

STUDIES ON UNIVERSITY STUDENT ATTITUDE IN DISTANCE EDUCATION: A SYSTEMATIC REVIEW

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Abstract: *In recent years, with the digital transformation, distance education has become a frequently preferred education option. In addition to technological elements, student and teacher factors are very important in distance education. In this study, a systematic review of studies investigating the attitudes and behaviors of university students in distance education was made. Prisma 2020 checklist was followed while reviewing studies. As a result of the reviews, 38 publications were included in this research. In the research, answers to 5 basic questions were sought. The studies compiled according to the researched subjects, the countries conducting the research, the year, the method used, and the data collection methods were listed. In conclusion, the most studied subject among the studies investigating student attitudes toward distance education was online education adopted. The year with the most publications was in the year 2020. This research is a useful guide for studies that want to study student attitudes in distance education.*

Keywords: *distance education; students' attitude; online learning.*

Introduction

Societies are experiencing digital transformation in many areas with the rapid progress of technological developments. Distance education is one of the important indicators of the digital transformation in education. It has been defined as the physical separation of the learner and the teacher in a separate place. (Simonson et al., 2019) In addition to traditional education, the fact that there is a physical separation in distance education has also caused many differences in the education period. Distance education has advantages and disadvantages for students and teachers. Researchers have conducted research in many areas of distance education. Student attitude, faculty management

skills, and the involvement of external stakeholders in the process of distance education are considered very important for the accurate realization of knowledge management and increasing quality (Markova et al., 2017). The Covid-19 period, which took place in the past years, has forced students to study with distance education. In a study emphasizing the importance of students' perspectives on distance education, it was seen that many factors such as computer self-efficacy, student interest, and behavior are related to this field (Sendogdu & Koyuncuoglu, 2021). This study is aimed to present the literature studies on the feelings, attitudes, and behaviors of university students toward distance education as a systematic review. Since distance education is a new field with digital transformation, it has been a matter of curiosity for this study in which fields researchers investigating students' emotions and attitudes work. Considering the spread of distance education, the importance of this review comes to the fore in terms of the analysis of the subjects that can be studied on student attitude. Only English articles and book chapters were included in this research. This systematic review was made in accordance with the Prisma 2020 checklist (Page et al., 2021). It consists of introduction method findings and discussion sections. The research includes research questions. Findings will be compiled according to research questions.

Method

While searching the literature, it was noticed that the titles of the publications were not always sufficient to understand the content. After that, each study was analyzed in detail and it was decided whether it was suitable for this systematic review.

1.1. Research Questions

The following questions were included in this research.

Q1: What is the most common year of publication in research on student attitude toward distance education?

Q2: What is the name of the country with the most publications in research on student attitude toward distance education?

Q3: What is the most studied subject in research on student attitude toward distance education?

Q4: What is the most frequently applied method in research on student attitude toward distance education?

Q5: What is the most frequently used data collection method in research on student attitude toward distance education?

1.2. Design

Inclusion and Exclusion Criteria

In the literature review, it has been observed that there are many publications related to distance education. These publications were eliminated according to certain criteria. PubMed, ScienceDirect, Eric, and Google Scholar databases were used in the search. Studies published between 2013-2023 were examined. As a result of the searches made with the keywords "distance education university student", and "online education university student", an average of 30,000 articles were listed. These studies were listed in order of relevance. The last search was done on 20 May 2023. The fact that a study was carried out in distance education, that it was studied with university students, and that it had student attitude-oriented measurements was an important determinant for its inclusion in research. The inclusion criteria for the publications included in this study are summarized in Figure 1.

