groups	678,447	6	6	3,288	,004
	Within-groups	13481,393	392	392		
	Total	14159,840	398	398		
General mean	Between-groups	30034,694	6	6	4,974	,000
	Within-groups	394522,208	392	392		
	Total	424556,902	398	398		

Table 6 reveals that the students' scores differ significantly for general mean ((F (240) = 4,974, p <.05) and three dimensions namely, metacognitive skills (F (240) = 4,432, p <.05), persistence (F (240) = 4,432, p <.05) and environmental structuring (F (240) = 4,432, p <.05). To reveal the source of these significant differences, the multiple comparison (LSD) analysis were implemented and presented in Table 7.

Table 7. Results of Multiple Comparisons (LSD) of the scores related to departments

Dependent Variable	(I) Departments	(J) Department	Mean of Differences (I-J)	Sig.
Metacognitive skills	Guidance & P. Counseling	Turkish Lang.	-12,32112*	,003
		Pre-school	-11,49982*	,018
	Turkish Lang.	Guidance & P. Counseling	12,32112*	,003
		Social Sciences	12,36976*	,010
	Social Sciences	Turkish Lang.	-12,36976*	,010
	Pre-school	Guidance & P. Counseling	11,49982*	,018
		Social Sciences	11,54846*	,037
Persistence	RPD	Turkish Lang.	-3,64348*	,008
	Turkish Lang.	Guidance & P. Counseling	3,64348*	,008
		Social Sciences	3,41461*	,040
		Math	4,26791*	,012
	Social Sciences	Turkish Lang.	-3,41461*	,040
		Pre-school	-4,18614*	,008
	Math	Turkish Lang.	-4,26791*	,012
	Pre-school	Guidance & P. Counseling	4,41500*	,001
		Social Sciences	4,18614*	,008
		Math	5,03944*	,003
Environmental structuring	Guidance & P. Counseling	Turkish Lang.	-3,12693*	,026
	Primary School	Turkish Lang.	-4,51198*	,040
	Turkish Lang.	Guidance & P. Counseling	3,12693*	,026
		Primary School	4,51198*	,040
General mean	Guidance & P. Counseling	Turkish Lang.	-21,58905*	,000
		Pre-school	-20,89468*	,000
	Primary School	Turkish Lang.	-19,99024*	,013
		Pre-school	-19,29586*	,020
	Turkish Lang.	Guidance & P. Counseling	21,58905*	,000
		Primary School	19,99024*	,013
		Social Sciences	19,69791*	,001
		Math	22,00782*	,001
	Social Sciences	Primary School	-19,69791*	,001
		Pre-school	-19,00353*	,002
	Math	Turkish Lang.	-22,00782*	,001
		Pre-school	-21,31344*	,002
	Pre-school	Guidance & P. Counseling	20,89468*	,000
		Primary School	19,29586*	,020
		Social Sciences	19,00353*	,002
		Math	21,31344*	,002

* p<0.05

As seen in Table 7, in terms of *metacognitive skills* dimension, there is a significant difference between the students in Turkish language teaching department and ones in guidance & psychological counseling department in favour of the ones in Turkish language teaching department. There is also a significant difference between the students in pre-school teaching department and ones in guidance & psychological counseling department in favour of the ones in Turkish Language Teaching

department. In terms of *persistence* dimension, a significant difference was found between the students in Turkish language teaching department and ones in guidance & psychological counseling department in favour of the ones in Turkish Language Teaching department. Again at the same dimension, there is a significant difference between the students in pre-school teaching department and ones in guidance & psychological counseling department, social sciences and math in favour of the ones in pre-school teaching department. In terms of *environmental structuring* dimension, a significant difference was reached between the students in Turkish language teaching department and ones in primary school teaching department in favour of the ones in Turkish language teaching department. When it comes to the general mean scores, a significant difference was revealed between the students in Turkish language teaching department and ones in guidance & psychological counseling, primary school teaching, social sciences and math departments in favour of the ones in Turkish language teaching department. Similarly, a significant difference was found between the students in pre-school teaching department and ones in guidance & psychological counseling, primary school teaching, social sciences and math departments in favour of the ones in Turkish language teaching department.

A GRADE-BASED COMPARISON OF SELF-DIRECTED ONLINE LEARNING SCORES OF UNDERGRADUATE STUDENTS

A grade level-based distribution of self-directed online learning scores of undergraduate students is presented in Table 8.

