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The Relationship BetweenThe Perception of Transactional Distance, Perceived Learning and Course Attendance

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ABSTRACT

In this study, the transactional distance (TD) perception of a total of 435 students, who took all their courses in the distance learning environment in the first year and continued some of their lessons in this way in the second year, was determined despite being a formal education student due to Covid-19. The transactional distance perceptions were examined according to demographic characteristics and the relationship between the student's transactional distance perceptions and perceived learning and course attendance were investigated. Survey model was used in the study. "Perceived Distance Scale in Blended Learning Environments", "Perceived Learning Scale" and "students attendance chart" in the student information system of the school were used to collect data. It was seen that the students' perception of TD was not high, and the perception did not change according to gender. It was determined that the dialogue perceptions of the "Transportation and Traffic Services" students participating in the study were higher than the "Computer Programming" students. While a significant and positive relationship was observed between students' TD perceptions and their perceived learning scores, no relationship was found with their attendance to the course. In order to make students' perceptions of transactional distance even lower, a proposal was made to increase the awareness of the instructors in the sub-dimensions of Transactional Distance.

İşlemsel Uzaklık Algısı, Algılanan Öğrenme ve Derse Devam İlişkisi

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ÖZ

Bu çalışmada Covid-19 nedeni ile örgün eğitim öğrencisi olmasına rağmen birinci sınıfta bütün derslerini uzaktan eğitim ortamında almış, ikinci sınıfta ise bazı derslerine bu şekilde devam etmiş toplam 435 öğrencinin işlemsel uzaklık algısı belirlenmiştir. İşlemsel uzaklık algıları demografik özelliklere göre incelenmiş ve öğrencinin işlemsel uzaklık algıları ile algılanan öğrenme ve derse devam durumlarının birbiriyle olan ilişkisi araştırılmıştır. Çalışmada tarama modeli kullanılmıştır. Veri toplamak için "Karma Öğrenme Ortamlarında Algılanan Uzaklık Ölçeği", "Algılanan Öğrenme Ölçeği" ve okulun öğrenci bilgi sisteminde yer alan "öğrencilerin derse devam çizelgesi" kullanılmıştır. Araştırma sonucunda öğrencilerin işlemsel uzaklık algılarının yüksek olmadığı, algının cinsiyete göre farklılaşmadığı görülmüştür. Çalışmaya katılan "Ulaştırma ve Trafik Hizmetleri" öğrencilerinin diyalog algılarının "Bilgisayar Programcılığı" öğrencilerine göre daha yüksek olduğu tespit edilmiştir. Öğrencilerin işlemsel uzaklık algıları ile algılanan öğrenme puanları arasında anlamlı ve olumlu bir ilişki görülürken, derse devam durumu ile bir ilişki belirlenmemiştir. Öğrencilerin işlemsel uzaklık algılarının daha da düşük hale getirilmesini sağlamak için öğretim elemanlarının Transactional Distance alt boyutlarında farkındalığının attırılması önerisi getirilmiştir.

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INTRODUCTION

Interaction is a crucial element in both F2F and distance learning. High quality interaction is a must for students to construct knowledge (Anderson, 2003), thus having a direct impact on students' achievement and their attendance to the class. Moore (1972) established Transactional Distance Theory (TDT) in relation to interaction in distance education and studied the components that have an impact on it.

Transactional Distance (TD) refers to the psychological and communicative space (Moore, 1997). Moore (1983) described TD as "not just geographical distance, but also educational and psychological gap between learners and instructors." It is a significant concept, since the concept of distance in education is not physical, but rather social science-based (Saba, 2001), not spatial or temporal, but transactional (Gorsky & Caspi, 2005). TDT is important in practical terms as it is a basic analytical framework to understand distance education systems (Gorsky & Caspi, 2005).

According to Rumble (1986), transactional distance is not just in distance education; even in F2F education, there exists some. Moore (1997) states that TD includes three variables.

