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Sema Kara 
Kastamonu University, Turkey

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Sema Kara

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Abstract

In the fight against the 2019 coronavirus disease (COVID-19) pandemic, countries have replaced traditional face-to-face education with distance education as a defense tool. Distance education is not only education and training but also is related to individuals. In today's world, where we are faced with a new development, the conveniences provided by distance education technologies have been used in all areas of education. Therefore, technological developments cause changes in all areas of education systems. These changes affect the quality and functions of art education directly and indirectly. In this study, visual arts teachers' attitudes towards distance teaching during the COVID-19 pandemic were investigated. For this purpose, the attitudes towards distance education were examined by gender, age and school type variables. The study, which was carried out in the survey model, was carried out with 165 visual arts teachers working in public and private secondary and high schools in Konya, Aksaray, Karaman and Niğde provinces. Distance education attitude scale was used to collect the research data. Findings revealed that visual arts teachers' attitudes towards distance education were generally negative. In addition, the participating teachers' attitudes towards distance education differed based on the school type, gender and age variables.

Introduction

The outbreak of coronavirus disease (2019) (COVID-19) first appeared in Wuhan, China in December 2019 and has swept the world at an incredible speed since then. As of May 2020, there were more than 150 million confirmed cases and more than 3 million deaths (WHO, 2021; Worldmeter, 2021). Due to high transmission and possible asymptomatic transmission, as well as the lack of knowledge about the virus, pressure and risk of transmission have increased dramatically among academics interacting with large numbers of students and individuals, especially in the early stages of the pandemic (Hu B. et al., 2020; Li et al., 2020). This situation has seriously increased the mental fatigue of educators, especially academic staff.

The COVID-19 outbreak had a very high and negative impact on education systems, especially on higher education institutions. It has posed significant psychological risks on academicians and students in higher education institutions. It is clear that higher education workers are among the groups at high risk of being

infected with COVID-19. Therefore, the COVID-19 pandemic has created a psychological health and education crisis in Turkey that has a very high impact on the academic, personal, educational and professional lives of education professionals (Huo et al., 2021). Along with devastating human casualties, the rapid spread of the contagious coronavirus disease (COVID-19) has triggered a severe disruption in economic, social and cultural dynamics around the world. The difficulties and disruptions experienced by the education sector due to this ongoing pandemic cannot be denied. Temporary but tentative suspension of face-to-face activities of higher education institutions (HEIs) globally (UNESCO-IESALC 2020) has caused millions of students, both in schools and higher education institutions, to experience “displacement” or “disconnection” from formal learning (Devkota, 2021).

Sudden and unpredictable changes in society can have a significant impact on critical functions and services. In the wake of COVID-19, many people found themselves in quarantine, at home and studying (Bergdahl & Nouri, 2020; MacKenzie 2020). After overcoming the initial challenge, many governments decided that central functions in society, such as compulsory education, should shift to distance education (Zhang et al., 2020). By March 2020, seven countries have made nationwide school closures (UNESCO 2020). Previous research on the need for school closures and the transition to distance education has revealed that schools interpret the new conditions in various ways and authorities need to prepare schools and educational institutions for transitions (Bergdahl & Nouri, 2020; Klaiman et al., 2011).

In the fight against the 2019 novel coronavirus disease (COVID-19) epidemic, countries have replaced traditional face-to-face education with distance education as a defense tool. Although many countries have experienced natural and man-made disasters before, distance education was not used as a solution to these crises as it was applied after the coronavirus crisis (Al Lily et al, 2020). For the entire school sector, the nationwide closure of schools and the impromptu transition to digital education has revealed that challenges arise and must be overcome immediately. Teachers were asked to use digital technologies to initiate and facilitate learning at home to prevent the spread of previous pandemics (eg. SARS, H1N1) (Fox, 2007; Woodhead & Kennedy, 2010) and their impacts.