Table 8. *A grade level-based distribution of self-directed online learning scores of undergraduate students*

Dimensions	Grade level	N	$\overline{\mathrm{X}}$	sd
Metacognitive skills	1	39	92,7949	16,66888
	2	163	93,4969	18,40000
	3	120	87,8083	20,29832
	4	77	84,5065	22,31097
	Total	399	89,9825	19,89071
Help seeking	1	39	13,1795	3,06827
	2	163	13,0368	3,22009
	3	120	13,8333	3,18962
	4	77	13,8831	3,47538
	Total	399	13,4536	3,25966
Time management	1	39	27,8718	6,43665
	2	163	28,0245	6,04913
	3	120	26,8583	6,39629
	4	77	27,6883	5,68993
	Total	399	27,5940	6,12480
Persistence	1	39	26,5385	6,99190
	2	163	26,3742	6,33342
	3	120	24,6333	6,15341
	4	77	25,0519	6,00635
	Total	399	25,6115	6,31477
Environmental structuring	1	39	25,8205	5,79415
	2	163	26,3436	5,63540
	3	120	25,3583	6,09973
	4	77	24,2857	6,36573
	Total	399	25,5990	5,96469
General mean	1	39	186.21	5.17
	2	163	187.28	2.47
	3	120	178.49	2.95
	4	77	175.42	3.92
	Total	399	182.24	1.64

When the scores of the students are examined based on the grade-level, it is seen that the highest mean score belongs to the second grade students ($\overline{X}$ = 93,4969) at metacognitive skills dimension. At help seeking dimension, it belongs to the fourth grade students ($\overline{X}$ = 13,8831). The highest mean score at time management dimension belongs to the second grade students ($\overline{X}$ = 28,0245). The highest mean score in persistence dimension belongs to the first grade students ($\overline{X}$ = 26,5385). At environmental structuring dimension, it belongs to the second grade students ($\overline{X}$ = 26,3436). In general mean, the highest mean score belongs to the second grade students ($\overline{X}$ = 187.28). To understand whether the difference among the grade-level based is significant or not, One-Way Analysis of Variance (ANOVA) were made and the results are presented in Table 9.

Table 9. *One-Way Analyses of Variance (ANOVA) results for grade level-based distribution of self-directed online learning scores of undergraduate students*

	Source of Varience	SS	df	MS	F	Sig.
Metacognitive skills	Between-groups	5197,931	3	1732,644	4,495	,004
	Within-groups	152266,946	395	385,486		
	Total	157464,877	398			
Help-seeking	Between-groups	62,755	3	20,918	1,983	,116
	Within-groups	4166,137	395	10,547		
	Total	4228,892	398			
Time management	Between-groups	98,854	3	32,951	,878	,453
	Within-groups	14831,372	395	37,548		
	Total	14930,226	398			
Persistence	Between-groups	267,264	3	89,088	2,255	,081
	Within-groups	15603,523	395	39,503		
	Total	15870,787	398			
Environmental structuring	Between-groups	232,029	3	77,343	2,193	,088
	Within-groups	13927,810	395	35,260		
	Total	14159,840	398			
General mean	Between-groups	10019,274	3	3339,758	3,182	,024
	Within-groups	414537,629	395	1049,462		
	Total	424556,902	398			

Table 9 reveals that the students' scores differ significantly for the metacognitive skills dimension and the general mean score. To reveal the source of significant differences, the multiple comparison (LSD) analysis are made and presented in Table 10.

Table 10. *Results of Multiple Comparisons (LSD) of the scores related to grade levels*

Dependent Variable	(I) Grade Levels	(J) Grade Levels	Mean of Differences (I-J)	Sig.
Metacognitive Skills	1	2	-,70206	,997
		3	4,98654	,514
		4	8,28838	,140
	2	1	,70206	,997
		3	5,68860	,077
		4	8,99044*	,006
	3	1	-4,98654	,514
		2	-5,68860	,077
		4	3,30184	,658
	4	1	-8,28838	,140
		2	-8,99044*	,006
		3	-3,30184	,658
General Mean	1	2	-1,07095	,853
		3	7,71346	,197