1. Dialogue: In the process of student-student or student-teacher communication, dialogue is the process of influencing each other through exchanging information, feelings, and opinions (Moore & Kearsley, 2011). A dialogue occurs during the interaction of the teacher and the student throughout the lesson. Dialogue and interaction are two notions that are extremely similar, yet with an important distinction. A dialogue involves purposeful and constructive positive interactions. The parties in the dialogue process are respectful and active listeners (Moore, 1997). When the dialogue between learners and their teacher's increases, the transactional distance declines.

2. Structure: Programme structure is the way in which the teaching programme is structured. Structure is about flexibility. This flexibility includes teaching strategies, assessment methods and programme's educational objectives. If a programme is teacher-learner dialogue is low and highly structured and the TD between teachers and learners is high. The flexibility of the structure in the distance education programme allows for easier response to individual needs (Moore & Kearsley, 2011).

3.Learner autonomy: It is that learners create their own learning plans, determine, and use the resources they will need while learning, and assess their learning processes (Rogers, 1969). The relationship of autonomy to structure and dialogue is various. Autonomous learners, for instance, were found to be more comfortable in programs with less dialogue and structure (Moore, 1997).

Dialogue, learner autonomy and structure are interrelated variables in TD. As the dialogue increases, TD decreases. As the structure increases, the capacity for individualization declines, resulting in an increase in TD (Moore, 1991). Increased student autonomy is required when there is less structural flexibility and low dialogue in a program. In distance education, a significant amount of effort should be devoted to understanding the characteristics of the learner population, determining the

extent of the structure required in the program, and designing appropriately structured interactions. Learner characteristics should be considered throughout this process, since giving too much autonomy to students who are not very autonomous might cause them to feel uncomfortable (Yılmaz & Keser, 2015). Transactional distance varies from student to student and occurs as a result of the complex interaction among students, their environment, and their behaviour patterns (Moore, 1993).

There are different studies on TD. Mphahlele & Makokotlela's study (2021), they realized the barriers to student participation in open and distance learning within the framework of transactional distance theory and conducted a literature review with a systemic meta-synthesis. Roach & Attardi (2022) made suggestions within the framework of transactional distance theory in order to realize the design, presentation and improvement stages of online course development in the best way. Kara (2022) investigated students' transactional distance perceptions in their online English course and the relationship between these perceptions and learner outcomes. It has been determined that the students' perceptions in terms of TD and learner outcomes are above the middle. In the study of Yılmaz and Yılmaz (2021), the effect of learning analytics-based (LA) feedback on learners' TD and motivation was examined. In the study, it was determined that providing feedback support to learners had an effect on reducing TD and increasing motivation. In the study of Doo et al. (2021), the effect of self-regulation and TD on learning participation in the flipped learning environment was investigated. As a result of the study, the importance of TD in increasing learner participation was emphasized. Batita & Chen (2022), in their study, examined students' transactional distance perceptions. At the end of the study, tarnsactional distance perceptions were refined in terms of dialogue, structure, and learner autonomy and it was determined that age, gender, and program of study had no effect on operational distance perception. In his study, Horzum (2014) studied the change in transactional distance during the three-year education of blended learning students. The study revealed that, according to student perceptions, the dialogue decreased during the teaching process while learner control increased, and that structural flexibility, content organization, and autonomy did not differ significantly. Wheeler (2007) determined that e-mail provided the highest level of immediacy of dialogue for learners. There are some studies that examine the relationship between transactional distance and some variables. Üstün (2021) investigated the relationship between metacognitive awareness during the pandemic period and TD perception. His study found that the level of students' perception of TD was low, and that there was a moderate positive relationship between students' perception of transactional distance and transactional awareness levels. Karakuş et al. (2020) established that there was a positive and strong relationship between the social presence levels of university students and their perceptions of TD. Bayır and Mahiroğlu (2017) examined the effect of students' gender and locus of control as well as their use of chat/e-mail on the transactional distance perception of students studying in online learning environments. Huang et al. (2016) investigated the relationship of environmental factors and demographic characteristics to transactional distance. Karaoglan et al. (2021) examined the effect of using metacognitive feedback on learners' transactional distance and determined that metacognitive feedback support decreased the transactional distance.

