

Investigation of University Students' Readiness for Online Learning During COVID-19 Pandemic in The Context of Self-Regulated Learning Skills*

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Abstract: This study aimed to determine the relationship between students' readiness for online learning and self-regulated learning skills in online distance education applications, which have gained importance especially in recent years and have become mandatory in universities during the pandemic period. The sample of the research was conducted with 445 university students studying at Necmettin Erbakan University, Faculty of Social and Human Sciences in the 2020-2021 academic year. Within the scope of the research, Readiness Scale for Online Learning and Self-regulated Learning Skills Assessment Scale were used. As a result of the analysis of the research data, it was concluded that the status of receiving distance education before the pandemic was effective on the readiness of university students for online learning. However, when the results of the self-regulated learning scale for the status of receiving distance education before the pandemic were examined, it was concluded that it was not an effective variable on university students. When the results showing the relationship between the readiness scale for online learning and the self-regulated learning skills scale were examined, a positive and moderately significant relationship was found. This means; As readiness for online learning increases, self-regulated learning skills also increase, and it can be said that as self-regulated learning skills develop, there will be a change in the level of readiness for online learning. Some recommendations were made for this study.

Keywords: Online Distance Education, Readiness, Self-regulated Learning

1. Introduction

The internet is increasingly used in many areas thanks to the advantages it provides. One of these areas is education. Although distance education applications are used for different purposes in education, they have become even more widespread after the global pandemic (COVID-19). There is a rapid increase in online programs and courses, and many universities face many difficulties in terms of effectiveness and acceptance of online education in order to have successful strategies (Park, 2009). It is stated that it is not easy to keep up with the increasing online courses and the transition to mandatory online distance education for effective distance education applications to be realized, and that many tasks fall on the student who plays a role in education in this process (Sari & Nayır, 2020). In addition, self-regulated learning skills are expressed among the important competencies for individuals who play an active role in online education to manage their own online learning processes (Wong, Baars, Davis, Van Der Zee, Houben & Paas, 2019). In order not to fall behind the advantages of face-to-face education, effective and permanent learning must take place in online education, and learners are expected to have self-regulated learning skills in order to take responsibility. Online learning can be defined as an institutional education activity in which one or more instructors in an electronic environment transfer teaching material to learners in different environments (Gunawardena & Mclsaac, 2013). Online learning refers to an education in which instructor services are provided to learners in a web-based environment accessed via the Internet or Intranet, and all the support they need is provided (Gülbahar, 2009). In this respect, learners in online learning environments carry out different educational processes through digital environments, similar to face-to-face education. On the other hand, there are some obstacles that prevent online education processes. These obstacles are gathered in four different areas: technical, learning-oriented, communication (inability to socialize) and environmental obstacles (Elçiçek, 2022). These obstacles are important in terms of determining learners' readiness, competence and perceptions regarding online distance education. Palloff and Pratt (2007) stated that eliminating the obstacles experienced in online distance education is important in terms of affecting the future online education practices of learners. On the other hand, self-regulated learning is gaining importance as a concept that expresses active

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learning in the learning processes in online learning environments. Although self-regulated learning was also expressed with names such as self-control and self-management in the 1980s, it is a concept that expresses what needs to be done for students to learn more efficiently in their individual learning processes (Boekaert, Pintrivh, & Zeidner, 2000). Pintrich (2000) defined self-regulated learning skill as an active and constructive process in which students determine their own learning goals, try to regulate their cognition, motivation, and behavior, and are guided and limited by their goals and the contextual features in their environment. Self-regulated learning allows the individual to learn at their own pace with their own learning method (Gama, 2000). Having high self-regulation skills means getting the most out of online environments, and therefore, it also means high academic success (Zimmerman & Schunk, 2011). Since a large part of the learning responsibility in online distance education belongs to the learner, it is expected from distance education learners to have self-regulated learning skills (Çivril & Aruğaslan, 2021).