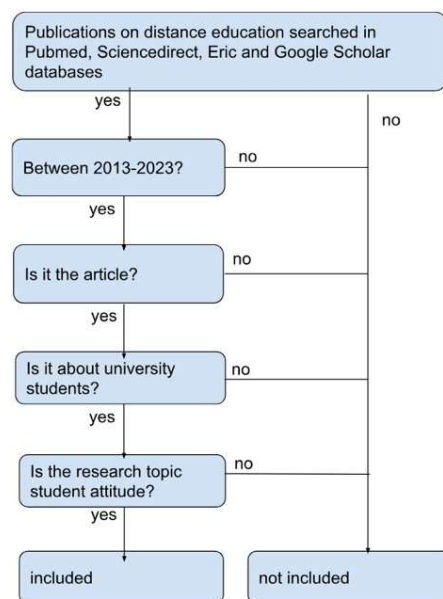


Figure 1 The inclusion criteria for the publications

Data Collection and Analysis

The number of publications was reduced to 90 by examining the compatibility of the subject title and summary, and the number of publications was limited to 38 by examining the final review and its compatibility with the subject in detail. Each study was reviewed by two authors to finalize the studies to be included in this review. A table has been created to evaluate the publications for this study's subject.

Publications' pieces of information have been added to the table according to the criteria of year, country, subject, relative variables, data collection method, and measurement tools. This table has been very decisive to see the relevance of the study to the subject.

Article	Year	Country	Subject	Relative Variables	Method	Data Collection
(Wang et al., 2013)	2013	USA	Academic performance	Characteristics of students, self-regulated learning, technology self-efficacy	Quantitative-statistics	Survey
(Cho & Shen, 2013)	2013	USA	Academic performance	Intrinsic goal orientation and academic self-efficacy	Quantitative-statistics	Survey
(Kuo et al., 2014)	2014	USA	Satisfaction	Learner-instructor interaction, learner-content interaction, technology self-efficacy, self-regulation	Quantitative-statistics	Survey
(GOULIMARIS, 2015)	2015	Greece	Motivation	Satisfaction	Quantitative-statistics	Survey
(M. Zhou, 2016a)	2016	China	Online education adopted	Behavior control, self-determination	Quantitative-statistics	Survey
(KWAH & ...)	201	Ghana	Stress	-	Quantitative	Survey

ESSILFIE, (2017)	7				ve- statistics	
(Fojtik, 2018)	2018	Czech Republic	Academic performan ce	Abilities to manage studies	Quantitati ve- statistics	Survey
(HARSASI & SUTAWIJAY A, 2018)	2018	Endonesi a	Satisfactio n	Educational quality, visual quality, ease of use, student- instructor interaction	Quantitati ve- statistics	Survey
(Bryan et al., 2018)	2018	Omaha	Online education adopted	Student- instructor interaction, student- student interaction	Quantitati ve- statistics	Survey
(Pilkington, 2018)	2018	South Africa	Motivatio n	Gamificatio n	Quantitati ve- statistics	Survey
(Neroni et al., 2019)	2019	Netherla nds	Academic performan ce	Learning strategy	Quantitati ve- statistics	Survey
(Madge et al., 2019)	2019	South Africa	Using social media	Using WhatsApp	Mix method	Survey and interview
(Ajmal et al., 2019)	2019	Pakistan	Anxiety	Academic performance	Quantitati ve- statistics	Survey
(Alqurashi, 2019)	2019	Russia	Satisfactio n	Learner- instructor interaction, learner- content interaction, learner- learner instruction, learner self- efficacy	Quantitati ve- statistics	Survey

(Villegas-Ch et al., 2020)	2020	Spain	Education improvement	Artificial assistant suggestion to the student	Quantitative-machine learning	Survey
(Tümen Akyıldız, n.d.)	2020	Turkey	Online education adopted	Time management, motivation and interaction	Qualitative	Focus group discussion technique
(Fidalgo et al., 2020)	2020	United Arab Emirates	Online education adopted	Time management, motivation, and language skills	Quantitative-statistics	Survey
(Lembani et al., 2020)	2020	South Africa	Online education adopted	Access to technology and digital divide	Quantitative-statistics	Survey
(Hebebcı et al., 2020)	2020	Turkey	Online education adopted	Access to technology and interaction	Qualitative	Structured interview forms
(Arthur-Nyarko et al., 2020)	2020	Ghana	Challenges of distance education	Technological self-efficacy, financial situation, smartphone requirement	Quantitative-statistics	Survey
(Rotas Cahapay, n.d.)	2020	Philippine	Challenges of distance education	Technological self-efficacy, financial situation, household responsibilities, technological	Mix method	Survey