Distance learning is defined as any learning process that uses various technologies (such as video, audio, and computer technologies) to achieve learning goals, and which keeps students away from educators in terms of time or place (Bender, 2003; Fallatah, 2021). Distance education is also called “online education”. Mostly, at least 80% of course content is online using computers and the internet (Allen & Seaman, 2011; Shelton & Saltsman, 2005). There are various distance learning models, including asynchronous and synchronous modalities. Asynchronous models include a communication method in which messages are sent and received over a period of time, and include two-way communication where there is a time delay between the sent message and the received message. Alternatively, synchronous models involve online communication between two or more people at the same time, but not necessarily in the same place. It is a computer-mediated exchange of information in which participants are online at the same time (Mahoney & Hall, 2020; Tomaino et al., 2021). Distance education is not only education and training, it is also focused on individuals. According to the literature, distance education also includes a wide variety of learning platforms such as e-learning, online

learning, blended learning, virtual learning, and computer learning (Khatsrinova et al., 2021; Nikulicheva, 2015). It covers a wide range of applications and processes such as distance education, computer-assisted learning, web-based education, virtual classrooms and digital collaboration (Kashive et al., 2020; Layali & Al-Shlowiy, 2020; Raturi, 2018).

In our age, the explosion of information and the accompanying rapid technological development offer new opportunities for all individuals and communities, and also give them many responsibilities. While it is possible to benefit from these opportunities by using technological opportunities, it is clearly seen that institutions or communities that do not use them will fall behind others (Aydoğmuş, 2019; Koyuncuoğlu, 2021; Kaleli, 2020; Sulak, 2009; Yıldız et al, 2004). In today's world, where we continually face a development, there are opportunities provided by distance education technologies for all areas of education. In this respect, technological developments cause changes in all areas of education systems. These changes affect the quality and functions of art education directly and indirectly. Individuals who can use technology in all areas of education have many advantages (Baş, Kubiato & Sünbül, 2016; Clark-Wilson & Hoyles, 2019; Demirer et al., 2011). Visual arts education teachers are also expected to be able to use technology. This expectation includes not only teaching the use of distance education technologies, but also using them in teaching activities. For this reason, the attitudes and behaviors of visual arts teachers in compulsory distance education applications are determining factors in the quality of education.

While the number of students enrolling in distance learning was high in the past, the COVID-19 pandemic has now caused most schools across the country to shift from classroom to distance learning with almost no time to plan (Ilhan, Kaba & Sin, 2021; Kaban, 2021; MCH Strategic Data, 2020; Niemi & Kousa, 2020; Yılmaz İnce, Kabul & Diler, 2020). Despite this widespread shift to distance learning, research on distance education is still in its early stages, and there is little research evaluating the effects of online visual arts classes for elementary, middle, and high school students. Findings from these studies are mixed. Few studies have demonstrated the equal effectiveness of online learning platforms and face-to-face teaching (Barbour & Mulcahy, 2009; Barker & Wendel, 2001). Most research on distance education has focused on the general education population (Altowairiki, 2021; Batmang et al., 2021; Demosthenous, Panaoura & Eteokleous; 2020; Ilhan, Kaba & Sin, 2021; Kaban, 2021; Niemi & Kousa, 2020; Yılmaz İnce, Kabul & Diler, 2020; Xhelili et al., 2021). However, research on the effects of distance education in visual arts courses and the attitudes and behaviors of teachers and students in these courses is very limited (Doğru, 2020; Kaleli, 2021). This study aims to reveal the attitudes of visual arts teachers in the early stages of the transition to distance education triggered by the crisis, on the basis of their distance education experiences. By investigating the preparedness and choices of visual arts teachers while teaching distance education classes, including the challenges they face, we expect that the study will help teachers and decision-makers in making informed decisions and improve the transition to distance education in Turkey and elsewhere.

Therefore, visual arts teachers' attitudes towards distance education during the COVID 19 pandemic were investigated in this study. For this purpose, this study addressed the following questions:

- What is the profile of visual arts teachers' attitudes towards distance education?

- Do visual arts teachers' attitudes towards distance education differ by gender?
- Do visual arts teachers' attitudes towards distance education differ by age?
- Do visual arts teachers' attitudes towards distance education differ by the type of school they work at?

Method

This research used survey design and investigated visual arts teachers' attitudes working in secondary and high schools towards distance education in terms of some variables. In the survey research design, the individual, event or object that is the subject of the research is defined in its own terms and as it is (Watson, 2014). The sample of this research consists of Public and Private secondary schools and high school teachers in Konya, Aksaray, Karaman and Niğde. In order to determine the samples of the research, all secondary and high schools affiliated to the relevant Provincial Directorate of National Education were examined and the visual arts teachers were randomly selected within the scope of the research. The participants of this study were 165 visual arts teachers. Detailed information about the research sample is given in the table below. 83 of the visual arts teachers worked in private schools and 82 of them work in public schools. 93 of the participating visual arts teachers were female and 72 were male.

