PANDEMİ NEDENİYLE YÜRÜTÜLEN ACİL UZAKTAN ÖĞRETİM SÜRECİNİN ARDINDAN ÖĞRETMEN ADAYLARINDA DEĞİŞİM YORGUNLUĞUNUN İNCELENMESİ

THE INVESTIGATION OF CHANGE FATIGUE IN TEACHER CANDIDATES FOLLOWING THE EMERGENCY REMOTE TEACHING PROCESS DURING THE PANDEMIC

Can MIHCI[1]

ÖZ: COVID-19 pandemisi sebebiyle yaşanan acil uzaktan öğretim döneminde eğitim büyük değişikliklerden geçmiştir. Bu değişiklikler, kısmen, eğitim kurumlarının uzaktan öğretim konusunda uygun bir çözüm oturtma çabalarının neticesidir. Kurumsal yönetim literatürü kısa sürede yaşanan büyük değişikliklerden ötürü çalışanların tecrübe edebileceği olumsuz bir psikolojik etki olarak değişim yorgunluğunu işaret etmektedir. Ancak eğitim bilimleri literatüründe öğrenciler nezdinde değişim yorgunluğunu inceleyen çalışmalara rastlanmamaktadır. Bu nicel çalışmada, değişim yorgunluğu ve bu değişimin yaşandığı uzaktan eğitim sürecinde karşılaşılan dijital okuryazarlık, çevrimiçi öğrenmeye karşı tutum ve okula yabancılaşma gibi değişkenler arasındaki ilişkileri; acil uzaktan öğretim sürecinin ardından okula dönmüş öğretmen adayları özelinde açıklamaya çalışan bir yapısal eşitlik modeli önerilmiştir. Modeldeki ilişkiler incelendiğinde; değişim yorgunluğunun öğrencilerde okula yabancılaşmayı yordadığı; ancak çevrimiçi öğrenme tutumunu yordamadığı görülmüştür. Bu da, üniversitelerin içerisinden geçtiği değişim sürecinin öğrencilerde yabancılaşmaya yol açan ancak uzaktan öğretim süreci kapsamında ele alınamayacak başka bir kategorisinin bulunmakta olduğuna işaret etmektedir. Diğer yandan, çevrimiçi öğrenme tutumunu olumlu ve okula yabancılaşmayı ise olumsuz yönde yordayan dijital okuryazarlığın ne kadar önemli bir beceri türü olduğu bir kez daha vurgulanmıştır.

Anahtar sözcükler: acil uzaktan öğretim, değişim yorgunluğu, okula yabancılaşma, dijital okuryazarlık, çevrimiçi öğrenme, öğretmen adayları

ABSTRACT: Education has gone through rapid changes during the emergency remote teaching period resulting by the COVID-19 pandemic. These changes, in part, have been associated with educational institutions attempting to implement a viable solution to the problem of distance education. Although organizational management theory literature suggests that great change in very little time results in a detrimental psychological phenomenon called change fatigue in employees and that this phenomenon has even been investigated in the context of teaching staff in the past; there have been no attempt at understanding change fatigue from a student perspective. This quantitative study attempts at proposing a structural equation model towards the understanding of how to change fatigue and other variables, namely, digital literacy, online learning attitude and school alienation that might have been influenced by it have affected teacher candidates after resuming face-to-face education followed by a 1.5 year of emergency remote teaching period. Results indicated that change fatigue predicts school alienation and yet; does not predict online learning attitude; hinting that there might be another category of alienating organizational change that universities have gone through that does not solely involve online education. Nevertheless, digital literacy is a beneficial skill for all students that helps bolster online learning attitudes and reduce overall school alienation.

Keywords: emergency remote teaching, change fatigue, school alienation, digital literacy, online learning, teacher candidates

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[1]. Arş. Gör. Dr., Trakya Üniversitesi, Eğitim Fakültesi, Edirne, Türkiye, canmihci@trakya.edu.tr, ORCID: 0000-0001-9393-4619

GENİŞLETİLMİŞ ÖZET

Giriş

Eğitim kurumları pandeminin değişen koşullarına ayak uydurmaya çalışırken belirsizlikle dolu hassas bir dönemden geçilmiştir. Büyük ölçüde hazırlıksız yakalanılan süreçte yüz yüze eğitime ara veren bu kurumlar; pandeminin ne zaman sona ereceği kestirilemez durumdayken deneme-yanılma yoluyla ellerinden geldiği ölçüde eğitimi sürdürmeye çabalamıştır. Bu süreçte, önemli bir kısmı uzaktan eğitim süreçlerini ilgilendiren ancak bunlarla da sınırlı kalmayan birçok kurumsal değişim yaşandığı iddia edilebilir. Ancak insanoğlunun öngörülebilirlik ve düzene yönelik bir ihtiyacı vardır ve kısa sürede hızla yaşanan büyük değişimlerin eğitimin paydaşlarında olumsuz psikolojik sonuçlar doğurmuş olabilir. Kurumsal yönetim teorisinde bu türden sonuçlar değişim yorgunluğu kavramı çerçevesinde incelenmektedir. Ancak eğitim bilimleri alanında değişim yorgunluğu kapsamında yürütülmüş çalışmalar incelendiğinde öğrencilere özgü değişim yorgunluğunu masaya yatıran çalışmalara rastlanamamıştır. Oysa ki COVID-19 pandemisi boyunca öğrenciler, üç kategoride incelenebilecek değişimleri içselleştirmek zorunda kalmıştır: a) yüz yüze eğitimin aniden sonlanması ve acil uzaktan öğretime geçiş şeklinde ortaya çıkan ani değişim, b) uzaktan eğitimle ilgili planlama eksikliğinden kaynaklanan, süreçte iyileştirme maksadıyla ve büyük ölçüde deneme-yanılma uygulamaları şeklinde karşılaşılan türden değişimler; ve c) yüz yüze eğitime geri dönüş yönünde yaşanan değişim. Yoğun değişim süreçleri boyunca öğrencilerin içerisinden geçtiği olumsuz deneyimin büyük ölçüde dijital araçların kullanımını şart koşan bir uzaktan eğitim süreciyle ilintili olduğu düşünüldüğünde; değişim yorgunluğunun dijital okuryazarlık ve çevrimiçi öğrenme tutumu gibi değişkenlerle ilişkisinin anlaşılması gerektiği söylenebilir. Son olarak, zorunlu uzaktan eğitim, akranlardan uzak kalma ve değişim sonucu yaşanan yorgunluk hissi gibi etmenlerden etkilenebileceği düşünülen ve eğitsel süreçlerde çaba gösteren öğrencinin zamanla bilgiye ve öğrenmeye dair tüm işlere anlamsızlık, güçsüzlük veya yalnız bırakılmışlık gibi hisler beslemesine neden olan okula yabancılaşmanın da bu denklemde istenmeyen bir sonuç olarak dikkate alınması gerektiği iddia edilebilir. Bahsi geçen tüm bu değişkenlerin yüz yüze eğitime dönüşün başladığı ilk akademik dönem esnasında birbirleriyle nasıl bir ilişki içerisinde olduğunu izah edebilmek için, literatür ışığında aşağıdaki hipotezler kurulmuştur:

H1 – Dijital okuryazarlık çevrimiçi öğrenme tutumunu olumlu yönde yordamaktadır.

H2 – Çevrimiçi öğrenme tutumu, okula yabancılaşmayı olumsuz yönde yordamaktadır.

H3 – Değişim yorgunluğu, çevrimiçi öğrenme tutumunu olumsuz yönde yordamaktadır.

H4 – Değişim yorgunluğu okula yabancılaşmayı olumlu yönde yordamaktadır.

H5 – Dijital okuryazarlık okula yabancılaşmayı olumsuz yönde yordamaktadır.

Yöntem

Nicel paradigmayı izleyen ve çeşitli değişkenler arasındaki ilişkileri onlara müdahale etmeksizin modellemeyi amaçlayan bu araştırmada yordayıcı korelasyonel araştırma modeli kullanılmıştır. Araştırma amaçlarına ulaşmada yapısal eşitlik modelleme adlı istatistiksel teknikten faydalanılmış olup, hibrid yaklaşım izlenmiştir. Araştırmanın çalışma grubunu 2021-2022 Akademik Yılı Göz Dönemi'nde Trakya Üniversitesi Eğitim Fakültesi'nin çeşitli öğretmenlik lisans programlarında kayıtlı 481 öğrenci oluşturmuştur. Veri toplama araçları çalışma grubuna acil uzaktan öğretimin sona erdiği ve yüzyüze eğitime dönüş yapılmış olan dönemin başlangıcından itibaren 1 ay süre geçtikten sonra çevrimiçi biçimde uygulanmıştır.

Bulgular

Yapısal eşitlik modellemesinde aykırılık tekniği olarak, 400'ün üzerinde mevcuda sahip örneklemler için uygun olduğu işaret edilen maksimum olabilirlik tercih edilmiştir. Kurulan modelin kabul edilebilir bir uyuma sahip olduğu anlaşılmıştır (χ^2 [59, N=468] = 164,686; p<.01; χ^2/df = 2.839; RMSEA = .063; CFI = .957; GFI = .950; AGFI = .921). Bunun ardından hipotezler test edilmiştir. H1 (Dijital Okuryazarlık → Çevrimiçi Öğrenme Tutumu) testi sonucu görülmüştür ki; dijital okuryazarlık tahmin edildiği şekilde çevrimiçi öğrenme tutumunu anlamlı olarak ve pozitif yönde yordamaktadır (β= 0.25; R^2=0.06; p<0.01). H2 (Çevrimiçi Öğrenme Tutumu → Okula Yabancılaşma), testi, çevrimiçi öğrenme tutumunun okula yabancılaşmayı anlamlı ve pozitif yönde yordadığını göstermiş (β= 0.20; R^2=0.04; p<0.01) olup, H2 hipotezi reddedilmiştir - zira kurulan hipotezin tam tersi yönde anlamlı ilişki saptanmıştır. H3 (Değişim Yorgunluğu → Çevrimiçi Öğrenme Tutumu) test edildiğinde, değişim

yorgunluğunun çevrimiçi öğrenme tutumu üzerinde anlamlı bir etkisi bulunmadığı görülmüş (p>0.05) ve hipotez reddedilmiştir. H4 (Değişim Yorgunluğu → Okula Yabancılaşma) üzerinde yürütülen testte, değişim yorgunluğunun okula yabancılaşmayı anlamlı ölçüde ve pozitif yönde yordadığı görülmüş (β= 0.28; R2=0.08; p<0.01), hipotez kabul edilmiştir. Nihayet H5 (Dijital Okuryazarlık → Okula Yabancılaşma) test edildiğinde; dijital okuryazarlığın okula yabancılaşmayı negatif yönde ve anlamlı ölçüde yordadığı görülmüş (β= -0.09; R2=0.01; p<0.01), hipotez kabul edilmiştir.

Tartışma ve Sonuç

Bu araştırmada acil uzaktan öğretim döneminin sona erdiği ve 1.5 yılın ardından yüz yüze eğitime kaldığı yerden devam edilmesi dönemecinde öğretmen adaylarında değişim yorgunluğu, okula yabancılaşma, dijital okuryazarlık ve çevrimiçi öğrenme tutumu değişkenleri arasında ilişkileri açıklayan bir model oluşturulmuş ve bunun üzerinden çeşitli hipotezler test edilmiştir.