				capability, interaction		
(Kedra & Kaltsidis, 2020)	2020	Greece	Online education adopted	Learner-instructor interaction, academic capacity and learner emotions	Qualitative	Survey
(Yılmaz İnce et al., 2020)	2020	Turkey	Online education adopted	Technological capability	Quantitative-statistics	Survey
(Ho et al., 2021)	2021	China	Satisfaction	Instructor effort	Quantitative-machine learning	Survey
(Akour et al., 2021)	2021	United Arab Emirates	Online education adopted	Academic anxiety stress family	Quantitative-machine learning	Survey
(Rehab, 2021)	2021	Egypt	Test anxiety	General anxiety, life satisfaction	Quantitative-statistics	Survey
(Bataineh et al., 2021)	2021	Jordan	Online education adopted	Satisfaction, challenges of distance education	Mix method	Survey and semi structured interview
(Lee et al., 2021)	2021	United Kingdom	Satisfaction	Learner-instructor interaction	Quantitative-statistics	Survey
(Markova, 2021)	2021	Russia	Challenges of distance education	Technological capability, motivation, learner-instructor interaction,	Quantitative-statistics	Survey

				learner-learner interaction, quality of education and satisfaction		
(Gan & Sun, 2021)	2021	USA	Digital divide	Technological capability	Qualitative	Survey
(Di Giacomo & Di Paolo, 2021)	2021	Italy	Satisfaction	Interaction	Quantitative-statistics	Survey
(Cicha et al., 2021)	2021	Poland	Online education adopted	Technological anxiety, learner self-efficacy	Quantitative-statistics	Survey
(Alhazmi, 2022)	2022	Saudi Arabia	Challenges of distance education	Technological capability, education quality, health problems and ethical issues	Quantitative-machine learning	Survey
(Turan et al., 2022)	2022	Turkey	Satisfaction	Flexibility, self-regulated effort	Quantitative-statistics	Survey
(Šorgo et al., 2022)	2022	Slovenia	Stress	Satisfaction	Quantitative-statistics	Survey
(Zhang et al., 2023)	2023	China	Academic performance	Self-efficacy, academic commitment	Quantitative-statistics	Survey
(Lamanauskas & Makarskaitė-Petkevičienė, 2023a)	2023	Lithuania	Online education adopted	Quality of education	Mix method	Interview

(M. Zhou, 2016b)	2023	USA	Motivation	Self-determination	Quantitative-statistics	Survey
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2. Findings

The findings are listed as follows according to the questions examined by the research. Microsoft Excel program was used while creating the charts.

Q1: What is the most common year of publication in research on student attitude toward distance education?

While the number of publications increased slowly after 2017, it increased rapidly as of 2020. It is seen in figure 2 that while there are publications in 2021, there is a decrease in the number of publications in 2022 and 2023.

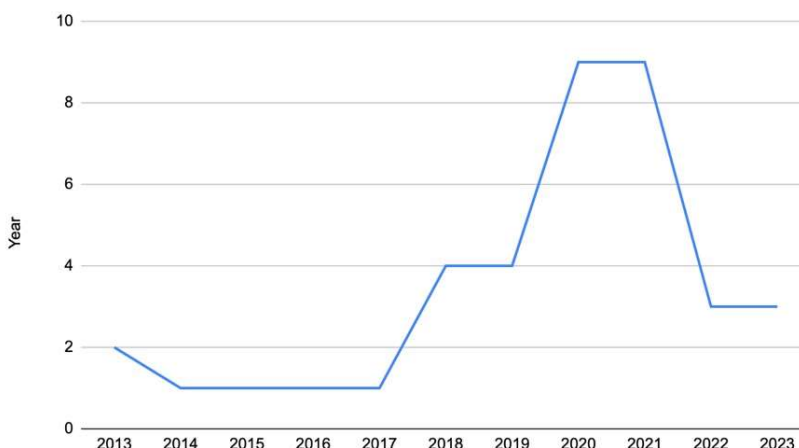


Figure 2 Studies on student attitude on distance education by years

Q2: What is the name of the country with the most publications in research on student attitude toward distance education?