Attitude towards Distance Education Scale

In the research, Ağır's (2007) "Attitude towards Distance Education Scale" was used to measure visual arts teachers' attitudes towards distance education. The scale has two sub-dimensions. The first is 'advantages of distance education', and the second sub-dimension is 'limitations of distance education'. There are 14 statements in the first sub-dimension and 7 in the second sub-dimension. There are 21 expressions in both sub-dimensions. 21 items were rated on a 5-point Likert-type scale ranging from "1", the lowest score and "5" is the highest. Cronbach Alpha reliability coefficient for the first sub-dimension was $r=.78$ and $r=.79$ for the second sub-dimension, and $r=.81$ for the whole scale. Based on expert opinions, it was seen that the scale itself and the statements predicted teachers' attitudes towards distance education very well.

Data Analysis

According to the results of the normality test performed to determine whether the scores the participants received from the "Attitude towards Distance Education Scale" showed a normal distribution, the kurtosis and skewness values were in the range of ± 1.5 . According to Tabachnick and Fidell (2013), skewness and kurtosis values in the range of ± 1.5 are acceptable levels for normality (Yurt & Sünbül, 2012). For this reason, it is assumed that the scores obtained from the scales were normally distributed, and the data were analyzed using the SPSS program. In describing visual arts teachers' attitudes towards distance education, mean and standard deviation values were used. In comparing attitudes towards distance education based on gender and school type variables, independent sample t-test was used. In the comparison of dependent variables by professional seniority variable, F test techniques were used.

Findings

In this section, in accordance with the purpose of the research, the findings obtained by comparing the scores obtained from the Attitude towards Distance Education Scale based on the variables of gender, age and school type are included. Before the comparisons are made, the descriptive information about the scores which the visual arts teachers obtained from the Attitude towards Distance Education Scale is presented in Table 1.

Table 1. Descriptive Analysis of Visual Arts Teachers' scores in the Attitudes towards Distance Education Scale

	N	Minimum	Maximum	Mean	Std. Deviation
Advantages of Distance Education	165	1.16	4.41	3.14	.68
Limitations of Distance Education	165	1.37	4.50	3.12879	.71
Overall Attitude	165	1.40	3.85	3.1391	.60

The table shows the maximum, minimum, mean and standard deviation values of the scores obtained from the visual arts teachers' attitude towards distance education scale. According to the group mean values, it was found that the visual arts teachers had a level below moderate in sub-dimensions and overall attitudes towards distance education scale. The findings showed that visual arts teachers generally had negative attitudes towards distance education.

Table 2 shows the independent sample t-test findings, in which the visual arts teachers' scores obtained from attitude towards distance education scale were compared by gender.

Table 2. Comparison of Visual Arts Teachers' Scores in Attitude towards Distance Education Scale based on Gender

	Gender	N	Mean	Std. Deviation	t	p
Advantages of Distance Education	Female	93	2.95	0.72	-4.52	0.00
	Male	72	3.40	0.54		
Limitations of Distance Education	Female	93	2.97	0.75	-3.27	0.00
	Male	72	3.33	0.60		
Overall Attitude	Female	93	2.96	0.64	-4.69	0.00
	Male	72	3.37	0.45		

The table shows the comparison of the visual arts teachers' scores in attitudes towards distance education scale based on gender. Calculated t-values for the gender variable revealed a significant difference at the 0.05 significance level. When the mean values are examined, it was seen that male visual arts teachers had significantly higher and positive attitudes than their female colleagues.

The results of the t-test analysis, in which the scores of the visual arts teachers obtained from the attitude towards distance education scale were compared based on the school type are presented in Table 3.

Table 3. Comparison of Visual Arts Teachers' Scores in Attitude towards Distance Education Scale based on School Type

	School Type	N	Mean	Std. Deviation	t	p
Advantages of Distance Education	Private School	83	3.28	0.49	2.48	0.01
	Public School	82	3.02	0.82		
Limitations of Distance Education	Private School	83	3.36	0.56	4.35	0.00
	Public School	82	2.90	0.77		
Overall Attitude	Private School	83	3.31	0.37	3.76	0.00
	Public School	82	2.97	0.73		

A t-test was conducted to compare the visual arts teachers' scores obtained from attitude towards distance education scale based on the type of school they work in. The calculated t values revealed a significant difference at the 0.05 significance level. When the mean values were examined, it was found that the visual arts teachers working in private schools had significantly higher and positive attitudes towards distance education than their colleagues in public schools. The F test findings, in which the scores of visual arts teachers obtained from the attitude towards distance education attitude scale were compared based on the age variable, are displayed in Table 4.