		4	10,78954	,091
	2	1	1,07095	,853
		3	8,78441[*]	,025
		4	11,86049[*]	,008
	3	1	-7,71346	,197
		2	-8,78441[*]	,025
		4	3,07608	,516
	4	1	-10,78954	,091
		2	-11,86049[*]	,008
		3	-3,07608	,516

* p<0.05

Table 10 shows there is a significant difference in favour of the second grade students to fourth grade students in terms of *metacognitive skills* dimension. When it comes to the general mean scores, there is a significant difference in favour of the second grade students to third and fourth students

FINDINGS FROM QUALITATIVE DATA ANALYSES

THE IMPLEMENTATIONS USED BY THE FACULTY MEMBERS TO SUPPORT THE SELF-DIRECTED ONLINE LEARNING SKILLS

The faculty members explained their own implementations about how to support their students' self-directed online learning skills. Their explanations were presented based on the pre-determined themes determined in accordance with the Self-Directed Online Learning Questionnaire.

SUPPORTING THE STUDENTS' METACOGNITIVE SKILLS

The faculty members explained that they asked questions during the courses (f:10), informed students about course aims/objectives (f:7), made relations between the subject and daily life (f:7), enabled them thinking on the subject (f:3), gave various examples (f:2), and applied teaching methods/techniques enabling critical thinking (f:2) to support the students' metacognitive skills.
The faculty members frequently indicated the importance of asking questions to increase students' self-directed online learning skills. For example; FM-7 uttered that "*I always ask questions about important subjects*" and FM-4 said "*I ask questions to make them think on it [the subject]*. The faculty members also indicated they are eager to inform students about the course aims/objectives by uttering "*At the beginning of the term, I certainly explain the course aims and every week, I make explanations about course objectives*" FM-3. Another frequently explained implementation is to make relations between the subject and daily life. FM-7 explained his implementation and its importance as follows:

> "*In general, I want students to relate these lessons and topics to their daily lives. I support them by giving current examples in relation to the content and topics of the courses I teach, and I believe the more the course content and topics are associated with current issues, the higher and more positive perspectives and interests the students have in the course.*" (FM-7)

SUPPORTING THE STUDENTS' HELP SEEKING SKILLS

The faculty members explained that they guided and encouraged the students to seek help from the course instructors (f:7). They also indicated they shared sources, materials, online tools about course content (f:2) to support the students' help seeking skills.
The faculty members regarded themselves as the main source for direct communication when the students need help. FM-9 indicated that "*I express that they can ask verbally at points that are often not understood. I try to respond promptly to the questions asked. I often show examples in difficult*

situations and provide resources that they can use in assignments." And FM-5 expressed "*My mobile phone and e-mail are open 24 hours, they know that they can reach me whenever they want.*"

SUPPORTING THE STUDENTS' TIME MANAGEMENT AND ENVIRONMENTAL STRUCTURING SKILLS

When the faculty members were asked about how to support their students' time management and environmental structuring skills, they frequently explained its difficulty especially during online learning (f:8). For instance, FM-5 explained "*It is difficult to control their time management in distance education. I know that they have problems with this.*" And FM-7 enlighted "*The distance education process offers the opportunity to do more work in a short time. However, I do not think that students use this opportunity positively enough.*" On the other hand, a few faculty members explained their implications as reminding student via mobile, e-mails about the course schedule and assignments (f:3) and making motivational conversations to explain importance of time management and environmental structuring (f:2). FM-10 explained in detail how she encouraged students about time management and environmental structuring by uttering:

> "*First, I ask about their time management and study environment. I make an effort for them to notice their strengths or weaknesses. I offer ideas about better quality time management and study environments. Then, they can choose the appropriate ones or adapt themselves.*" FM-10

SUPPORTING THE STUDENTS' PERSISTENCE SKILLS

When the faculty members were asked about how to support their students' persistence skills, some of the faculty members mentioned about the difficulty of getting persistence skills especially in online learning environment and a few views focusing on their regular study habits and how to improve students' persistence skills were explained (f:4). For example; FM-4 explained "*Since I find a research-based assessment more effective, I ask comprehensive research questions, so that they have to study regularly.*" And FM-12 uttered "*During the course, the materials that should be ready weekly are presented. In addition, extra readings are presented during the week and included in the evaluation process.*"