In figure 3, When the publications investigating student attitudes in distance education are listed by country, there are 23 different countries. Especially, the USA is the most studied country. Names of other countries: Greece, China, Ghana, Czech Republic, Indonesia, Omaha, South Africa, Netherlands, Pakistan, Russia, Spain, Turkey, United Arab Emirates, Philippines, Egypt, Jordan, United Kingdom, Italy, Poland, Saudi Arabia, Slovenia, Lithuania.

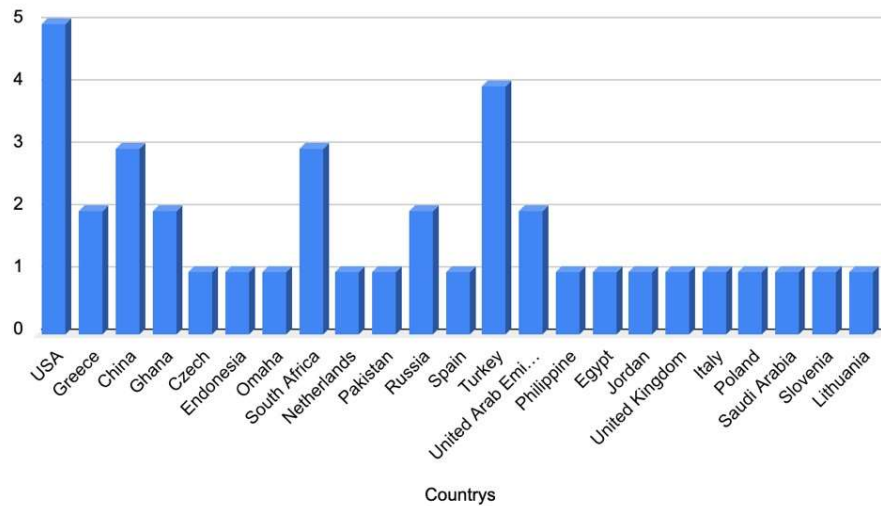


Figure 3 Studies on student attitude toward distance education by countries

Q3: What is the most studied subject in research on student attitude toward distance education?

Online education adopted has been another frequently studied topic. The subjects studied in studies on student attitude toward distance education are as follows in Figure 4: academic performance, satisfaction, motivation, Online education adopted, stress, using social media, anxiety, education improvement, challenges of distance education, test anxiety, and digital divide.

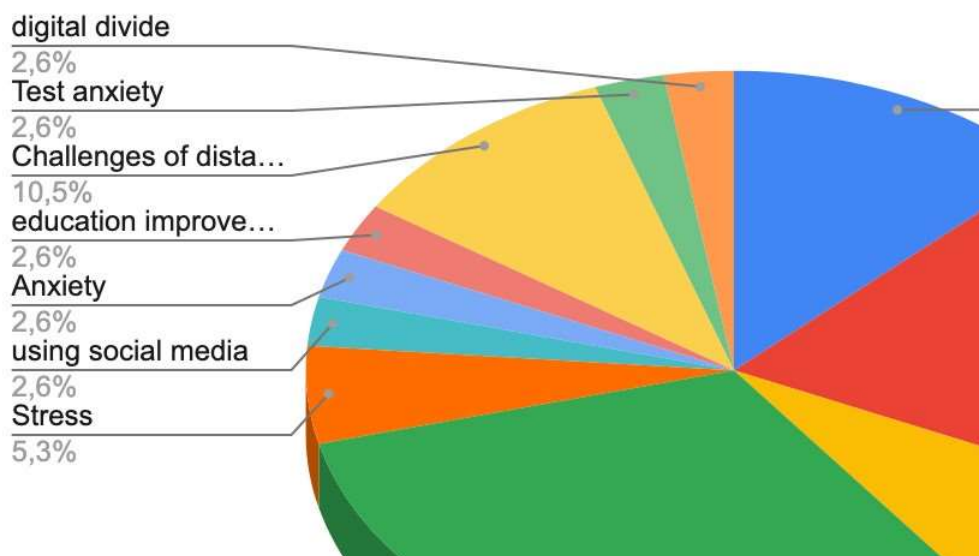


Figure 4 Studies on student attitude toward distance education by subject

Q4: What is the most frequently applied method in research on student attitude toward distance education?