This study, on the other hand, was conducted with students who, despite being formal education students, took all their courses in a distance education environment in the first year of their education and continued some of their courses in this way in the second year due to the COVID-19 pandemic. During this process, transactional distance has become more crucial. There is evidence in the literature that low transactional distance has a positive effect on students' learning (Kanuka et al., 2002; Shearer, 2009), increases achievement and student motivation (Horzum, 2007), and ensures the permanence of what is learned (Flowers et al., 2012). Some studies indicate that there is a relationship between student satisfaction and transactional distance (Mbwesa 2014; Paul et al.,2015; Weidlich & Bastiaens, 2018).

Learning is expected to occur by creating the desired behaviours in the educational process. Batista and Cornachione (2005) define perceived learning as students' assessment of their own learning situation. It is known that there are various factors affecting perceived learning. Course content, course structure, rigor and online mentoring–support can be counted among these (Sebastianelli et al., 2015). Also student-teacher interaction (Fredericksen et al., 1999) and student-student interaction (Swan et al., 2000) can affect perceived learning. As a result, a relationship between perceived learning and transactional distance can be thought to exist. Student engagement can be effective in reducing transactional distance (Bolliger & Halupa, 2018). For this reason, synchronous or asynchronous attendance of students to the course, referred to as "course attendance" in this study, is another component that may influence transactional distance. Active, collaborative learning environments created for students will positively affect participation and perceived learning (Laverie, 2006). Such environments, on the other hand, indicate environments that are expected to be created in order to have low transactional distance perception. The willingness of learners to participate in education and enjoying learning activities positively affect learning (Vinuales et al., 2019). Learner engagement is extremely valuable in reducing dropout rates. It is thought that student participation, especially during the pandemic period, may increase graduation ratesand reduce dropout (Banna et al., 2015). For this reason, it is thought that students' perceptions of transactional distance, their participation in the lesson and the learning situations they percived about may be related to each other. Therefore, the study will address the following questions:

1.What are the transactional distance perceptions of formal education students in a blended learning environment?

2.Do students' perceptions of TD differ statistically significantly depending on their gender and department?

3.Is there a statistically significant relationship of students' perceptions of TD to their perceived learning feelings and their attendance?

4.Is there a statistically significant relationship between the sub-dimensions of the TD perception and the sub-dimensions of perceived learning?

METHOD

Research Design

In the study, the transactional distance perceptions, perceived learning status and course attendance status of the students who are formal education students and took all of their 1st year courses and some of their 2nd year courses via distance learning were analyzed. In this study, in which variables related to the specified situation were defined, the correlation model was used as a research method (Karasar, 2015). The data collection process, on the other hand, was carried out by answering the written questions directed to the participants and by a method called survey model, field research or examination method. (Sevinç, 2009).

Study Group

A total of 435 second-year students, studying in the associate degree programs of a state university in Anatolia and taking the "Information Technologies and Applications" course in a distance learning environment, participated in the study. **Table 1**. *Gender and Department of the Students Participating in The Study*

Variable		**n**	**%**
Gender	Female	152	35
	Male	283	65
Department	Computer Programming (CP)	51	12
	Biomedical Device Technology (BDT)	43	10
	Electronics Technology Department (ETD)	61	14
	Map and Cadastre Department (MCD)	40	10
	Construction Technology Department (CTD)	43	10
	Occupational Health and Safety (OHS)	34	8
	Optician Department (OD)	47	11
	Radio and Television Programming (RTP)	42	10
	Management of Health Institutions (MHI)	24	6
	Transport and Traffic Services (TTS)	50	11

Information about the gender and deparmant of the students participating in the study is shown in Table 1.

Research Instruments

To collect data in the study" Perceived Transactional Distance in Blended Learning Environments Scale ", "Perceived Learning Scale" and "Students' attendance schedule" in the student information system of the school were used.