İlk olarak görülmüştür ki dijital okuryazarlık, çevrimiçi öğrenme tutumunu olumlu olarak yordamaktadır. Yani öğretmen adayı ne kadar dijital okuryazarsa, çevrimiçi öğrenmeye dönük o denli olumlu bir tutum geliştirme eğilimi taşıdığı; ve tersi yönde de dijital okuryazarlık seviyesi ne kadar düşükse çevrimiçi öğrenme tutumunun o denli olumsuz bulunacağı açıklanmıştır. Bu sayede, literatürde korele olduğu gösterilen bu değişkenler arasındaki nedensel bağ ortaya konmuştur.

Bunun ardından, aynı çevrimiçi öğrenme tutumunun okula yabancılaşmayı negatif yönde yordayacağı iddiası incelenmiş; ancak tam ters yönde anlamlı bir sonuç elde edilmiştir. Bu durum verilerin toplandığı dönem dikkate alınarak yorumlanmıştır. Literatür, bilhassa akranlara karşı yabancılaşma potansiyeli taşıyan öğrencilerin çevrimiçi öğrenme materyalleri ile etkileşim oranlarının daha yüksek bulunduğunu gözler önüne sermektedir. Bu bilgi, verilerin 1.5 yıllık aranın ardından yüz yüze eğitime dönüşten bir ay sonra toplanmış olduğu gerçeği ile beraber değerlendirildiğinde; bilhassa çevrimiçi öğrenmeye olumlu tutum sahibi kişilerin okula dönüp, o güne dek ya hiç tanışmadığı ya da bundan 1.5 yıl önce yalnızca 1 dönem boyunca yüz yüze etkileşime girme şansı bulabilmiş öğrencilerin birbirlerine ve fiziksel sınıftaki öğrenme ortamına yabancılık çekmesinin sonucu olarak yorumlanabilir. Bu nedenle denebilir ki; uzun bir aranın ardından yüz yüze eğitime dönüş aşamalarında özellikle bazı öğrenciler bir çeşit oryantasyon programı vb. uygulamalara ihtiyaç duyuyor olabilir.

Değişim yorgunluğu ile ilgili hipotezler göstermiştir ki; bu değişken, çevrimiçi öğrenme tutumu üzerinde bir etki taşımıyor olsa dahi okula yabancılaşmayı pozitif yönde anlamlı olarak yordamaktadır. Bu sonuç şu şekilde açıklanabilir: öğretmen adaylarında okula yabancılaşmaya sebebiyet veren kurumsal değişimler; yalnızca çevrimiçi öğrenme bağlamında değerlendirilmemelidir. Yani muhtemelen bu bağlamın dışında yer alan ve üniversite eğitiminde benimsenmiş olabilecek, her davranışı ölçülebilir performans göstergelerine indirgemeye odaklı araçsal bir bakış açısı yahut ağır işleyen ve katı tutum sergileyen bürokratik yapılar da yabancılaştırıcı etmenler olarak değerlendirmeye alınmaya adaydır.

Nihayet, dijital okuryazarlığın diğer değişkenlerden bağımsız olarak tek başına okula yabancılaşmayı anlamlı ölçüde ve negatif yönde yordadığı da görülmüş olup; gerek çevrimiçi öğrenme tutumuna etkisi gerekse bu özelliği ile öğretmen adayları için değerli bir beceri olduğu tekrar anlaşılmıştır.

INTRODUCTION

There are times that public education systems undergo great changes in relatively short durations. These most often are necessitated by circumstances that pose as great societal hardships, and may be classified as *force majeure*; such as disasters, famines, wars, or as it is in the case of today, public health crises. One of the three most dangerous pandemics faced within the 21st century, the COVID-19 outbreak (Khan et al., 2021) has caused radical measures to be taken by countless institutions in many nations. The Turkish Education System has had to adapt to conditions of the pandemic and Emergency Remote Teaching has temporarily become the standard for all educational institutions in Turkey (Tosun et al., 2021). Institutions of higher education have started the emergency remote teaching process starting on March 2020, which coincided with the Spring semester of the 2019-2020 Academic Year (YÖK, 2020); and have resumed face-to-face educational activities only at the beginning of the Fall semester of 2021-2022 Academic Year (YÖK, 2021).

As educational institutions tried to adapt for changing circumstances of the COVID-19 global pandemic, there has been a great period of instability and uncertainty. It was unclear when and how the pandemic would be considered over, or at least weaken enough so as to resume face-to-face schooling. The way jargon such as *the new normal* (Karakaş, 2020) has become pervasive has even shown that some changes necessitated by the pandemic conditions would be there to stay for good. Still, as nobody knew what to expect, many solutions, both permanent and temporary, have been attempted by educational institutions and policymakers worldwide. Turkish universities were no exception. Preparation of course materials for asynchronous distance educational use, getting teleconferencing systems ready for synchronous online classes; or setting up rules and policies for class attendance, exam integrity and proctoring have all been great issues for education during the pandemic period. Moreover, a lack of standardization has caused the process to vary greatly from institution to institution, somewhat causing inequality among students in the largely state-run university institutions of Turkey.