Table 4. Comparison of Visual Arts Teachers' Scores in Attitude towards Distance Education Scale based on Age

	Age	N	Mean	Std. Deviation		
Advantages of Distance Education	21-27	41	3.45	0.39	11.371	.000
	28-35	26	3.38	0.68		
	36-43	34	3.29	0.58		
	44-50	34	2.95	0.63		
	51 and over	30	2.58	0.79		
Limitations of Distance Education	21-27	41	3.52	0.38	14.561	.000
	28-35	26	3.35	0.48		
	36-43	34	3.25	0.65		
	44-50	34	2.94	0.71		
	51 and over	30	2.48	0.80		
Overall Attitude	21-27	41	3.48	0.20	18.691	.000
	28-35	26	3.37	0.50		
	36-43	34	3.28	0.49		
	44-50	34	2.95	0.52		
	51 and over	30	2.54	0.73		

Visual arts teachers' attitude towards distance education scores based on age were compared with the F test. The F values calculated between the groups were significant ($p < 0.05$). Further analyzes were performed to reveal which group favored the difference. According to the Tukey test analysis, it was seen that visual arts teachers under the age of 35 had significantly higher distance education attitude scores than their colleagues aged 44 and over.

Discussion

In this study, which examined the distance education attitudes of visual arts teachers during the COVID 19 pandemic, it was found that the teachers within the scope of the research had a moderate attitude towards distance education. In this respect, distance education practices applied by visual arts teachers revealed negative attitudes. The findings showed that satisfaction and intention to use have a positive effect on the behavior of using distance education. Today, it is more important for systems to meet the needs and satisfaction of users and to increase their intention to use the product or service than selling products or services directly (Dominici & Palumbo, 2013; Robb et al., 2015). According to Heirdsfield et al. (2011), challenges related to the use of e-learning posed significant challenges and problems for both teachers and students around the world. Teachers can usually employ methods and techniques specific to their courses in a more difficult and time-consuming way compared to face-to-face lessons or classes. This causes many educators to develop negative attitudes towards the lesson, activity and technique used (Reddy et al., 2020; Johnson et al., 2021).

Another finding of study is that there was a relationship between the gender of visual arts teachers and their attitudes towards distance education. In general, male visual arts teachers' attitudes towards distance education were more positive and higher than their female colleagues. These findings are similar to the findings of Chang, Evans, Kim, Norton, Deater-Deckard, and Samur (2015); Else-Quest, Hyde, & Linn (2010), Luoto, & Varella (2021), Sieverding and Koch (2009). Psychological gender differences such as higher risk-taking, systematization, and object-orientation of males, and higher fear, empathy, and human orientation females especially in pandemic conditions and new practices have been reported in research (Archer, 2019; Geary, 2010; Greenberg et al., 2018; Luoto, 2020; Varella et al., 2016). According to the literature (Doğru, 2020; Kaleli, 2020), it is stated that males are more entrepreneurial in learning tasks involving new technologies and show more positive affective characteristics than females.

Another finding that emerged in the study is that visual arts teachers' attitudes towards distance education differed significantly based on their ages. In the study, it was found that visual arts teachers under the age of 35 had significantly higher distance education attitudes than their colleagues aged 44 and above. Therefore, it could be argued that as the ages of visual arts teachers increase, their attitudes towards distance education technologies become negative. According to Johnson (2011) it is important to note that individuals participating in online learning and these characteristics may affect the learning outcomes achieved. As age and experience levels for the learning task increase, cognitive competencies increase and affective characteristics decrease.

Finally, visual arts teachers' attitudes towards distance education were investigated based on the type of school

they work in. It was found that visual arts teachers working in private schools had significantly higher and positive distance education attitudes than their colleagues in public schools. These findings corroborate the findings of Ogunniyi (2015) and Tej, Jindal, and Tej (2016). According to Ogunniyi (2015), attitude as a factor can be seen as the sum of the teacher's or student's experience and tendency towards the lesson, its content, school or process. Therefore, the strong technological infrastructure and learning school culture in private schools might have caused the visual arts teachers working in these environments to develop positive attitudes towards these new teaching technologies.

It is emphasized that distance education in public schools is a source of problems not only for visual arts teachers but also for other teachers, and reveals negative attitudes (Khatsrinova et al, Unesco, 2020). Despite the important results of the research in these fields, it is seen that readiness, as a factor, is important in the visual arts teachers' attitudes towards distance education technologies. The success of the entire distance education system not only ensures that the visual arts teacher is ready for professional and pedagogical activity, but it is also important for other education stakeholders to take responsibility in the new distance education conditions in this regard.