This scale was developed by Horzum (2011). The scale, which consists of 38 items, has a 5-point Likert structure. It consists of a total of five sub-factors: Autonomy, Dialogue, Content Organization, flexibility of structure, and control. As a result of the analysis, the fit indices of the developed scale were x2=907.01 (sd= 653, p= .000), x2/sd= 1.39, CFI= .98, RMR= .07, SRMR= .05, RMSEA= .045, NNFI= .98 NFI= .93) and internal consistency coefficient was .92. It was determined that the fit indices and reliability level of the scale were between acceptable values (Horzum, 2011).

For perceived learning, the scale developed by Rovai et al., (2009) and adapted into Turkish by Albayrak et al. (2014) was used. Consisting of 9 items, the scale consists of three sub-factors: cognitive, psychomotor and affective. The attendance chart is the chart showing that the student attends the course if the student enters the distance learning environment where the course is given.

Ethic

This article was found ethically appropriate with the decision number 115/06 of the scientific research and publication ethics committee of Isparta University of Applied Sciences on 01.08.2022.

FINDINGS

Table 2 shows the descriptive statistics regarding transactional distance perceptions of formal associate degree students who later continued to study in blended education.

Table 2. *Scores for Students' Perceptions of Transactional Distance*

Sub-dimension	N	Min	Max	$\bar{X}$	SS
Dialogue	435	8	40	30.70	7.60
Flexibility of structure	435	8	35	28.51	4.88
Content organization	435	8	40	31.85	6.14
Control	435	9	30	23.57	4.80
Autonomy	435	13	45	34.64	7.15

Table 2 shows that each sub-dimension score is higher than the average. Therefore, one can argue that perceptions of transactional distance were not high, and also that the students found their level of dialogue, flexibility of structure, individual control abilities, and level of autonomy above average and their views on the content organization were positive.

Table 3 and Table 4 show whether the students' perceptions of transactional distance differ by gender and department. The change according to gender was analysed using independent sample t-test, while the change according to department was analysed using ANOVA test.

Table 3. *T-Test Analysis of The Change in The Students' Perceptions of TD According to Gender*

Sub-dimension	Cinsiyet	n	$\bar{X}$	SS	sd	t
Dialogue	Erkek	283	30.92	7.46	433	.832
	Kadın	152	30.28	7.85		
Flexibility of structure	Erkek	283	28.63	5.01	433	.664
	Kadın	152	28.30	4.63		
Content organization	Erkek	283	31.80	6.38	433	.268
	Kadın	152	31.96	5.68		
Control	Erkek	283	23.70	4.87	433	.740
	Kadın	152	23.34	4.66		
Autonomy	Erkek	283	34.98	7.27	433	1.243
	Kadın	152	34.09	6.90		

Table 3 shows whether the sub-dimensions of transactional distance perceptions differ according to student's gender. The results of the analysis showed that the students' perceptions of dialogue ($t(433)= .832$), flexibility of structure ($t(433)= .664$), content organization ($t(433)= .268$), control ($t(433)= .740$)

and autonomy (t(433)= 1.43) did not differ significantly according to their gender (p>.05).

In the study, there were a total of 433 students studying in ten different departments. ANOVA test was applied to determine whether the department of the students constituted a difference in the perceptions of transactional distance. The result of the analysis showed that there were no significant differences in "flexibility of structure", "content organization", "control", and "autonomy". A significant difference was determined in "dialogue", and a post-hoc comparison was made with the Scheffe test as shown in Table 4 to determine between which departments the difference was.

Table 4. *The Difference in Dialogue According to the Departments*

Sub-dimension	Department	N	($\bar{X}$)	SS	F	p	Significant Difference
Dialogue	CP	51	28.14	8.13	3.124	.001	CP/ TTS
	BDT	43	32.23	6.79			
	ETD	61	32.15	8.17			
	MCD	40	32.35	7.30			
	CTD	43	32.16	6.10			
	OHS	34	29.06	6.99			
	OD	47	28.79	7.21			
	RTP	42	29.17	7.44			
	MHI	24	28.17	9.95			
	TTS	50	33.04	6.43			

Table 4 shows that there was a significant difference between the distance perceived by Computer Programming (CP) students and the students of Transport and Traffic Services (TTS) in "dialogue". The perception of dialogue was higher in the students studying in the department of Transport and Traffic Services ($\bar{X}$=33.04) than the students studying in the department of Computer Programming ($\bar{X}$=28.14).Pearson correlation test was performed to determine whether there was a significant relationship of the students' perceptions of TD to their perceived learning feelings and class attendance.