And in the chaos that was the initial stages of the pandemic, many institutions were left to their own devices and lacked cooperation. They have had to resort to trial-and-error strategies while seeking optimal solutions. Given that a primary aspect of human nature is an inherent need for predictability and order (Bernerth et al., 2011); it might be claimed that such a great amount of change occurred in too little time (Leuschke, 2017) might have caused negative psychological outcomes. In organizational management theory; the effects of such rapid changes within an institution have been theorized to cause a detrimental phenomenon called change fatigue in members of an organization (Bernerth et al., 2011). Change fatigue has been extensively studied in many areas of work-life; but several studies have also studied the way it occurs in educational staff, i.e. teachers and faculty; either due to overall changes in an education system (Leuschke, 2017; Limon & Nartgün, 2020) or changes in the curriculum (Dilkes et al., 2014). Several studies have also investigated change fatigue as caused by rapid advances in classroom technology available for the teacher's use (Henderson & Milman, 2020; Orlando, 2014). This might be an important point to consider, as it is a fact that throughout the emergency remote teaching period, three semesters of educational activity have commenced entirely online and over digital devices–the effective use of which depends heavily on a concept called *digital literacy*.

Digital literacy has been defined as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (Heitin, 2016), and it has been suggested that higher digital literacy predicts both achievement of learning outcomes and academic performance in online education in higher education institutions (Yustika & Iswati, 2020). So it might be claimed that change fatigue may have occurred in students as a result of rapid changes to the mode of education due to the pandemic and also that this feeling of fatigue might have been influenced the educational experience of students during the period. One more factor that might have influenced student experience during a heavily-digitized form of education –whether it was tiresome or not–is Online Learning Attitude, which may simply be explained as the desire and the manner of the individual towards online learning and which has been found to be associated with readiness to pursue education by online means (Herguner et al., 2020; Hergüner et al., 2021).

It is worthy of note here that, as a theory in organizational management, change fatigue has so far been considered only within the context of employees' reaction to rapid organizational change.

However, it might be noteworthy to consider that higher education students have had to cope with not one but three major narratives of change during the two-year-long period that passed after the start of the pandemic. The first narrative involves the sudden halt in face-to-face schooling and immediate transition to online classes, which occurred at the start of the pandemic. The second narrative involves change due to trial-and-error strategies implemented by educational institutions as they tried to overcome problems that arose due to lack of prior planning. The third and the most recent narrative involves a return to face-to-face education and might also be overlooked by some because it implies a return to the state of things as they were before the pandemic (Chen, Kennedy, Meinck & Rožman, 2022). All these considered, it might be about time change fatigue, the detrimental effects it leads to, and the other variables that influences it, is investigated in students as well.

As change fatigue is a frequently researched phenomenon in the domain of organizational management and human resources planning; its probable outcomes have also been investigated in this context. It has been reported, for instance, that change fatigue in white-collar workers is associated with employee burnout, decreased work engagement, and decreased organizational commitment (Magano, 2021). An alternative to these worker-related phenomena in the domain of education and the context of students might be alienation. In psychology, alienation has been described as *a specific mode of relationship between the individual and the world, which involves emotions of indifference, hostility and general unrelatedness and leads to individual suffering* (Hascher & Hadjar, 2018). Çağlar (2013) attempts at defining a specific form of alienation, namely *student alienation* as individuals' within an educational process alienating themselves from knowledge, learning, or any related process during their efforts and being overwhelmed by feelings of meaninglessness, powerlessness, normlessness, or isolation. These feelings of a student are also associated with dissatisfaction with education, a likelihood of copying from other students' work, absenteeism, or withdrawal from the educational system (Osin, 2017). As it is only a claim that change fatigue due to emergency remote education might have led to school alienation in students; there are also works in the literature that associate alienation with education-related use of technological tools. A recent study conducted in the post-pandemic period, for instance, has shown that student alienation is also negatively correlated with education-related use of ICT (Dar & Jan, 2022); however, no causal explanations have been made.

The existing information in the academic literature point towards an idea that these variables interact with one another in a model pattern. The following hypotheses have thus been formulated for the case of teacher candidates resuming face-to-face education right after the emergency remote teaching process due to COVID-19, which resulted in a 2-year long period of online learning:

- H1 – Digital literacy positively influences online learning attitude.
- H2 – Online learning attitude negatively influences school alienation.
- H3 – Change Fatigue negatively influences online learning attitude.
- H4 – Change Fatigue positively influences school alienation
- H5 – Digital Literacy negatively influences school alienation

Figure 1 shows the diagram detailing the structural model that the aforementioned hypotheses explain.

METHODOLOGY

Research Model

Following the quantitative research paradigm, this study seeks to investigate relationships between certain variables and determine whether a pattern of relationships (a model) exists among them. It, therefore, conforms with the predictive correlational model of research, as explained by Büyüköztürk and colleagues (2008). In order to achieve the goals of the research, structural equation modeling technique has been employed. Structural equation modeling (SEM) is a statistical technique that depicts various types of models to explain relationships among variables, with the aim of providing a quantitative test of a theoretical model hypothesized by a researcher (Schumacker & Lomax, 2004).
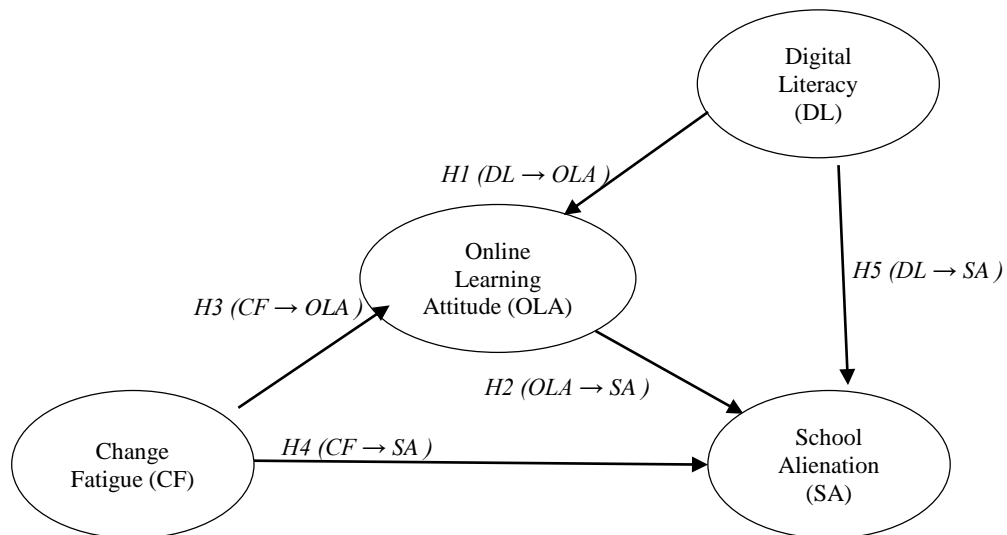
Figure 1. The Structural Model and associated hypotheses