Readiness in terms of online learning is a necessity for students' course attendance and success (Demir Kaymak & Horzum, 2013). Smith (2005) explained the cognitive and affective skills that constitute readiness as "the state of having motivation for learning, the necessary technological skills, learning style and the knowledge, skills and beliefs necessary to manage one's own learning in an online environment". Yılmaz (2017) states that computer and internet, communication in online environments and self-regulated learning self-efficacy are important in terms of online learners' readiness.

With the COVID-19 pandemic, all universities have started to conduct their education activities with distance education since the 2019-2020 spring academic year. During this process, universities have accelerated their adaptation to educational technologies, and most universities have reached the capacity to conduct online, remote courses with a sufficient distance education infrastructure. Of the 189 universities, 121 started distance education applications one week after the pandemic was announced, 41 as of March, and 25 after April 6, 2020. After the decision of YÖK to switch to distance education due to the pandemic,

1.1. Research Purpose

The purpose of this study is to examine university students' readiness for online learning in the context of self-regulated learning skills. In this context, answers were sought to the following questions;

1. What are the levels of university students' readiness for online learning (SRL) and self-regulated learning skills (SRL)?
2. Is there a difference between students' SRL and SRL variables according to their
 - a) grade level
 - b) status of receiving education via distance education before the pandemic
 - d) frequency of internet use?
3. What is the relationship between students' SRL and SRL variables?

2. Method

The research model, universe and sample, data collection tool and data analysis information are given below.

2.1. Research Model

The research was designed with a quantitative method and is in the relational screening model. The relational screening model is a research model that attempts to determine whether there is a change between two or more variables, and if so, between which variables (Fraenkel, Wallen & Hyun, 2014).

2.2. Population and Sample

The universe of the study consists of 2000 university students studying at Necmettin Erbakan University in the 2020-2021 academic year. A total of 445 students were reached on a voluntary basis from the simple random sample selection of students who attended remote courses due to the pandemic caused by the Covid-19 Outbreak. Information about the students in the sample is given below (Table 1).

Table 1. Demographic Information of University Students (n=445)

Variables	Values	F	%
Grade Level	1 st grade	149	33,5
	2 nd grade	88	19,8
	3 rd grade	103	23,1
	4 th grade	105	23,6
Do you have your own computer/tablet?	Yes	292	65,6
	No	153	34,4
Did you receive distance education before the pandemic?	Yes	56	12,6
	No	389	87,4
	None	3	0,7
How often do you use the internet?	1-2 hours per week	20	4,5
	3-4 hours per week	10	2,2
	1-2 hours per day	92	20,7
	3-4 hours per day	95	21,3
	More than 4 hours per day	225	50,6
Total		445	100

2.3. Data Collection Tool and Data Collection

In the study, online learning readiness and self-regulated learning skills scales were used for distance education university students. The self-regulated learning skills scale was developed by Velipaşaoğlu and Musal (2017) with 328 university students and consists of 23 items. It was seen that the 23 items included in the scale were located under six dimensions. While Cronbach's alpha value was expressed as 0.839 for the overall scale, Cronbach's Alpha value was calculated as .862 for this study. The other scale, the online learning readiness scale, was developed by Hung, Chou, Chen, and Own (2010). The scale was adapted to Turkish by İlhan and Çetin (2013). In the adaptation study conducted with 405 university students, it was stated that the scale consisted of a single factor and 18 items. While the Cronbach's Alpha internal consistency coefficient of the scale was expressed as .84, it was calculated as .894 for the research. Permission for use has been obtained for both scales.

2.4. Data Analysis

In the study, descriptive statistics were used to determine personal data and students' self-regulation skills and readiness for online learning. Kolmogorov-Smirnov Test was used to determine the normal distribution of the data according to the variables (Field, 2009). Since the data were not normally distributed, Kruskal Wallis and Mann Witney U tests were applied to determine the difference between the variables of online learning readiness and self-regulated learning skills according to the independent variables. In addition, Spearman Correlation Coefficient (SC) was used to determine the relationship between the online learning readiness scale and the self-regulated learning skills scale. In the interpretation of the data obtained from the 5-point Likert-shaped measurement tool, 1.00-2.33 was interpreted as low, 2.34-3.66 as medium and 3.67-5.00 as high. The significance level was accepted as .05.