Conclusion

Teaching attitude is an important feature that should be emphasized in education. Teachers with positive attitudes towards distance education during the COVID-19 pandemic make great efforts for teaching activities, are persistent and patient and do not give up easily when they have difficulty. Today, the importance of online learning methods in education is unquestionable. It is of great importance that teachers, who have an important place in visual arts teaching, have high and positive attitudes towards distance education. However, in the study, it was found that the participants' attitudes towards distance education were not high. It has been revealed by research that attitudes towards distance education are affected by teachers' own experiences, subject areas, and models around them, and this affects the quality and interactivity of their courses, and this process works bidirectionally. As a matter of fact, the findings of this study show that especially female and elderly visual arts teachers had low distance education attitudes. In addition, teachers working in public schools had a more negative attitude towards distance education than private schools. Based on these findings, it is important to provide in-service trainings and seminars for visual arts teachers to integrate distance education technologies with the teaching. In addition, it is recommended that visual arts teachers be supported on an innovative and technological basis in the process of acquiring distance education, online learning and web-based learning skills in order to develop positive attitudes. Finally, in this study, which investigated the visual arts teachers' attitudes towards distance education based on the demographic variables, there were quite high and significant differences. Qualitative research could be conducted to reveal the sources and causes of this difference.

References

Ağır, F. (2007). *Özel okullarda ve devlet okullarında çalışan ilköğretim öğretmenlerinin uzaktan eğitime karşı tutumlarının belirlenmesi* (Unpublished Master Thesis). Balıkesir Üniversitesi Fen Bilimleri Enstitüsü.

- Al Lily, A. E., Ismail, A. F., Abunasser, F. M., & Alhajhoj Alqahtani, R. H. (2020). Distance education as a response to pandemics: Coronavirus and Arab culture. *Technology in Society*, 63, 101317. <https://doi.org/10.1016/j.techsoc.2020.101317>
- Allen, I. E., & Seaman, J. (2011). *Going the distance: Online education in the United States, 2011*. Sloan Consortium. <https://eric.ed.gov/?id=ED529948>
- Altowairiki, N. (2021). Online Collaborative Learning: Analyzing the Process through Living the Experience. *International Journal of Technology in Education (IJTE)*, 4(3), 413-427. <https://doi.org/10.46328/ijte.95>
- Archer J. (2019). The reality and evolutionary significance of human psychological sex differences. *Biol. Rev.* 94 1381–1415. [10.1111/brv.12507](https://doi.org/10.1111/brv.12507)
- Aydoğmuş, M. (2019). Investigation of the effect of social entrepreneurship on professional attitude and self-efficacy perception a research on prospective teachers. *Studies In Higher Education*, 44, 1–15.
- Barker, K., & Wendel, T. (2001). E-learning: studying Canada's virtual secondary schools. Society for the Advancement of Excellence in Education. <http://www.excellenceineducation.ca/pdfs/006.pdf>
- Barnum, M., & Bryan, C. (2020). America's great remote-learning experiment: What surveys of teachers and parents tell us about how it went. Chalkbeat. <https://www.chalkbeat.org/2020/6/26/21304405/surveys-remote-learning-coronavirus-success-failure-teachers-parents>
- Baş, G., Kubiátko, M. & Sünbül, A.M. (2016). Teachers' perceptions towards ICTs in teaching-learning process: Scale validity and reliability study. *Computers in Human Behavior*, 61, 176-185.
- Batmang, B., Sultan, M., Azis, A., & Gunawan, F. (2021). Perceptions of Pre-Service Teachers on Online Learning during the COVID-19 Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, 9(3), 449-461. <https://doi.org/10.46328/ijemst.1595>
- Bender, D.M. (2013). Interior design faculty intentions to adopt distance education. *J Interior Design*, 29, 66-81.
- Bergdahl, N., & Nouri, J. (2020). COVID-19 and Crisis-Prompted Distance Education in Sweden. *Technology, Knowledge and Learning*, 1–17. Advance online publication. <https://doi.org/10.1007/s10758-020-09470-6>
- Chang, M., Evans, M. A., Kim, S., Norton, A., & Samur, S. (2015). Differential effects of learning games on mathematics proficiency. *Educational Media International*, 52(1), 47-57.
- Clark-Wilson, A. & Hoyles, C. A. (2019). research-informed web-based professional development toolkit to support technology-enhanced mathematics teaching at scale. *Educ Stud Math*, 102, 343–359
- Demirer, V., Çintaş Yıldız, D. & Sünbül, A.M. (2011). The Relationship between Primary School Students' Computer-Internet Usage and Reading Habits: Sample of Konya. *Elementary Education Online*, 10(3), 1028-1036
- Demosthenous, G., Panaoura, A., & Eteokleous N. (2020). The Use of Collaborative Assignment in Online Learning Environments: The Case of Higher Education. *International Journal of Technology in Education and Science (IJTES)*, 4(2), 108-117.
- Devkota K. R. (2021). Inequalities reinforced through online and distance education in the age of COVID-19: The case of higher education in Nepal. *International review of education. Internationale Zeitschrift für Erziehungswissenschaft. Revue internationale de Pedagogie*, 1–21. Advance online publication. <https://doi.org/10.1007/s11159-021-09886-x>