There exist three approaches to SEM; with the first solely involving the use of observed variables, the second involving use of latent composite variables, and the third being a hybrid approach (Holbert & Stephenson, 2002). This study follows the third approach, as latent variables referred to in hypotheses have been loaded onto multiple-item composites of instrument sub-dimension scores.

Study Group

The study group consists of 481 undergraduate students that were enrolled in various teacher training departments of Trakya University Faculty of Education during the Fall Semester of the 2021-2022 academic year. Students participated in the study on a voluntary basis. Table 1 shows demographic information pertaining to the participants.

Table 1.

Participant Demographics

Study Year	1st Year	2nd Year	3rd Year	**Total**
Gender				
Male	53	87	13	153
Female	154	124	51	341
Total	207	211	63	481

Data Collection Instruments

The following data collection instruments have been utilized for the purpose of this study. All necessary permissions have been acquired by contacting the developers of said instruments via e-mail and notifying them of the nature of this research.

Digital Literacy Scale

Initially developed by Ng (2012) the Digital Literacy Scale seeks to measure digital literacy levels of teacher candidates, both in the overall context and in the context of using educational technology products. Higher scores in the scale indicate better overall aptitude and disposition towards using ICT products, particularly in the educational context. The scale has been adapted to Turkish language by Hamutoğlu and colleagues (2017). The Turkish version consists of 17 5-point Likert scale type items that are spread into 4 sub-dimensions (with example items given in parentheses following the name of each sub-dimension) of a) attitude towards ICT for learning (e.g. *I like using ICT for learning*), b) technical digital literacy (e.g. *I can learn new technologies easily*), c) cognitive digital literacy (e.g. *I am confident with my search and evaluate skills in regards to obtaining information from the Web*) and d) social-emotional digital literacy (e.g. *ICT enables me to collaborate better with my peers on project*

work and other learning activities). Reliability analyses of the Turkish version have shown that, whereas the internal consistency (Cronbach's Alpha) coefficient for the overall scale is .93; the coefficients for the attitude, technical, cognitive, and social sub-dimensions of the scale were found to be .88, .89, .70 and .72; respectively.

Online Learning Attitude Scale

Developed by Usta and colleagues (2016), the goal of this scale is to determine the attitudes, i.e. the overall combined state of positive and negative emotions, in college students towards online education. Authors explain that a higher score in the scale translates into a more positive attitude towards an individual's attitude towards online learning, which directly affects their motivation, participation, fulfillment, and success throughout online education processes. The scale consists of 20 5-point Likert scale type items and these comprise four sub-dimensions (with English translations of example items given in parentheses following the name of each sub-dimension), namely; a) general acceptance (e.g. *Online Learning should become more widespread*), b) individual awareness (e.g. *I prefer online environments to face-to-face environments*), c) utility value (time-effort-cost) (e.g. *Online Learning makes it easier for me to constantly follow up with my courses*) and d) implementation effectiveness (active participation) (e.g. *Online courses require active participation from the students*). The overall Cronbach's Alpha internal consistency coefficient for the scale has been found to be .90; whereas coefficients for the sub-dimensions were reported as .77, .85, .79, and .68; respectively.

Change Fatigue Scale

Change Fatigue Scale has initially been developed by Bernerth and colleagues (2011) and it originally sought to measure the strain placed upon workers due to changes in the organizational workplace, i.e., change fatigue. In the same study, the phenomenon of change fatigue is reported to be associated with negative outcomes such as workplace exhaustion and one's intention to quit their jobs. Limon (2020) has adapted the scale not only into Turkish language but also into a context of educational institutions; to be employed in measuring change fatigue in both students and educational staff. This version of the scale, where attaining higher scores indicates greater change fatigue, consists of 6 5-point Likert scale type items and displays a Cronbach's Alpha internal consistency coefficient of .86. English translations of sample items include *I constantly feel like we are expected to change some things as students* or *I would like to achieve consistency before any further changes are made in the education system*. It should also be noted that, to the author's knowledge, this is the only instrument that may possibly be used for measuring change fatigue in students and yet, it should be acknowledged that it has not been developed specifically for use with this target audience.

School Alienation Scale

Çağlar (2012) has developed the Student Alienation Scale originally in the Turkish language and by working with undergraduate teacher candidates in order to measure alienation in students towards their school, i.e., a negative attitude towards the institution and the activities conducted therein. Consisting of 20 5-point Likert scale type items, a higher score attained in the scale translates into a higher level of alienation. The reliability measure for the overall scale has been reported in terms of Cronbach's Alpha coefficient of .86; whereas for the sub-dimensions (with English translations of example items given in parentheses following the name of each sub-dimension) of weakness (e.g. *I believe that knowledge I gain in this school contribute to my understanding and interpretation of life*, scored negatively), anomy (e.g. *I find that the disciplinary rules in the school are too strict*), isolation (e.g. *I do not know who to trust in this school*) and meaninglessness (e.g. *I continue schooling not because I want it but because the circumstances require it*); the coefficients have been given as .79, .75, .76, and .76; respectively.