Studies investigating student attitudes and behaviors in distance education have mostly used studied quantitative-statistical methods with a rate of 68.4% in Figure 5. The other methods used in the publications are seen as quantitative-machine learning, qualitative, or mixed methods, each with a rate of 10.5%.

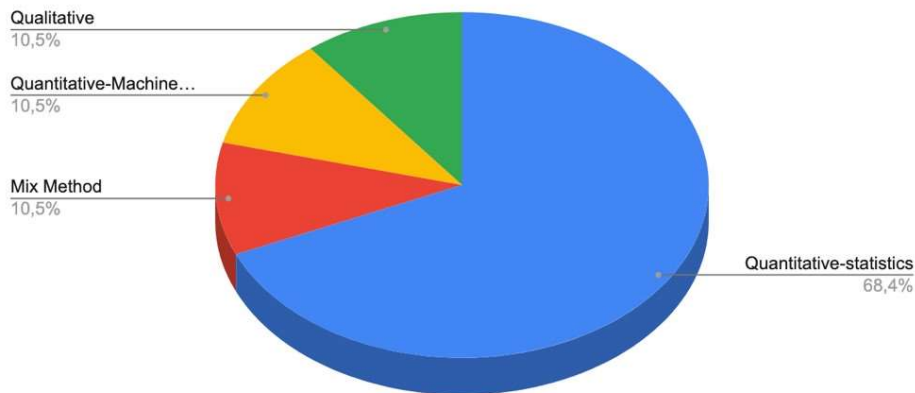


Figure 5 Studies on student attitude toward distance education by the methods

Q5: What is the most frequently used data collection method in research on student attitude toward distance education?

According to Figure 6, the survey was the most important data collection method with 86.6% of the studies on student attitude toward distance education. Other data collection methods are seen as focus group discussion techniques, structured interview forms, survey and semi-structured interviews, and Interviews, each with a rate of 2.6%.

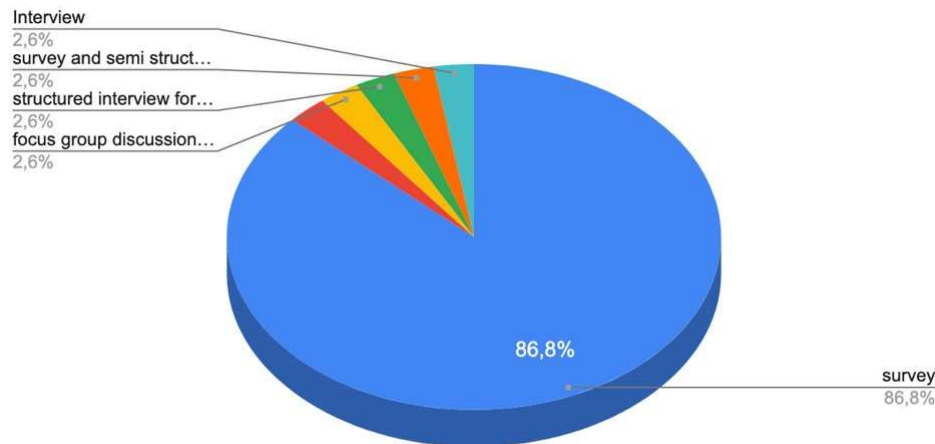


Figure 5 Studies on student attitude toward distance education by data collection methods

The studies on student attitude in distance education have been filtered according to the subject and classified as follows.

Online education adopted

Distance education has existed for many years, but students can be resistant to it for various reasons. In this context, the decision to use distance education has been widely studied. Zhou et al. examined students' intention to use distance education for planned behavior theory and self-determination and shared the conclusion that the findings include connectivity (M. Zhou, 2016a). According to a study conducted in South Africa, the digital divide, and technological inadequacies negatively affected students' decision to use distance education (Lembani et al., 2020). In a study conducted in Omaha, it was revealed that students' participation in distance education is related to learner-instructor interaction and learner-learner interaction (Bryan et al., 2018). During the Covid-19 period, there are many studies on student attitudes toward distance education. In a study conducted during the Covid-19 period, while anxiety, hopelessness, and lack of interaction were negative effects on students' decisions to use distance education, flexibility in time and place was seen as a positive effect (Tümen Akyıldız, n.d.). In another study conducted with students studying in Portugal, The United Arab Emirates, and Ukraine, time management, motivation, and English language skills negatively affected students' decision to use distance education (Fidalgo et al., 2020). In the publication examining the views of students on distance education in Turkey during the Covid-19 period, technological