Table 5. *Correlations of the Perceptions of TD to the Perceived Learning Scores and Course Attendance*

Variables	n	$\bar{x}$	ss	1	2	3
1-Perceptions of transactional distance	435	149.30	9.15	-	.731**	-.002
2- Perceived learning	435	45.62	26.74	.731**	-	.061
3- Course attendance	435	2.02	.817	-.002	.061	-

**p<.01

According to the results of Pearson correlation analysis (r=.731, p<.01), there was a significant positive relationship between perceived learning and perceptions of transactional distance (Table 5). However, there was no significant relationship between the perception of TD and course attendance (r=-.002, p>.01).

Table 6. *Correlations Between the Sub-Dimensions of the TD Scale and The Sub-Dimensions of the Perceived Learning Scale*

Variables	1	2	3	4	5	6	7	8
1- Dialogue	-	.701*	-.718*	.644*	.614*	.521*	.591*	.470*
2- Flexibility of structure	.701*	-	.809*	.668*	.675*	.484*	.600*	.434*
3- Content organization	.718*	.809*	-	.726*	.741*	.511*	.664*	.442*
4-Control	.644*	.668*	.726*	-	.785*	.537*	.661*	.448*
5- Autonomy	.614*	.675*	.741*	.785*	-	.541*	.666*	.443*
6- Cognitive learning	.521*	.484*	.511*	.537*	.541*	-	.653*	.689*
7- Affective learning	.591*	.605*	.664*	.661*	.666*	.653*	-	.627*
8- Psychomotor. learning	.470*	.434*	.442*	.448*	.443*	.689*	.627*	-

Table 6 shows that each of the sub-dimensions of transactional distance perception and the sub-dimensions of the perceived learning scale were in a significant and positive relationship with each other. There was a strong positive relationship between “content organization”, “control”, and “autonomy”, which are among the sub-dimensions of transactional distance perception, and “affective learning”, which is one of the sub-dimensions of the perceived learning scale. The relationship of all dimensions with each other except these dimensions was moderate.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

In the research, the transactional distance perception of a total of 435 students who, despite being formal education students, took all their courses in a distance education environment in the first year of their education and continued some of their courses in this way in the second year due to the COVID-19 pandemic. The study examined transactional distance perceptions according to demographic characteristics, as well as the relationship of the TD perceptions of the students to their perceived learning and course attendance.

The analysis found that the students' perceptions of transactional distance were not high. One could argue that long-term use of a distance learning environment during the pandemic affected students' readiness and their acceptance of the environment. This impact may have reduced the perception of transactional distance. It can also be suggested that the instructors must have made the necessary arrangements in order to meet the demands of the changing environment. Similarly, there are studies in which transactional distance was moderate (Bolliger & Halupa, 2018; Karakuş et al., 2020) and low (Gavrilis et al., 2020; Üstün 2021). According to the study of Calderón-Garrido et al. (2021), it was seen that there are teachers who use different applications to communicate with their students. In this process, it has been seen that there are uses such as Whatsapp, Zoom, Google Classroom, MS Teams, eMail in different studies (Alper, 2020; Bahasoan et al.,2020; Munir et al., 2021). This situation suggests that the effort made to communicate with students during the pandemic process is reflected in the perception of TD. In Kara's (2021) study, it was determined that the highest average score regarding TD between Learner and Teacher. In the study of Batita & Chen (2022), it was determined that the transactional distance between the

learner and the teacher was the highest, and the distance between the learner and the learner was the lowest. When the total transactional distance score was examined, it was seen that it was not as high as this study.