Data Collection Procedure

Data collection took place between the 5th and 8th weeks of the Fall semester of the 2021-2022 academic year at Trakya University. A waiting period of one month from the start of the semester has been allocated for the purpose of having senior students adjust to face-to-face education following the suspension period during which emergency remote education took place. It should be noted once again

that, even after the end of emergency remote education, up to 40% of ECTS credits worth of courses in each program of the university that students in this study participated from continued to be given fully online. Data have been collected throughout these online courses by administering the scales via Microsoft Forms over Microsoft Teams communication environment. The scales were administered as sections of a single Microsoft Forms document and it has been noted that the average time to complete the form (consisting of a total of 61 Likert-type items and two questions on demographics) has been 11 minutes and 4 seconds.

Data Analysis Procedure

Data have been analyzed using statistical software suited for Structural Equation Modeling analysis. For the Structural Equation Modeling discrepancy technique; Maximum Likelihood (ML) was chosen, as it is suitable for sample sizes over 400. Indicators for latent variables have been constructs that are total scores attained from relevant sub-dimensions of measurement instruments, as per the hybrid approach to structural equation modeling. At this point, it was assured that the number of indicators per latent variable and sample size were adequately matched (Schermelleh-Engel et al., 2003).

Although it has been noted that ML requires the assumption of multivariate normality; it is also known that this test is quite robust against violation of the normality assumption (Schermelleh-Engel et al., 2003) An assessment of normality has thus been conducted based on observation of skewness and kurtosis values and as per suggestion of Gao and colleagues (Gao et al., 2008); N=13 participants were removed from the study in order to pursue values that exhibit values that are not "extreme deviations from normality" (Schermelleh-Engel et al., 2003) without losing model power. Under the new circumstances; the covariance matrix has been generated.

Ethical Board Permission

Research ethics have been complied with throughout all stages of this research and all necessary permissions have been sought thereof. A university ethical board permission covering all procedures undertaken during this research has therefore been granted by Trakya University Ethical Board for Social Sciences and Humanities in session 2021/06 held on the date of 07.07.2021 with the ethical board decree number 06/18.

FINDINGS

Descriptive statistics and Inter-correlation Matrix (Spearman's Rho) for the variables in the proposed model has been given in Table 2.

Acceptable values in analyzing goodness of fit for structural equation models, which has been derived from Schermelleh-Engel and colleagues' (2003) classification has been shared alongside attained descriptive goodness of fit measures of the proposed model in Table 3.

The proposed model and the obtained goodness of fit values have been shared in Figure 1.

Although the p value has been shown to be <.01, it is reported that this is almost inevitable in ML with sample sizes over 400. Accordingly; the proposed model has been confirmed to display an acceptable fit (χ^2 [59, N=468] = 164,686; p<.01; χ^2/df = 2.839; RMSEA = .063; CFI = .957; GFI = .950; AGFI = .921).

Once the measurement model has been approved; the research hypotheses have been tested. The results of analyses have been shown in Table 4. For the case of H1 (Digital Literacy → Online Learning Attitude), it has been shown that digital literacy positively and significantly predicts online learning attitude (β= 0.25; R^2=0.06; p<0.01). H1 has therefore been accepted. For the case of H2 (Online Learning Attitude → School Alienation), it has been shown that online learning attitude positively and significantly predicts school alienation (β= 0.20; R^2=0.04; p<0.01). This finding is inconsistent with the claim in H2, as it states that the prediction will be inverse. H2 is therefore rejected. As for H3 (Change Fatigue → Online Learning Attitude), it has been shown that change fatigue has no significant influence over online learning attitude (p>0.05). H3 has therefore been rejected. H4 (Change Fatigue → School Alienation) has also been tested and it was observed that change fatigue significantly and positively predicts school alienation (β= 0.28; R^2=0.08; p<0.01). H4 is therefore accepted. A test of H5 (Digital Literacy → School alienation) has revealed that digital literacy significantly and negatively predicts

school alienation (β= -0.09; R^2=0.01; p<0.01). H5 has therefore been accepted. Table 4 reports these Structural Equation Model results in brief.

Table 2.

Descriptive Statistics and Inter-correlation Matrix for the Variables in Proposed Model

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	**Change Fatigue**	22,44	4,175	1,00												
	Digital Literacy															
2	**Attitude** towards ICT for learning	26,87	3,582	,072	1,00											
3	**Technical** digital literacy	22,50	3,346	,068	,535*	1,00										
4	**Cognitive** digital literacy	7,65	1,213	,038	,580*	,366*	1,00									
5	**Social**-Emotional digital literacy	6,71	1,398	,066	,431*	,670*	,262*	1,00								
	Online Learning Attitude															
6	General **Acceptance**	22,16	4,418	-,017	,268*	,248*	,256*	,196*	1,00							
7	Individual **Awareness**	16,42	5,936	-,058	,186*	,106*	,167*	,096*	,711*	1,00						
8	**Utility** Value	10,55	2,799	,000	,246*	,173*	,271*	,127*	,656*	,713*	1,00					
9	Active **Participation**	13,87	2,834	,082	,233*	,141*	,260*	,161*	,439*	,353*	,398*	1,00				
	School Alienation															
10	**Weakness**	14,19	4,168	,172*	-,153*	-,108*	-,078	-,064	-,015	,145*	-,010	-,077	1,00			
11	**Anomy**	12,810	3,117	,259*	-,092*	-,065	-,051	-,030	,064	,185*	,081	-,033	,487*	1,00		
12	**Isolation**	12,4786	3,420	,157*	-,155*	-,099*	-,081	-,083	,007	,134*	,034	-,020	,311*	,333*	1,00	
13	**Meaninglessness**	9,6538	3,219	,229*	-,076	-,091*	-,023	-,051	,079	,236*	,068	-,054	,625*	,706*	,342*	1,00