2.5. Ethics

This research was approved by Necmettin Erbakan University, Social and Human Sciences Scientific Research Ethics Committee with the meeting number 04 dated 16.04.2021 and the decision number 2021/243.

3. Findings

The results obtained from the research are given below under headings.

3.1. University Students' Readiness for Online Learning

The items in the Readiness for Online Learning scale applied to University Students are given in Table 2. The table shows the arithmetic mean, standard deviation values and levels for each item according to the option selected by the students.

Tablo 2. Readiness Levels of University Students for Online Learning

Items	\bar{X}	sd	Level
1. I am confident in using the basic functions of Microsoft Office programs (MS Word, MS Excel, and MS PowerPoint).	3,29	1,218	Medium
2. I am confident in my knowledge and skills on how to manage online learning software.	2,94	1,10	Medium
3. I am confident in my ability to use the Internet (Google, Yahoo) to obtain or gather information about online learning.	3,74	1,246	High
4. I implement my own study plan.	3,53	1,24	Medium
5. I seek help when I encounter learning problems.	3,64	1,175	Medium
6. I manage my time well.	3,07	1,128	Medium
7. I set my learning goals.	3,51	1,14	Medium
8. I have high expectations regarding my learning performance.	3,00	1,221	Medium
9. I can direct my own learning process.	3,39	1,143	Medium
10. During the online education process, other online activities (chat, surfing the Internet) do not distract me.	2,49	1,173	Medium
11. I review online learning materials again in line with my needs.	3,62	1,138	High
12. I am open to new ideas.	3,98	1,165	Medium
13. I am motivated to learn.	3,61	1,156	High
14. I learn from my mistakes.	3,72	1,204	High
15. I like to share my ideas with others.	3,76	1,193	High
16. I am confident in using online tools (e-mail, chat/meeting) to communicate effectively with others.	3,76	1,245	High
17. I am confident in expressing myself (my feelings and sense of humor) through writing.	3,73	1,269	Medium
18. I am confident in asking questions in online discussions.	3,36	1,307	Medium
General	62,13	15,553	

When Table 2 is examined, it is seen that the levels of the items are generally in the medium and high range. This situation can be evaluated as the readiness levels of the majority of university students for online learning are medium to high. In addition, when the average values are examined, item 10 (2.49) has the lowest average while item 12 (3.98) has the highest average. According to the statement in item 10, it can be concluded that students are easily distracted during online education. The arithmetic mean in general was found to be ($\bar{X}=62.13$). In this context, the readiness of university students for online learning is not very high.

3.2. Self-Regulated Learning Skills of University Students

The items in the Self-Regulated Learning Skills scale applied to the students are given in Table 3. In Table 3, the arithmetic mean, standard deviation values and levels for each item are shown according to the option marked by the students.

Table 3. Self-Regulated Learning Skill Levels of University Students

Items	\bar{X}	sd	Level
1. I have high personal expectations for academic success.	3,53	1,112	Medium
2. I believe I have the skills necessary to achieve success.	3,72	1,031	High
3. I am responsible.	4,08	0,984	High
4. I have self-discipline.	3,93	1,057	High
5. I enjoy studying.	3,59	1,056	Medium
6. I determine my learning needs and goals.	3,82	1,002	High
7. I plan my learning process.	3,62	1,073	High
8. I prioritize my studies.	3,91	1,114	High
9. I can choose the best method for my learning.	3,80	1,094	High
10. I decide on my own learning strategies.	3,93	1,055	High
11. I mark important points while reading a text.	4,05	1,074	High
12. I repeat the information I have just learned.	3,65	1,053	Medium
13. I summarize the texts I read.	3,44	1,176	High
14. I use different learning resources.	3,76	1,026	High
15. I manage my time well while studying.	3,22	1,109	High
16. I monitor my own development in line with my goals.	3,64	1,022	High
17. I enjoy acquiring information beyond defined goals.	3,95	1,049	Medium
18. I am open to new ideas in the learning process.	4,20	0,977	High
19. I am willing to get suggestions from others while learning.	3,98	1,042	High
20. I enjoy struggling with difficulties in the learning process.	3,13	1,283	High
21. When I encounter a problem/difficulty, I research possible solutions.	3,81	1,033	High
22. When I have a problem that I cannot solve during the learning process, I ask for help.	3,78	1,061	High
23. I can determine my strengths and weaknesses by evaluating my own performance.	3,88	1,091	High
General	86,43	18,224	