- Doğru, O. (2020). An Investigation of Pre-service Visual Arts Teachers' Perceptions of Computer Self-Efficacy and Attitudes Towards Web-based Instruction. *International Journal of Research in Education and Science (IJRES)*, 6(4), 629-637.
- Dominici, G., & Palumbo, F. (2013). How to build an e-learning product: Factors for student/customer satisfaction. *Business Horizons*, 56(1), 87-96.
- Else-Quest, N., Hyde, J., & Linn, M. (2010). Cross-national patterns of gender differences in mathematics: a meta-analysis. *Psychological Bulletin*, 136, 103-27. [10.1037/a0018053](https://doi.org/10.1037/a0018053).
- Fallatah, S. A. (2021). Senior interior design students' perceptions about distance learning in the shadow of COVID-19. *Journal of Public Health Research*, 9(Suppl 1), 1914. <https://doi.org/10.4081/jphr.2020.1914>
- Fox, R. (2007). ICT use during SARS: teachers' experiences. *Journal of Technology and Teacher Education*, 15(2), 191-2005.
- Geary, D. C. (2010). *Male, Female: The Evolution of Human Sex Differences*, 2nd Edn. Washington, DC: American Psychological Association. [10.1037/12072-000](https://doi.org/10.1037/12072-000)
- Greenberg D. M., Warrier V., Allison C., Baron-Cohen S. (2018). Testing the empathizing-systemizing theory of sex differences and the extreme male brain theory of autism in half a million people. *Proc. Natl. Acad. Sci. U.S.A.* 115 12152-12157. [10.1073/pnas.1811032115](https://doi.org/10.1073/pnas.1811032115)
- Heirdsfield, A., Walker, S., Tambyah M. & Beutel, D. (2011). Blackboard as an online learning environment: What do teacher education students and staff think? *Australian Journal of Teacher Education (Online)*, 36(7), 1-9.
- Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L. X. (2020). Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *EClinicalMedicine* 24, 100424. [10.1016/j.eclinm.2020.100424](https://doi.org/10.1016/j.eclinm.2020.100424)
- Huo, L., Zhou, Y., Li, S., Ning, Y., Zeng, L., Liu, Z., Qian, W., Yang, J., Zhou, X., Liu, T., & Zhang, X. Y. (2021). Burnout and Its Relationship With Depressive Symptoms in Medical Staff During the COVID-19 Epidemic in China. *Frontiers in Psychology*, 12, 616369. <https://doi.org/10.3389/fpsyg.2021.616369>
- Ilhan, G. O., Kaba, G., & Sin, M. (2021). Usage of Digital Comics in Distance Learning During COVID-19. *International Journal on Social and Education Sciences (IJonSES)*, 3(1), 161-179. <https://doi.org/10.46328/ijonSES.106>
- Johnson, J. B., Reddy, P., Chand, R., & Naiker, M. (2021). Attitudes and awareness of regional Pacific Island students towards e-learning. *International Journal of Educational Technology in Higher Education*, 18(1), 13. <https://doi.org/10.1186/s41239-021-00248-z>
- Johnson, R. D. (2011). Gender differences in e-learning: Communication, social presence, and learning outcomes. *Journal of Organizational and End User Computing*, 23(1), 79-94.
- Kaban, A. (2021). Determining Teachers', Students', and Parents' Perceptions of Distance Education through Metaphors. *International Journal of Research in Education and Science (IJRES)*, 7(1), 245-264. <https://doi.org/10.46328/ijres.1316>
- Kaleli, Y. S. (2020). The Effect of Computer-Assisted Instruction on Piano Education: An Experimental Study with Pre-service Music Teachers. *International Journal of Technology in Education and Science (IJTES)*, 4(3), 235-246.