* Correlation is significant at the 0.05 level

Figure 1. The Structural Equation Diagram based on the Proposed Model (N=468)

χ^2/df = 2.839
RMSEA =.063
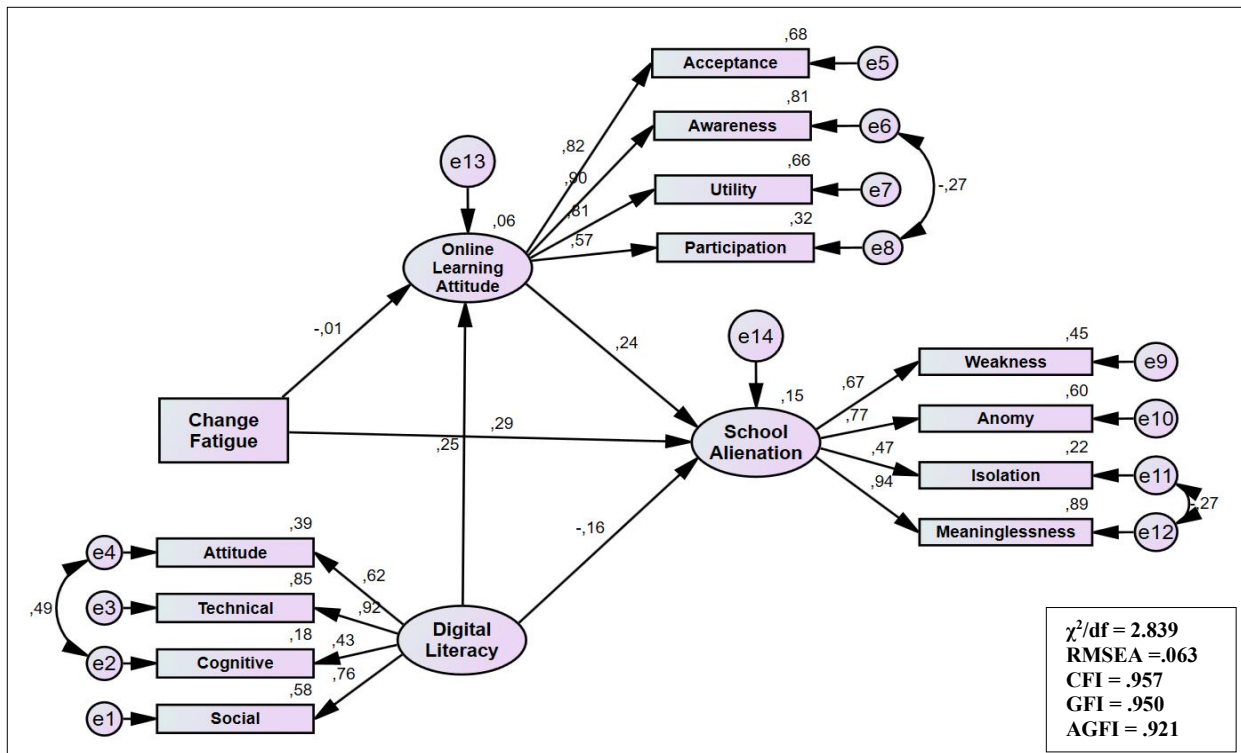CFI = .957
GFI = .950
AGFI = .921

Table 3.

Descriptive Goodness of Fit Measures' Classifications and Results Attained by the Proposed Model

Fit Measure	Good Fit	Acceptable Fit	Proposed Model	Result
χ^2/df	$0 \leq \chi2/df \leq 2$	$2 \leq \chi2/df \leq 3$	2.839	Acceptable Fit
RMSEA	$0 \leq$ RMSEA $\leq .05$	$.05 \leq$ RMSEA $\leq .08$	.063	Acceptable Fit
CFI	$.97 \leq$ CFI ≤ 1.00	$.95 \leq$ CFI $\leq .97$	.957	Acceptable Fit
GFI	$.95 \leq$ GFI ≤ 1.00	$.90 \leq$ GFI $\leq .95$	.950	Good Fit
AGFI	$.90 \leq$ AGFI ≤ 1.00	$.85 \leq$ AGFI $\leq .90$	.921	Good Fit

Table 4.

Structural Equation Model Results (N=468)

	Dependent Variables			
Predictor Variables	Online Learning Attitude		School Alienation	
	β	S.E.	β	S.E.
H1 (Digital Literacy → Online Learning Attitude)	0.25***	0.183	-	
R^2	0.06		-	
H2 (Online Learning Attitude → School Alienation)	-		0.20***	0.040
R^2	-		0.04	
H3 (Change Fatigue → Online Learning Attitude)	0.00	0.042	-	
R^2	0.00		-	
H4 (Change Fatigue → School Alienation)	-		0.28***	0.034
R^2	-		0.08	
H5 (Digital Literacy → School alienation)	-		-0.08***	0.133
R^2	-		0.01	

DISCUSSION

In this study, an attempt at modeling the relationships among change fatigue, school alienation, online learning attitude, and digital literacy in a study group of teacher candidates once after their schools have resumed face-to-face education following a one-and-a-half-year period of online education, has been made. The proposed model has been shown to be an acceptable fit, and several hypotheses have been tested based on this finding.