As a result of the analysis of Table 3, the majority of the items are at a high level. As a result of the responses given by university students, it can be said that their self-regulation skills are generally at a high level. The general average of the scale is (\bar{X} =86.43), which is proportionally at a high level.

3.3. Readiness for Online Learning and Self-Regulated Learning Skills of University Students by Grade Level

One of the important variables of the study, the class level variable, was examined together with the students' readiness for online learning. According to the normality test, the p value was greater than .05. The expression "no significant difference" can be used for this situation. In Table 4, the Kruskal_Wallis_H test results between the students' class level and their readiness for online learning were examined.

Table 4. Results of Kruskal_Wallis_H Test Showing the Effect of Grade Level on University Students' Readiness for Online Learning (RFOL)

	Grades	N	Rank Mean	Chi-Square	df	p
Readiness for Online Learning (RFOL)	1st grade	149	208,66	4,102	3	,251
	2nd grade	88	227,73			
	3rd grade	103	221,14			
	4th grade	105	241,21			

*p<.05

As a result of the analysis of the obtained data, no significant difference was found in the readiness of university students for online learning at the class level in Table 4. ($H=4,102$; $p>.05$). Therefore, it can be said that the class levels of the students are not an effective variable in the readiness of university students for online learning. The class level variable was examined together with the self-regulated learning skills scale. In Table 5, the Kruskal_Wallis_H test results showing the self-regulated learning skills of university students according to their classes were examined.

Table 5. Kruskal_Wallis_H Test Results Showing the Effect of Grade Level on Self-Regulated Learning Skills of University Students (SRLS)

	Grades	N	Rank Mean	Chi-Square	df	p
Self-Regulated Learning Skills (SRLS)	1st grade	149	219,53	2,982	3	,394
	2nd grade	88	235,75			
	3rd grade	103	207,68			
	4th grade	105	232,27			

*p<.05

As can be seen from Table 5, the variable of the students' grade level in the study did not show a significant difference in relation to the students' self-regulated learning skills ($H=2.982$; $df=3$; $p>.05$). In general terms, it can be concluded that the effect of the grade level on the students' self-regulated learning skills is not as much as expected. In the study, the grade level is a variable in which the ages of the university students differ. However, it can be said that it should be examined in more detail whether it will have an effect on self-regulated learning skills.

3.4. Readiness for Online Learning and Self-Regulated Learning Skills of University Students According to Distance Education Status Before the Pandemic

The readiness of university students for online learning was examined according to their distance education status before the pandemic. This means that it is important for university students to receive distance education before the pandemic. The results of the Mann Withney_U test for students' readiness for online learning according to their distance education status before the pandemic are given in Table 6.

Table 6. Kruskal_Wallis_H Test Results Showing the Effect of Grade Level on Self-Regulated Learning Skills of University Students

	Distance Education	N	Total Averages	\bar{X}	U	p
RFOL	Yes	56	14461,5	258,24	8918,5	,028
	No	389	84773,5	217,93		

*p<.05

As seen in Table 6, it was determined that there was a significant difference according to the analysis result of the effect of distance education before the pandemic on readiness for online learning ($U=8918$; $p<.05$). In addition to this result, it can be concluded that almost 85% of university students did not receive distance education before the pandemic. Despite this, it was seen that the average scores of the options chosen by the students were close to each other. The average score of the students who received distance education before the pandemic ($X=258.24$) and the average score of the students who did not receive distance education before the pandemic ($X=217.93$) were found.