inadequacy and limited interaction negatively affected the use of distance education tools (Hebebe et al., 2020). The interaction of students with the instructor, their academic qualifications, and their emotional state affected their intention to use distance education in a study that took place in Greece during the Covid-19 pandemic (Kedra & Kaltsidis, 2020). Yılmaz et al have concluded that students' technological competencies negatively affected their intention to use distance education (Yılmaz İnce et al., 2020). Researchers, which aims to predict students' intention to use mobile learning platforms, with machine learning methods, the effects of factors such as fear of low grades, family conditions, stress and loss of friends, and sadness in students were observed on their intention to use mobile learning platforms (Akour et al., 2021). According to a study conducted with students studying in Jordan, it was concluded that students' dissatisfaction with distance education and technological inadequacy affect their decision to use distance education tools (Bataineh et al., 2021). In research conducted with students living in Poland during the Covid 19 pandemic, it was concluded that technological anxiety and self-efficacy were effective in the decision to use distance education tools (Cicha et al., 2021). The quality of education has been highly effective in student participation in the course through distance education (Lamanauskas & Makarskaitė-Petkevičienė, 2023b).

Satisfaction

Satisfaction is the second most frequently studied subject. It has been examined a lot of variables that affect satisfaction as well as student satisfaction. In a study investigating the predictors of satisfaction in distance education for university students studying in Indonesia, it was seen that the quality of education, the ease of use of the interface, and the student-instructor interaction affect satisfaction (Harsasi & Sutawijaya, 2018). Alqurashi has investigated student satisfaction and learner-student interaction, learner self-efficacy, and learner-content interaction, He has concluded that these predictors are closely related to satisfaction. The study emphasized the need for a detailed examination of the reasons why the learner-student interaction is determinant (Alqurashi, 2019). In research investigating the predictors of satisfaction in online learning, it was concluded that while student-teacher interaction and learner-content interaction were seen as important factors, the learner-learner interaction had no effect (Kuo et al., 2014). Researchers, which carried out a student satisfaction estimation study with machine learning during the Covid-19 period, have concluded that the teacher's effort was an important predictor of

satisfaction (Ho et al., 2021). In another study investigating the distance education perspective of students during the Covid 19 period through satisfaction, it was concluded that satisfaction is related to instructor communication (Lee et al., 2021). They investigated students' perceptions of distance education through satisfaction; it was observed that students reported less interaction with the instructor and less distraction (Di Giacomo & Di Paolo, 2021). Turan et al., investigating the predictors of satisfaction in distance education shared the conclusion that the variables of gender, self-regulated effort, and flexibility have a positive effect on satisfaction (Turan et al., 2022).

Academic Performance

Academic performance studies are always included in publications on students in education. For distance education, studies have been conducted that measure the value of academic performance and examine the relationship between academic performance and many other variables. In research examining the factors affecting the academic success of students in distance education, it was concluded that a student's character, self-regulated learning, and technological competence are directly related to academic success (Wang et al., 2013). According to a study examining the variables affecting academic success in online learning, it was concluded that student internal goal orientation and academic self-efficacy are of great importance for academic success (Cho & Shen, 2013). A study investigating the advantages and disadvantages of distance education compared distance education and traditional education and concluded that students' ability to manage their studies is effective in student academic success in distance education (Fojtik, 2018). Neroni et al., have examined the relationship between academic performance and learning strategies, they have concluded that strategic management skills, time, and effort were important predictors of academic performance (Neroni et al., 2019). In a study conducted during the Covid-19 period, it was concluded that the predictors of self-efficacy and academic commitment were effective on the academic success of students (Zhang et al., 2023).