- Kaleli, Y. S. (2021). The Effect of Individualized Online Instruction on TPACK Skills and Achievement in Piano Lessons. *International Journal of Technology in Education (IJTE)*, 4(3), 399-412. <https://doi.org/10.46328/ijte.143>
- Kashive, N., Powale, L. & Kashive, K. (2020). Understanding user perception toward artificial intelligence (AI) enabled e-learning. *The International Journal of Information and Learning Technology*. 38(1), 1–19. doi: 10.1108/IJILT-05-2020-0090.
- Khatsrinova, O., Veronika, B., Barabanova, S. V., Rozalina, S., & Khatsrinova, J. (2021). Teacher Readiness for Distance Learning. Educating Engineers for Future Industrial Revolutions. *Proceedings of the 23rd International Conference on Interactive Collaborative Learning (ICL2020)*, Volume 2, 453–469. https://doi.org/10.1007/978-3-030-68201-9_45
- Klaiman, T., Kraemer, J.D. & Stoto, M.A. (2011). Variability in school closure decisions in response to 2009 H1N1: A qualitative systems improvement analysis. *BMC Public Health*, 11(1),1–10. doi: 10.1186/1471-2458-11-73.
- Koyuncuoglu, O. (2021). An Investigation of Graduate Students' Technological Pedagogical and Content Knowledge (TPACK). *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, 9(2), 299-313. <https://doi.org/10.46328/ijemst.1446>
- Layali, K. & Al-Shlowiy, A. (2020). Students' perceptions of e-learning for ESL/EFL in Saudi universities at time of coronavirus: A literature review. *Indonesian EFL Journal (IEFLJ)*, 6(2), 97–108. doi: 10.25134/ieflj.v6i2.3378.
- Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y. (2020). Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. *Engl. J. Med.* 382, 1199–1207.
- Luoto, S. (2019). An updated theoretical framework for human sexual selection: from ecology, genetics, and life history to extended phenotypes. *Adapt. Hum. Behav. Physiol.* 5 48–102. 10.1007/s40750-018-0103-6
- Luoto, S., & Varella, M. (2021). Pandemic Leadership: Sex Differences and Their Evolutionary-Developmental Origins. *Frontiers in Psychology*, 12, 633862. <https://doi.org/10.3389/fpsyg.2021.633862>
- MacKenzie, D. (2020). COVID-19 goes global. *New Scientist*, 245(3271), 7-10. doi: 10.1016/s0262-4079(20)30424-3.
- Mahoney, J., & Hall, C. A. (2020). Exploring online learning through synchronous and asynchronous instructional methods. In C.M. Sistik-Chandler (Eds.), *Exploring Online Learning Through Synchronous and Asynchronous Instructional Methods Advances in Mobile and Distance Learning* (pp. 52–76). IGI Global. 10.4018/978-1-7998-1622-5.ch003
- MCH Strategic Data. (2020). School closings. <https://www.mchdata.com/COVID19/schoolclosings>
- Niemi, H. M., & Kousa, P. (2020). A Case Study of Students' and Teachers' Perceptions in a Finnish High School during the COVID Pandemic. *International Journal of Technology in Education and Science (IJTES)*, 4(4), 352-369.
- Nikulicheva, N.V. (2015). Model of a distance learning course for the training of a teacher of distance learning. *Open Dist. Educ.* 3(59), 54–60
- Ogunniyi, S. O. (2015). Resource utilisation, teaching methods, time allocation and attitude as correlates of undergraduates' academic achievement in cataloguing in library schools in Southern Nigeria. Ph.D Thesis, Department of Library, Archival and Information Studies. University of Ibadan, xiv, +155pp.