The self-regulated learning skills of university students were examined according to the status of distance education before the pandemic. No significant difference was found in the result of the normality test. Therefore, the Mann_Withney_U test was applied and its findings are given in Table 7.

Table 7. Mann_Whitney_U Test Results Showing the Effect of Distance Learning Status Before the Pandemic on Self-Regulated Learning Skills

	Distance Education	N	Total Averages	\bar{X}	U	p
SRLS	Yes	56	13173,5	235,24	10206,5	,446
	No	389	86061,5	221,24		

*p<.05

Table 7 shows that there is no significant difference between students who answered yes and students who answered no regarding self-regulated learning skills, based on their status of receiving distance education before the pandemic ($U=10206$; $p>.05$). It can be concluded that the answers given by students who answered yes and students who answered no regarding self-regulated learning skills, based on their status of receiving distance education before the pandemic, are similar to each other. As a result of the analyses obtained, it was revealed that the general average total score of students who answered yes regarding self-regulated learning skills, based on their status of receiving distance education before the pandemic (13173.5), was lower than the general average total score of students who answered no (86061.5).

3.5. Readiness for Online Learning and Self-Regulated Learning Skills of University Students According to Internet Usage Frequency

The readiness of university students for online learning was examined according to the frequency of students' internet use. This variable is of great importance for the research. The Kruskal-Wallis_H test results for the students' readiness for online learning according to the frequency of students' internet use are given in Table 8.

Table 8. Results of Kruskal-Wallis_H Test Showing the Effect of Internet Usage Frequency on University Students' Readiness for Online Learning

	Internet Usage Frequency	N	Rank Mean	Chi-Square	df	p
RFOL	None	3	166,5	33,822	5	,000
	1-2 hours per week	20	113,9			
	3-4 hours per week	10	210,25			
	1-2 hours per day	92	179,82			
	3-4 hours per day	95	235,46			
	More than 4 hours per day	225	246,41			

*p<.05

As can be understood from the table (Table 8), the difference between the ranking averages in the frequency of internet use as a result of the Kruskal-Wallis_H test was found to be statistically significant ($H=33.822$; $df=5$; $p<.05$). As a result, a significant difference was found. The reason for this may be that university students have different cognitive characteristics. The frequency of students' internet use is seen as a major factor for online learning or distance education. Despite this, differences emerged in the answers given by the students. According to another scale, the effect of students' internet use frequency on self-regulated learning skills was examined. Table 9 shows the results of the Kruskal-Wallis_H test between students' internet use frequency and self-regulated learning skills.

Table 9. Kruskal-Wallis_H Test Results Showing the Effect of Internet Usage Frequency on Self-Regulated Learning Skills of University Students

	Internet Usage Frequency	N	Rank Mean	Chi-Square	df	p
SRLS	None	3	253,17	11,805	5	,038
	1-2 hours per week	20	195,63			
	3-4 hours per week	10	237,8			
	1-2 hours per day	92	186,04			
	3-4 hours per day	95	241,55			
	More than 4 hours per day	225	231,66			

*p<.05

When Table 9 is examined, a significant difference was found between the students' internet usage frequency and self-regulated learning skills ($H=11.805$; $p<.05$). Despite the significant difference, no difference was found in the results when the tests conducted between and within the groups were examined. Although the answers given by the students differed in general, the fact that 50.6% of the students' average rank in the internet usage frequency group is in the More than 4 hours a day group can explain this difference. In this case, it can be said that the students' internet usage frequency is slightly above the average in terms of the ratio of the total number of students.

3.6. The Relationship Between University Students' Readiness for Online Learning and Self-Regulated Learning Skills

The findings obtained from university students' readiness for online learning and self-regulated learning skills do not show a normal distribution. Therefore, Spearman Correlation Coefficient (SC) was taken to examine the relationship between them. It is shown in Table 10.