The study shows that the students' perceptions of TD do not differ according to gender. Both male and female students' perceptions of the TD were not high. Similarly, there are studies in which gender does not pose a significant difference (Bayır & Mahiroğlu, 2017; Batita & Chen, 2022; Bolliger ve Halupa, 2018; Horzum, 2011; Horzum, 2015; Huang et al., 2016; Karakuş & Yanpar-Yelken 2020; Lenear 2006; Rabinovich, 2009; Üstün, 2021; Vasiloudis et al. ,2015). According to Gavrilis et al. (2020), on the other hand, men's perceptions of transactional distance are lower.

This study included students from ten different departments and examined the differences in students' perceptions of TD according to their departments. Although the study included students from various departments, there was a significant difference only in students' perceptions of dialogue studying "Computer Programming" and "Transport and Traffic Services". The perceptions of dialogue of "Transportation and Traffic Services" students were higher than those of "Computer Programming" students. This could indicate that "Transport and Traffic Services" students are more communicative. Üstün's (2021) study revealed that the transactional distance perceptions of the students studying "Computer Technology and Information Systems" were significantly lower than those studying "Recreation". Similarly, Kara's (2021) study showed that learning outcomes expressed by perceived learning and perceived satisfaction were quite close to TD.

This study shows that there was a significant and positive relationship between students' transactional distance perceptions and perceived learning scores. This suggests that the decrease in transactional distance could be related to the increase in students' learning and the ability to achieve learning goals (Bolliger & Halupa, 2018; Garrison & Cleveland-Innes 2005; Zhang 2003). It has been observed that there has been an increase in the learning skills of students who participated in online education during the Covid 19 process. According to the Chand et al. (2022) study, students also realized different learnings in this process, such as producing videos, making video presentations, and watching videos over and over to clarify the course content. It is thought that learning is also reflected in transactional distance perceptions. The study also indicates that each of the sub-dimensions of transactional distance perception and the sub-dimensions of the perceived learning scale had significant and positive relationships with each other. There was a positive significant relationship between "content organization", "control", and "autonomy", which are variables in the perception of transactional distance, and "affective", which is a variable in the perceived learning scale; the relationship among all other sub-dimensions was moderate.

There was no significant relationship between the perception of TD and course attendance. In contrast, Bolliger & Halupa (2018) determined that student engagement increases as the transactional distance decreases. Doo et al. (2021) revealed that there was a relationship between transactional distance and learning engagement. However, both studies discussed "engagement" in terms of cognitive, affective, and behavioural dimensions rather than classroom presence. In this study, students' class attendance refers to students' watching videos during or after the lesson. Therefore, this study does not have the same

properties as the other studies.

This study suggests the following:

Efforts can be made to raise teacher awareness in order to reduce the perception of transactional distance. Studies on increasing students' perceptions of learning can be conducted for this purpose. An environment in which interaction is increased can be provided in order to reduce students' perceptions of transactional distance. Activities can be held in cooperation with other students. Asynchronous sharing can be achieved by using environments such as forums and discussion panels. Later studies can assess the extent of engagement in greater depth rather than just class attendance and look into its relationship with the perception of transactional distance again.