- Raturi, S. (2018). Understanding learners preferences for learning environments in higher education. *The Online Journal of Distance Education and e-Learning*, 6(3), 84–100.
- Reddy, P., Chaudhary, K., Sharma, B. & Chand, R. (2020). The two perfect scorers for technology acceptance. *Education and Information Technologies*, doi: 10.1007/s10639-020-10320-2.
- Robb, A., White, C., Cordar, A., Wendling, A., Lampotang, S., & Lok, B. (2015). A comparison of speaking up behavior during conflict with real and virtual humans. *Computers in Human Behavior*, 52, 12-21.
- Shelton, K., & Saltsman, G. (Eds.). (2005). *An administrator's guide to online education*. Information Age Publishing. <https://www.infoagepub.com/products/Administrators-Guide-to-Online-Education>
- Sieverding, M.&Koch, S.C. (2009). Self-Evaluation of computer competence: How gender matters. *Computers & Education*, 52(3), 696-701
- Sulak, S. A. (2007). Dokuzuncu Sınıf Bilgi ve İletişim Teknolojisi Ders Programının Değerlendirilmesi. (Unpublished PhD Thesis), Selçuk Üniversitesi Eğitim Bilimleri Enstitüsü.
- Tabachnick, B.G. & Fidell, L.S. (2013). *Using multivariate statistics*. New York: Pearson Education
- Tej, S. D., Jindal, D., & Tej, D. (2016). Being an educator in private vs. public school system: a comparative study on job contentment. *IRA International Journal of Education and Multidisciplinary Studie*, 3(3), 309-320.
- Tomaino, M., Greenberg, A. L., Kagawa-Purohit, S. A., Doering, S. A., & Miguel, E. S. (2021). An Assessment of the Feasibility and Effectiveness of Distance Learning for Students With Severe Developmental Disabilities and High Behavioral Needs. *Behavior Analysis in Practice*, 1–17. Advance online publication. <https://doi.org/10.1007/s40617-020-00549-1>
- UNESCO. (2020). COVID-19 Educational Disruption and Response. Retrieved 12.01. 2021, from <https://en.unesco.org/themes/education-emergencies/coronavirus-school-closures>.
- UNESCO-IESALC (Instituto Internacional de la UNESCO para la Educación Superior en América Latina y el Caribe). (2020). COVID-19 and higher education: Today and Tomorrow. Caracas: International Institute for Higher Education in Latin America and the Caribbean. Retrieved 01 January 2021 from <http://www.iesalc.unesco.org/en/wp-content/uploads/2020/04/COVID-19-EN-090420-2.pdf>.
- Unger, S., & Meiran, W. R. (2020). Student Attitudes Towards Online Education during the COVID-19 Viral Outbreak of 2020: Distance Learning in a Time of Social Distance. *International Journal of Technology in Education and Science (IJTES)*, 4(4), 256-266.
- Varella M. A. C., Benedetti Piccoli Ferreira, J. H., Pereira, K. J., Raad Bussab, V. S. & Varella Valentova J. (2016). Empathizing, systemizing, and career choice in Brazil: sex differences and individual variation among areas of study. *Pers. Individ. Dif.* 97 157–164. 10.1016/j.paid.2016.03.058
- Watson, R. (2014). Quantitative research. *Nursing Standard*, 29(31), 44-47. DOI:10.7748/ns.29.31.44.e8681
- Woodhead, P. & Kennedy, D.M. (2010). Digital natives and H1N1: How adversity can drive change. *International Journal of E-Adoption*, 2(3), 53–66. doi: 10.4018/jea.2010070105.
- Xhelili, P., Ibrahim, E., Rruçi, E., & Sheme, K. (2021). Adaptation and Perception of Online Learning during COVID-19 Pandemic by Albanian University Students. *International Journal on Studies in Education (IJonSE)*, 3(2), 103-111.
- Yıldız, R, Sünbül, A.M., Koç, M., Halis, İ. (2004). *Öğretim teknolojileri ve materyal geliştirme kitabı*. Ankara: Nobel-Atlas Yayınevi. ISBN 975-6266-01-5

- Yılmaz İnce, E., Kabul, A., & Diler, İ. (2020). Distance Education in Higher Education in the COVID-19 Pandemic Process: A Case of Isparta Applied Sciences University. *International Journal of Technology in Education and Science (IJTES)*, 4(4), 343-351.
- Yurt, E. & Sünbül, A. M. (2012). Effect of modeling-based activities developed using virtual environments and concrete objects on spatial thinking and mental rotation skills. *Educational Sciences: Theory and Practice*, 12(3), 1975 - 7992.
- Zhang, W, Wang, Y. & Yang, L. (2020). Suspending classes without stopping learning: China's education emergency management policy in the COVID-19 outbreak. *Journal of Risk and Financial Management*, 13(3), 1-6.

Author Information

Sema Kara

 <https://orcid.org/0000-0002-6482-7598>

Kastamonu University

Kastamonu

Turkey

Contact e-mail: karasema02@gmail.com