Table 10. Correlation Analysis Determining the Relationship Between the Readiness for Online Learning Scale and the Self-Regulated Learning Skills

		RFOL	SRLS
RFOL	SC	1	0,622*
	p	.	,0
	N	445	445
SRLS	SC	0,622*	1
	p	,0	.
	N	445	445

As seen in Table 10, as a result of the correlation analysis conducted to determine the relationship between the scale of readiness for online learning and the scale of self-regulated learning skills, a moderately positive significant relationship of 62.2% was found ($r=,622$; $p<.05$). Accordingly, as readiness for online learning increases, self-regulated learning skills also increase. It can be said that readiness for online learning will also change as self-regulated learning skills show a significant difference.

3. Results and Discussion

There is a very rapid change process in information and technological developments. However, it is seen that the area most affected by this rapid development is education. The effect of online learning readiness, which has rapidly adapted to our lives with the Covid 19 outbreak, on students' self-regulated learning skills has been examined.

When the research results are examined; the readiness levels of the majority of university students for online learning have been evaluated as medium to high. According to the Self-Regulated Learning Skills of University Students results, the majority of the items are at a high level as a result of the responses given by the students. It has been concluded that university students' self-regulated learning skills are high.

The class level variable did not create a significant difference in university students' readiness for online learning. Therefore, it can be said that the class levels of the students are not an effective variable in university students' readiness for online learning. Students can easily access the internet. In this respect, it can be considered natural that the online education readiness of students who have reached a certain age and have received education on this subject is not different. On the other hand, according to another result, the effect of the class level on students' self-regulated learning skills is not as much as expected. In the study, the grade level is a variable in which the ages of university students differ.

A significant difference was observed according to the findings on the effect of distance education before the pandemic on their readiness for online learning. In addition to this result, it can be concluded that almost 85% of university students did not receive distance education before the pandemic. Despite this, it was observed that the average scores of the options chosen by the students were close to each other. It was observed that there was no significant difference between the students who answered yes and the students who answered no according to their self-regulated learning skills, according to their distance education before the pandemic. It can be considered one of the reasons why the similarity in self-regulated learning skills was in the same direction due to the fact that distance education received by students during the pandemic was mandatory.

A statistically significant difference was found between the average rankings in the findings obtained in the readiness of university students for online learning according to the frequency of internet use. The reason for this may be that university students have different cognitive/mental characteristics. The frequency of students' internet use is seen as a major factor for online learning or distance education. Despite this, there were differences in the answers given by the students. A significant difference was found between the frequency of students using the internet and their self-regulated learning skills. Although the answers given by the students differed in general, the fact that 50.6% of the students' average rank in the frequency of internet use was in the group of More than 4 hours a day can explain this difference. In this case, it can be said that the frequency of students using the internet is slightly above the average in terms of the ratio of the total number of students.

As a result of the correlation analysis conducted to determine the relationship between the readiness scale for online learning and the self-regulated learning skills scale, a moderately positive and significant relationship of 62.2% was found. Accordingly, as readiness for online learning increases, self-regulated learning skills also increase. Therefore, as university students' readiness for online learning differs positively, their self-regulated learning skills can develop in the same direction. The same can be said that readiness for online learning will also change with a significant difference in self-regulated learning skills.

Sarıtaş and Barutçu (2020) investigated the readiness of 2876 students for online education via the internet before the start of online education at Pamukkale University due to the global pandemic in 2020. According to the findings, it was found that the students' readiness for online learning was high, and that online learning readiness differed according to the grade levels of undergraduate students and whether they had previous online learning experiences. Similarly, in this study, the total readiness level was found to be high and differed according to whether they had previous learning experiences, but the results according to grade levels were contrary to this study. The reason for the difference according to grade levels compared to this study can be thought to be due to the different departments selected as samples.

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Conflict of Interest

it has been reported by the authors that there is no conflict of interest.

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