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GENİŞLETİLMİŞ ÖZET

Giriş: Etkileşim uzaktan eğitim ortamında son derece önemli bir kavramdır. Etkileşimdeki niteliğin bilgiyi yapılandırılmaki değeri (Anderson, 2003) öğrenci başarındaki etkiye işaret etmektedir. Moore (1972) uzaktan eğitimde etkileşim ile ilgili olarak İşlemsel Uzaklık Teorisini (Transactional Distance Theory-TD) tanımlamış ve psikolojik ve iletişimsel mesafe olarak değerlendirmiştir. İşlemsel uzaklığın diyalog, yapı ve öğrenci özerliği olmak üzere üç bileşeni bulunmaktadır (Moore, 1997). Diyalog, öğrenci-öğrenci ya da öğrenci- öğretmen iletişimi sürecinde bilgi, duygu ve düşünce paylaşımlarıyla bireylerin birbirlerini etkileme süreci olarak ifade edilmektedir (Moore ve Kearsley, 2011). Yapı, programın eğitim hedefleri, öğretim stratejileri ve değerlendirme yöntemlerinin esnekliğini belirtmektedir. Eğitim programının bireysel öğrenci ihtiyaçlarını karşılayabilmesini açıklamaktadır. Bir programda yapılandırma düzeyi yüksek ve öğrenci-öğretmen diyalogu düşük ise işlemsel uzaklık yüksektir (Moore, 1997). Öğrenen özerliği, öğrencilerin öğrenme planlarını kendilerinin yapması, öğrenirken kullanacakları kaynakları belirleyerek kullanması ve öğrenme durumlarını değerlendirmesi anlamına gelmektedir (Rogers,1969). Bu üç bileşen uygun şekilde düzenlenirse işlemsel uzaklığın azalıacağı ifade edilmektedir. Örneğin bağımsız öğrencilerin az diyalog ve az yapıya sahip programlarda daha rahat oldukları görülmüştür (Moore, 1997).

Etkileşimde etkisi olduğu düşünülen değişkenlerden bir diğeri derse devam durumudur. Öğrencilerin derste bulunması etkileşimin başlaması için önemli görülmektedir. Bunun yanı sıra öğrenci-öğretmen etkileşimi (Fredericksen vd.,1999) ve öğrenci-öğrenci etkileşiminin (Swan vd.,2000) algılanan öğrenmeyi etkilediği belirlenmiştir. Öğrencilerin kendi öğrenme durumunu değerlendirmesi algılanan öğrenme olarak ifade edilmektedir (Batista ve Cornachione, 2005). Etkileşim ile ilişkili olan bir çok bileşen bulunmaktadır. İşlemsel uzaklık algısı, derse devam ve algılanan öğrenme bu bileşenler arasında yer almaktadır. Bu nedenle yapılan çalışmada aşağıdaki sorular incelenmiştir.

1. Örgün eğitim öğrencisi olup karma eğitim sürecinde bulunan öğrencilerin işlemsel uzaklık algıları nasıldır?

2. Öğrencilerin TD'ları cinsiyetlerine ve bölümlerine göre anlamlı farklılık göstermekte midir?

3. Öğrencilerin işlemsel uzaklık algılarıyla algılanan öğrenme duyguları ve derse devam durumları arasında anlamlı bir ilişki bulunmakta mıdır?

4. İşlemsel uzaklık algısı alt faktörleri ile algılanan öğrenme alt faktörleri arasında anlamlı bir ilişki bulunmakta mıdır?

Yöntem

Araştırma Modeli: Çalışmada örgün eğitim öğrencisi olan ve 1. sınıftaki derslerinin tamamını 2. sınıftaki derslerinin ise bir kısmını uzaktan eğitim ile alan öğrencilerin işlemsel uzaklık algıları, algılanan öğrenme durumları ve derse devam durumları tarama modeli ile analiz edilmiştir.

Çalışma Grubu: Çalışmaya Anadolu'da bulunan bir devlet üniversitesinin önlisans programlarında okuyan, "Bilişim Teknolojileri ve Uygulamaları" dersini uzaktan eğitim ortamında alan toplam 435 ikinci sınıf öğrencisi katılmıştır.

Veri toplama araçları: Çalışmada veri toplamak için Horzum (2011) tarafından geliştirilen, 38 maddeden oluşan "Karma Öğrenme Ortamlarında Algılanan Uzaklık Ölçeği", Rovai vd.,(2009) tarafından geliştirilen ve Albayrak vd.(2014) tarafından Türkçe'ye uyarlanan "Algılanan Öğrenme Ölçeği" ve okulun öğrenci bilgi sisteminde yer alan "öğrencilerin derse devam çizelgesi" kullanılmıştır.