RELATING THE QUANTITATIVE AND QUALITATIVE FINDINGS

The mixed method research included more detailed quantitative findings and some general qualitative findings. To remind here, the undergraduate students' scores are as the follows in order: Time Management (%78,82), Persistence (%73,17), Environmental Structuring (%73,11), Metacognitive Skills (%71,71), and Help Seeking (%64,04). When the qualitative findings were examined, it can be said that the faculty members gave more specific interest to metacognitive, and help seeking skills while they less focused on time management-environmental structuring, and persistence skills. Based on the faculty members' implications, it can be said that they are aware of the importance of metacognitive-help seeking skills and their students' needs, so they tried to increase their students' those skills. On the other hand, it takes attention that the students have the highest scores on time management dimensions but the faculty members frequently explained they believed their students had problems about it. The same situation is valid for both persistence and environmental structuring skills.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In the present study, self-directed online learning skills of undergraduate students were firstly examined and discussed comparatively based on gender, grade level, and department differences. Then, the implications used by the faculty members to support the skills were examined. The results obtained are discussed below.

The students' general mean score of the scale was above the scale average, which can be regarded as satisfactory. In other studies, carried out on undergraduate students like Cook et al.

(2017), Çelik (2012), Swart, (2018), Turan (2009), and Yen et al. (2005), the level of self-directed online learning skills was determined as moderate or high. On the other hand, Winne (2017) has reported that undergraduate students appear to be undereducated in terms of self-regulation.

When the results are examined based on the dimensions of the applied scale, it is concluded that the students had the highest mean score at time management dimension and the lowest one at help seeking dimension. Another study with similar sample has resulted in quite different results. In Özdemir & Önal's (2021) study, they concluded that undergraduate students' skills are the highest in the factor of environmental structuring whereas their skills are the lowest at the time management dimension. These contradictory results can be a sign of personal difference and different contexts where these studies were carried out.

Another result of this study about the gender-based differences in self-directed online learning skills of undergraduate students is that female students have higher scores in general, metacognitive skills, persistence, and environmental structuring dimensions. There are similar studies concluding that female students have a higher level of self-directed skills in general (Cadorin et al., 2017; Guglielmino et al., 1987; Hutto, 2009; Özdemir & Önal, 2021; Slater et al., 2017; Swart, 2018; Weis et al., 2013) and there are other similar studies such as Aydemir (2007), Caprara et al. (2008), Üredi and Üredi (2005), Saban (2008), and Zimmerman & Martinez Pons (1986) about the metacognitive skills. To Aşkın Tekkol and Demirel (2018), female students have higher cognitive and affective characteristics, which are critical for applying self-directed learning. On the other hand, there are some studies reaching out that gender difference does not cause any significant differences (Gömleksiz & Demiralp, 2012; Yukselturk & Bulut, 2009). Although in our study, we did not reach any significant difference in terms of time management, Demirtaş and Özer (2007) conclude that female undergraduate students have more effective time management skills and Karasakaloglu and Saracaloglu (2009) state that female students have higher academic self-design, which can be related to time management dimension of our study.

These aforementioned studies carried out at different times and contexts have reached conflicting results. But it is noteworthy that Gestsdottir et al. (2014) have reported their longitudinal study conducted in European context revealed contradictory results, namely female students have outperformed males in Iceland whereas the opposite was valid for French and German contexts. They reached out that the effect of cultural settings may cause such a contradiction. As also emphasized by Özdemir and Önal (2021), females are thought as being "more frequently expected to conform to social norms; thus, their experience and skill in regulating their emotions and behaviors tend to be superior compared to males" (Davis, 1995).

When it comes to the department-based differences, it is noteworthy that there are significant differences in metacognitive skills, persistence, and environmental structuring dimensions in favour of the students at Turkish Language Teaching department. Similarly, Aşkın Tekkol and Demirel (2018) determine students majoring departments related to Turkish-Social Studies (TS) have significantly higher skills scores than other students. Furthermore, the study by Gömleksiz and Demiralp (2012) concludes the students who enter university with a verbal score have higher self-directed learning skills than other score types. In other studies, including a similar sample, any significant differences in terms of department were not found (Özdemir & Önal, 2021).