An initial finding has shown that digital literacy significantly and positively predicts online learning attitude for the study group. This may be interpreted as the more digitally literate a teacher candidate is, the greater her incidence to show a positive attitude towards online learning has been. Likewise, lower digital literacy also explains a portion of negative attitudes of teacher candidates towards online learning during the pandemic. This relationship has previously been heralded by Li and Lee (2016), who have worked with students in a graduate school of education and found a correlation between digital literacy and online learning attitude, and yet; the current study expands upon Li and Lee's results by pointing towards a certain causality.

It was also hypothesised that a more positive attitude towards online learning would predict negatively student alienation, which is a complex construct that is a combination of feelings like meaninglessness, powerlessness, normlessness, or isolation and negatively influences the educational experience altogether. However, the exact opposite has been shown to be true and it was observed that the more positive the attitude towards online learning, the greater the student alienation has been found. However, it is highly important to understand here that data have been collected from students precisely one month after the emergency remote education period has ended and regular, face-to-face education has resumed. It was at this exact moment that the student's feelings of alienation have been measured and the finding above may be interpreted as, a more positive attitude towards online learning explains a greater feeling of alienation experienced by students upon return to face-to-face education from a rather long period of emergency remote teaching that lasted almost a year and a half. A glance at Johnson's research, which investigates student alienation and the level of interaction with an online learning management system reveals that student alienation manifests at different levels in different types of

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students. The same study differentiates alienation towards peers, the course and towards school in general and it reports that those students who especially feel alienated to their peers displayed a greater amount of interaction online with the learning management system. It should be considered that the study group of this here study consists largely of 1st and 2nd year students, who have never had the chance to get acquainted face to face with their classmates and partly by 3rd year students who have had only a single semester to get acquainted. Upon resuming face-to-face education, the possibility that students who have more fondly embraced the previous period of online education have felt stronger alienation upon having to socialize with classmates whom they literally met for the first time is supported by Johnson's findings.

As for the third hypothesis involving change fatigue; there has been no observed effect of this phenomenon upon online learning atittude. That is, all the changes to the education system that the students have had to endure did not significantly affect their adoption of online learning. This may also be interpreted as, in spite of all the perceived amount of change that happened around them; those who were supportive of online education still continued to be so; whereas those who were against online education still continued to be so. Nevertheless, this situation may be dependent on the opportunities available to a given university or its efficiency in implementing distance education programs; as well as upon the prominent learning styles in groups of students enrolled.

However, the fourth hypothesis that claimed that this same change fatigue serves to predict the school alienation experienced by teacher candidates upon return to face-to-face education has been confirmed. Also taking into consideration the interpretation pertaining to the third hypothesis, it could be said here that the ordeal that the unprepared educational institutions have had to go through during the pandemic and the environment of chaos and inconsistence that was caused by systemic changes involving attempts at establishing a viable mode of education by trial-and-error deserves its own category of change apart from change attributed only to online learning. Johnson (2005) reports that student alienation might have multiple reasons, ranging from a teaching-learning process devoid of creativity to the very way learning institutions are structured in a fashion that emphasizes utilitarianism, instrumentalism, measurable performance indicators, and standardized competencies. There are many such elements of university education that may have been inadverently highlighted during the implementation of rapid changes due to the pandemic; such as the alienating bureaucratic nature of administrative processes or rigid rules that were implemented as a result of hasty decision making. Further research is necessary in order to understand the multiple perspectives of change that institutions have had to go through during the pandemic period.

The last hypothesis, which suggested that digital literacy negatively predicts student alienation, has been confirmed. This finding should not be surprising, as the literature suggests that in addition to requiring the greater skill of self-regulation, educational environments where information and communication technologies are heavily used require technical skills in students, and those who lack these may feel intimidated and develop emotions of powerlessness; eventually leading to alienation (Healy & Fairweather, 2010). This notion has been tested and proven to be valid also during the COVID-19 era of education by a recent study conducted with 700 college students (Dar & Jan, 2022) However, Dar and Jan's research has not investigated causality in the relationship between digital literacy and student alienation and carries implications that the relationship might be two-way; i.e., that increasing student alienation might also explain the decreasing intentions of students to make use of ICT in the educational context. The model that this here study proposes, however, investigates raw digital capacities (literacy) of students rather than their intentions; and showcases that no matter what the attitude of students might be towards online education and how fatigued they might feel due to institutional change during the pandemic; digital literacy still reduces the likelihood of student alienation upon return to face-to-face education.

CONCLUSION AND SUGGESTIONS

The transition of education to virtual spaces increases the student's need for self-directedness; while causing feelings of remoteness and lack of interaction or relation (Adebayo & Balogun, 2019). The theoretical framework of student alienation encompasses this and even more; and it has been shown with this study that school alienation due to a forced transition to online learning is influenced by other factors than simple lack of digital literacy, such as change fatigue or online learning attitude. The

Pandemic has caught the educational institutions worldwide off-guard and lack of planning has led to many systemic changes, which has led to change fatigue that elevated student alienation. It is therefore not a time for educational institutions to relax and consider the pandemic to be over. Instead, rigorous work on plans that may be swiftly put into effect and ensure stability and predictability for both students and staff must be made. Orientation and re-orientation programs may be developed, action plans and checklists designed; while supportive training for increasing digital literacy in both personnel and students may be implemented. It is vital to communicate to all stakeholders such that each and every student and personnel member knows by heart how education will progress even under dire circumstances, pandemic or otherwise. This could help reduce change fatigue and therefore, student alienation. One more finding of note is that, as academic literature has been pointing out for some time, there may be some students out there who have discovered that online education may be a better alternative to face-to-face education for them. This is yet another chance for the world to start considering distance education or other hybrid models as true alternatives to face-to-face, in the long run. An immediate lesson that should be taken, is that research is required so as to develop re-orientation programs for students upon returning to face-to-face education after a long period of emergency remote teaching.

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