Challenges of Distance Education

Challenges of students in distance education and methods of coping with problems are among the other publications encountered in research. In a study investigating the difficulties experienced by Ghanaian university students in distance education, it was concluded that there were financial inadequacy and technological problems (Arthur-Nyarko et al., 2020). According to another study conducted

with Filipino students during the Covid-19 period, internet problems, insufficient course resources, electrical problems, learner-learner interaction, domestic problems, and mental and physical health problems were stated as the reasons for the difficulties experienced by students in distance education (Rotas & Cahapay, n.d.). Distance education challenges of students living in Russia during the Covid-19 period were expressed as learner-learner and learner-instructor interactions, self-evaluations, education quality, and motivation problems (Markova, 2021). Alhazmi has investigated what kind of problems students have with the changes in education methods that occurred during the Covid-19 period. The contents of distance education on Twitter were analyzed and the basic problems of distance education were collected under five headings as educational problems, social problems, technological problems, health problems, and attitude and ethical problems (Alhazmi, 2022).

Stress, Anxiety

Stress and anxiety problems in distance education are other frequently studied subjects. In a study conducted with stressed students in distance education, the causes of stress were determined as academic duties, exams, financial problems, and family problems (Kwaah & Essilfie, 2017). According to research conducted with distance education students in Pakistan, it was concluded that the anxiety level of the students and their academic performance were related (Ajmal et al., 2019). Rehab et al., have examined the effect of test anxiety of university students in distance education on general anxiety and satisfaction in daily life, it was concluded that there is a strong positive relationship between the general anxiety of students with test anxiety in distance education, and test anxiety negatively affects satisfaction (Rehab, 2021). In another study conducted with students living in Slovenia, it has been revealed that the satisfaction level of the students affects stress and as the satisfaction increases, the stress decreases (Šorgo et al., 2022).

Motivation

Motivation has been seen as an important factor for student participation in distance education. There was a positive correlation between student motivation and satisfaction according to a study measuring the relationship between the satisfaction and motivation of distance education students (Goulimaris, 2015). In a study that draws attention to the importance of competition for student motivation, it has

been concluded that gamification has a significant positive effect on motivation (Pilkington, 2018). Zhou and Zhang have investigated the effect of student intrinsic and extrinsic motivation on self-determination theory, it was stated that the effectiveness and usability of the instructional management system were correlated with motivation (Z. Zhou & Zhang, 2023).

Social Media

A study that talked about the contribution of students' use of social media tools in distance education to course development shared the conclusion that students' use of WhatsApp is important in learner interaction (Madge et al., 2019).

Education Improvement

It was shared that artificial assistants can be developed in accordance with distinctive details such as the student's learning style, motivation, character traits, and family characteristics in a study investigating the methods of improvement in the distance education system (Villegas-Ch et al., 2020).

Digital Divide

Researchers have investigated the digital divide for distance education students during the Covid 19 period, it was concluded that technological inadequacies are a major obstacle to distance education for most students (Gan & Sun, 2021).

3. Discussion

In this systematic review study, student attitude studies in distance education conducted in the last 10 years were examined in detail. Research questions were very important for the details of this study. Within the scope of the findings obtained, some comments can be made for the studies on student attitudes in distance education.

The most frequent use of statistical methods in data study methods analysis method can be associated with the high number of studies collecting data with questionnaires. On the other hand, the underutilization of machine learning can be seen as a deficiency in this field and may be an important tool for new researchers. The fact that the questionnaire is most frequently preferred in data collection can be explained by the distance of education and the lack of face-to-face communication with students. Although it is possible to measure the student's system usage behaviors in distance education with technical devices, it is not enough to follow the emotional state and student

attitude from technological records. In addition, the fact that there are many scales prepared for the attitudes and behaviors of students in distance education supports the data collection method with questionnaires. It is seen that statistical methods are the most frequently used method for measurement in studies examining students' distance education attitudes. It could be mentioned that machine learning studies have increased over the years. Osmanoglu et al. investigated the emotion analysis of students in distance education, it was emphasized that it is important to better understand learners and how they feel, and it was proposed that machine learning techniques can be used for accurate prediction. In new studies that will investigate student attitudes in distance education, analysis and predictions with machine learning methods may be interesting and contribute to the scope of this subject (OSMANOĞLU et al., 2020).