In terms of the grade level-based differences, it is remarkable that there is a significant difference in favour of the sophomore students to senior students in terms of metacognitive skills dimension. In another study carried out on Turkish medical students, Turan (2009) reaches out freshmen students have higher levels of self-directed skills than sophomores and juniors. Similarly, Özdemir (2018) also concludes that freshmen students have higher levels of self-directed skills than senior students at nine different faculties in Turkish context. Conversely, Aşkın Tekkol and Demirel (2018) determine no positive correlation between grade level and self-directed skills level. Some other studies in the literature also corroborate our study result (Acar, 2014; Kiliç and Sökmen, 2012; Salas,

2010; Sarmasoglu and Görgülü, 2014), which all show that there is an inverse proportion between grade-level and self-directed learning levels. But it is expected that these skill levels increase as the grade level increases because skills associated with self-directed learning continue to develop as individuals progress through early adolescence into adulthood (Wilmshurst, 2013).

In the qualitative part of this mixed method study, the implications used by the faculty members to support the skills were examined. Based on the faculty members' views, it was found out that they gave more specific interest to metacognitive skills and help seeking while they focused less on time management-environmental structuring, and persistence skills. Based on the faculty members' implications, it can be said that they are aware of the importance of metacognitive skills help-seeking and their students' needs, so they made various implications to increase their students' those skills. On the other hand, the faculty members frequently explained they believed their students had problems with time management, environmental structuring and persistence. But it can be concluded that the faculty members' implications to support these skills of self-directed online learning are limited to some kind of encouragement.

It is widely accepted that faculty members play an important role in helping students develop and apply self-directed learning skills (Lunyk-Child et al., 2001). Especially in online learning environments, recent research studies proved that the skills of learners, especially the low academic achievers, can be improved by using self-directed instructional methods (Young, 1996). Additionally, faculty members must carefully balance the type and amount of support provided to students as they learn to take responsibility for their own learning with the goal of being independent learners (Morris, 2019).

Learners can be described as self-directed in relation to the degree that they are metacognitively, motivationally and behaviorally active participants in their own learning process (Zimmerman, 1990). For that reason, the faculty members in our study should also give specific interest to their students' time management-environmental structuring, and persistence skills. So that the students can be active motivationally and behaviorally active in their own learning process, too. In two different studies conducted nearly three decades before at Canadian community colleges and in another study, it was found that a few faculty members included in these studies were reached out as supportive of self-directed learning (Wilcox, 1996).

Self-directed learning is a process of learning in which learners function autonomously, taking responsibility for planning, initiating, and evaluating their own learning efforts. When the learning efforts are changed into online, it takes much more interest and importance because self-directed learning seems to promise a reasonable solution to the immediate and very real problem of providing high quality educational experiences with less demand on public resources in distance education process (Wilcox, 1996).

As Calıkoğlu and Gumus (2020) emphasized, in distance education process, there are some factors which prevent effective learning experiences. Besides the changing and diversifying expectations from higher education, as an important key to solving such problems experienced distance education process, self-directed learning skills should be supported at higher education. It should be noted here that to make such support systematic and ongoing, we should use curriculum at higher education institutions. Being aware of that fact, self-directed learning has been introduced into curricula and mentioned frequently in the mission's statements/program objectives in many higher educational institutions. But the introduction of SDL into undergraduate curricula and/or involvement in the objectives have not always been successful (Levett-Jones, 2005) in efforts to improve educational quality in higher education. The main responsibility of increasing students' SDL skills belong to the students themselves and the responsibility of directing them is to the faculty members.

Based on the results of the study, the following suggestions are presented;

1. Contemporary educational approaches and rapid increase of distance higher education make it more urgent to have self-directed skills, so there should be experimental studies to determine/apply teaching/learning methods to support students' SDL skills.

2. SDL includes different skills sets. In the current study, it is determined that the students should be supported in terms of metacognitive and help-seeking skills especially. So further studies can be conducted on analyzing and supporting such skills.

3. In this study, the faculty members explained their own ways of supporting SDL skills and it is clear that they have some limited implementations, especially in terms of time management-environmental structuring, and persistence skills. So further studies may be applied to increase the awareness and practical information of faculty members.

AUTHOR CONTRIBUTION

The authors both equally contributed to the conception, design and implementation of the research, to the analysis of the results and to the writing of the manuscript apart from data collection process in which they carried out separate roles. The first author collected the quantitative data while the second author took the lead in interviewing process, so she had the main responsibility in collecting qualitative data. They both gave final approval of the version to be published.

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