Bulgular: Araştırma bulgularına göre öğrencilerin işlemsel uzaklık algılarının yüksek olmadığı belirlenmiştir. Öğrencilerin diyalog düzeylerini, yapı esnekliğini, bireysel kontrol kabiliyetlerini, özerlik düzeylerini ortalamanın üstünde buldukları ve içerik organizasyonuna karşı görüşlerinin olumlu olduğu ifade edilebilir. Analiz sonuçları, öğrencilerin diyalog ($t_{(433)}$= .832), yapı esnekliği ($t_{(433)}$= .664), içerik organizasyonu ($t_{(433)}$= .268), kontrol ($t_{(433)}$= .740) ve özerklik ($t_{(433)}$= 1.43) algılarının cinsiyetlerine göre anlamlı bir farklılık göstermediği belirlenmiştir. Bilgisayar Programcılığı bölümünde okuyan öğrencileri ile Ulaştırma ve Trafik Hizmetleri bölümünde okuyan öğrencilerinin diyalog alt boyutunda algıladıkları uzaklığın farklılık gösterdiği belirlenmiştir. Ulaştırma ve Trafik Hizmetleri bölümünde okuyan öğrencilerin diyalog algılarının daha yüksek olduğu görülmüştür. Öğrencilerin algılanan öğrenme ve işlemsel uzaklık algıları arasında anlamlı ve olumlu bir ilişki olduğu belirlenmiştir. İşlemsel uzaklık algıları ile derse devam durumları arasında ise anlamlı bir ilişki bulunmamaktadır. Ayrıca işlemsel uzaklık algısının alt boyutları ve algılanan öğrenme ölçeğinin alt boyutlarının her birinin birbiri ile anlamlı ve olumlu ilişki içinde olduğu belirlenmiştir.

Sonuç ve Öneriler: Araştırmada Covid-19 nedeni ile örgün eğitim öğrencisi olmasına rağmen birinci sınıfta bütün derslerini uzaktan eğitim ortamında almış, ikinci sınıfta ise bazı derslerine bu şekilde devam etmiş toplam 435 öğrencinin işlemsel uzaklık algısı belirlenmiştir. İşlemsel uzaklık algıları demografik özelliklere göre incelenmiş ve öğrencinin işlemsel uzaklık algıları ile algılanan öğrenme ve derse devam durumlarının birbiriyle olan ilişkisi araştırılmıştır. Analizler sonucunda öğrencilerin işlemsel uzaklık algılarının yüksek olmadığı görülmüştür. Salgın hastalık döneminde uzun bir süre uzaktan eğitim ortamının kullanılmasının, öğrencilerin hazırbulunuşluklarında ve ortamı kabullenmelerinde etkisinin olduğu düşünülmektedir. Çalışmada

öğrencilerin işlemsel uzaklık algılarının cinsiyete göre farklılaşmadığı görülmüştür. Hem erkek hem de kadın öğrencilerin işlemsel uzaklık algılarının yüksek olmadığı belirlenmiştir. Çalışmaya on farklı bölümden öğrenci katılımı bulunmaktadır. Öğrencilerin bölümlerine göre işlemsel uzaklık algılarındaki farklılık incelenmiştir. Çok farklı bölümden öğrenci olmasına rağmen sadece diyalog alt boyutunda "Bilgisayar Programcılığı" ile "Ulaştırma ve Trafik Hizmetleri" bölümünde okuyan öğrencilerin algılarında farklılık görülmüştür. Bu durum Ulaştırma ve Trafik Hizmetleri öğrencilerinin iletişime daha açık olduklarını düşündürmektedir. Öğrencilerin işlemsel uzaklık algıları ile algılanan öğrenme puanları arasında anlamlı ve olumlu bir ilişki görülmüştür. İşlemsel uzaklık algısı ile derse devam arasında ise anlamlı bir ilişki bulunmamıştır. Bunun nedeni çalışmada derse devam durumunun öğrencinin sadece ders esnasında ya da ders sonrasında videoyu takip etmesi olarak değerlendirilmiş olmasına olabilir. Bu nedenle daha sonra yapılacak çalışmalarda derse katılım boyutunun, sadece derse devam olarak değil daha detaylı bir şekilde değerlendirilerek işlemsel uzaklık algısı ile olan ilişkinin tekrar incelenmesi önerilmiştir.