As of the beginning of 2020, the Covid-19 disease has swept the world and many countries have started quarantine. Education has been one of the most affected areas by this pandemic. According to Pokhrel et al., approximately 1.6 billion students in more than 200 countries have been affected and distance education has been preferred over face-to-face education (Pokhrel & Chhetri, 2021). In parallel with this information, student attitude studies in distance education conducted in the last 10 years explain the increase in the rate of distance education preference during the Covid-10 in 2020 and 2021. The emotional load of the students should be considered in the studies carried out during Covid-19. According to Akour et al., factors such as fear of low grades, family problems, stress, loss of friends, and sadness during the Covid-19 pandemic affected the distance education processes of students (Akour et al., 2021). In this context, it can be concluded that the studies carried out during the pandemic show bias compared to the studies conducted in other years by highlighting the students' emotional states. The increase in the number of articles in 2020 and 2021 can be seen as meaningful with the transition to emergency distance education in the Covid-19. It could be said that there is a numerical bias in the studies included in this research in 2020 and 2021 due to the pandemic.

Among the compiled studies, it was seen that the most studied topic was the Online education adopted. Although some students have experienced distance education before, this experience can be new for many students. In this context, it is understandable that the question of whether students will accept a non-traditional educational environment is the most frequently studied topic. Studies investigating students' decision to use distance education have looked at whether the decision

to use distance education is related to the following topics: behavior control, self-determination, student-instructor interaction, student-student interaction, time management, motivation and interaction, language skills, digital divide, access to technology and interaction, learner-instructor interaction, academic capacity and learner emotions, technological capability, academic anxiety, stress, family, satisfaction, challenges of distance education, technological anxiety, learner self-efficacy, quality of education. Many factors can affect students' online education adopted. So much so that the effects of the social dynamics of the subject studied during the year in which the study was carried out should also be considered. Most studies investigating students' decisions to use online education platforms were conducted during the years of the Covid-19 pandemic. The fact that students must use online education platforms regardless of their preferences is quite understandable in studying this subject. Satisfaction was a relative variable that was also examined in studies investigating the Online education adopted. In studies investigating student satisfaction. The relationship between satisfaction and the following topics: learner-instructor interaction, learner-content interaction, technology self-efficacy, self-regulation, educational quality, visual quality, ease of use, student-instructor interaction, learner-learner instruction, learner self-efficacy, Instructor effort, flexibility, and self-regulated. According to table 1, while examining satisfaction, the interaction issue was mostly investigated. In particular, the subjects of learning content, learning instructor, and learner-learner interaction come to the fore. It has been stated that student satisfaction is directly related to learner-content interaction (Kuo et al., 2013). As a result of these studies, it can be mentioned that there is a relationship between student satisfaction with instructors and content in distance education. When examining academic performance studies, its relationship with the following subjects was often looked at: characteristics of students, self-regulated learning, technology self-efficacy, intrinsic goal orientation, and academic self-efficacy, abilities to manage studies, learning strategy, self-efficacy, academic commitment. While investigating the variables affecting the academic performance of the student, it was observed that student-oriented studies were carried out. It is seen that research working on 'Challenges of distance education' were carried out during the covid 19 period. It is understandable that this issue should be examined when societies struggle for a healthy life. So much so that there were many problems in the distance education process for this multi-factorial period. It has been seen that especially technological and financial self-efficacy are at the forefront of these problems. In studies on students' stress and anxiety in distance

education, it has been observed that stress in distance education is associated with academic performance, general anxiety, life satisfaction and distance education satisfaction. Psychological factors such as stress and anxiety are related to student attitudes toward distance education. In fact, the fact that this subject has been studied less among the studies investigating student attitudes in distance education shows that it is necessary to be studied by researchers. Subjects investigating student motivation, social media use, the digital divide, and education development in distance education have been less studied than other research topics. There is a need for new studies on these researchers for these topics, each of which can be important and effective. Considering that the most frequently studied topic is the Online education adopted, it is obvious that these topics and many details need to be examined separately. However, with these topics handled separately, induction can be made in the decision to use distance education.

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