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## Critical Factors Affecting Students' Intention to Adopt Technology-Enhanced Learning

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## Critical Factors Affecting Students' Intention to Adopt Technology-Enhanced Learning

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### Abstract

Technology-enhanced learning (TEL) is the use of a computer or other technology which provides education courses or training for students, such as online courses, off-line content, or mixed-mode delivery. The current study aims at developing a model to examine the effect of resource availability and students' subject interest on students' intention to adopt TEL. The data were collected from 157 students at the University of Ha'il and analyzed using a two-step AMOS; confirmatory factor analysis (CFA) was applied to develop the measurement model, and structural equation modelling (SEM) was applied to analyze and test the relationships among constructs in the model. The results showed that both resource availability and students' subject interest have a significant positive effect on students' intention to use TEL. This study may assist decision makers and developers in universities and other higher education institutions and deepen their understanding of factors which may affect students' adoption and usage of TEL.

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### Introduction

The use of technology creates new educational opportunities (Nikou & Economides, 2017). Technology has been adopted and used everywhere and in everything with which we engage (Muir-Herzig, 2004). In future, technology will be used in different environments. Most students are skilled in technology; hence, universities and schools must update and upgrade their services, specifically by adopting different technologies which will promote the desired learning outcomes. According to Newton (2003), use of technology, especially in the education sector, enhances access to education and training among learners and improves the learning and teaching process, which, in turn, creates huge advantages for educational institutions seeking to provide students with services in a competitive environment.

Technologies can play a significant role in improving the learning and teaching process; they can also reach more learners at lower cost and provide better educational services (Altunisik & Akturk, 2021; Duygu & Aktürk, 2021; Noroozi et al., 2021; Öztürk et al., 2021; Peled, 2000; Yılmaz & Hebecci, 2022). Most universities and other educational institutions have been changing the ways in which they deliver education to learners, such as the learning and teaching environment, platforms, and areas including admission, library services, concealing, etc. As

unexpected circumstances such as COVID-19 arise, students have used different technologies and engaged with them online. Thus, technology adoption within the learning and teaching process can be seen as an improvement which has been considered by most universities and other educational institutions worldwide (Aktürk & Delen, 2020; Altunışık & Aktürk, 2021; Barkus & Koç, 2019; Johnston & McCormack, 1996; Subakan & Koç, 2019; Subakan & Koç, 2021).

The term ‘technology-enhanced learning’ (TEL) has been widely used in recent decades because of the competition among universities and other educational institutions to gain the highest achievers and best enrolment figures (Clark & Meyer, 2011). Most universities and other institutions continually update their systems and strategies as none is willing to lag behind the others and miss out on any opportunity to improve. Diseases may last a long time, as stated by the World Health Organisation (WHO) (Jagannath, 2020), and they require traditional methods of teaching and learning to change to an online format so the learning process can continue and universities and other educational institutions can continue to compete.

Various technologies have been provided in the educational market. However, it is essential to examine and understand the different factors which may affect the adoption of TEL among students so universities and other educational institutions can successfully implement and enjoy the benefits of technologies. Thus, this study will examine the effect of certain factors, namely resource availability and subject interest, on students’ use and adoption of TEL in universities.

## **Literature Review**

TEL is defined as the use of computers or other technologies which provide education courses or training for students, whether through online courses, off-line content, or mixed-mode delivery (Al-Busaidi, 2013). Furthermore, TEL could provide students with a better chance for studying online or support them offline wherever and whenever they wish to study. TEL can also be used to drive students’ communication and self-motivation, thereby enhancing their efficacy. TEL can thus be summarized as the knowledge and information that can be gained by means of technology (Tetteh, 2016; Janda, 2016) and is known by other terms, such as technology-based learning, m-learning, technology-assisted learning, e-learning and web-based learning.

TEL can offer students huge benefits, such as flexibility in terms of location and time (Homan & Macpherson, 2005). In this way, it also fills a learning gap, as learning and teaching through traditional methods are restricted to a specific time and location (Fayter, 1998). Furthermore, TEL assists learners and teachers by enabling them to participate without strictures on space or time (Hwang & Arbaugh, 2009).

TEL utilizes internet technologies to ensure content and materials can enhance students’ skills and knowledge (Imamoglu, 2007). TEL offers both online and face-to-face delivery of courses without issues regarding distance or time (Park, 2009). Similar studies have shown that students can be prepared for using various different technologies during active learning and to develop knowledge and skills independently by using offline materials and contents (Lorenzo & Gallon, 2018; Kirkwood & Price, 2014).

According to a study by Wenglinsky (1998), which examined the relationships between the proficiency of computer technology and students' outcomes in mathematics, the first had a positive and significant effect on the second. Wenglinsky (1998) stated that learners who used computers and applied strategies practically scored higher than those who depended only on computer-based learning and used programs for increasing their learning in mathematics. Sivin-Kachala and Bialo (2000) conducted a review study examining the relationships between students' achievement and technology use and found a positive and significant advantages for learners who utilize technology to provide themselves with a rich learning environment. Students who used technology not only performed well in different subject scores but had higher self-esteem. Consequently, TEL is considered fruitful for improving skills and knowledge.

However, although some universities have utilised TEL in their teaching and learning processes, few have gained all the potential benefits of doing so (Mehra & Omidian, 2012). Furthermore, Park (2009) mentioned that it is essential to understand students' intention for adopting TEL, which is considered the main primary driver in developing and implementing it successfully. Furthermore, few research have had examined factors that may affect students' engagement with technologies (Keller & Cernerud, 2002; Liaw et al., 2007; Ituma, 2011; Park, 2009; Alshammari, 2020), particularly in developing countries (Tarhini et al., 2015). Thus, this study aims at examining the effect of factors such as resource availability and subject interest on students' use and adoption of TEL in universities.

## Methodology

### The Proposed Research Model

The proposed research model is shown in Figure 1:

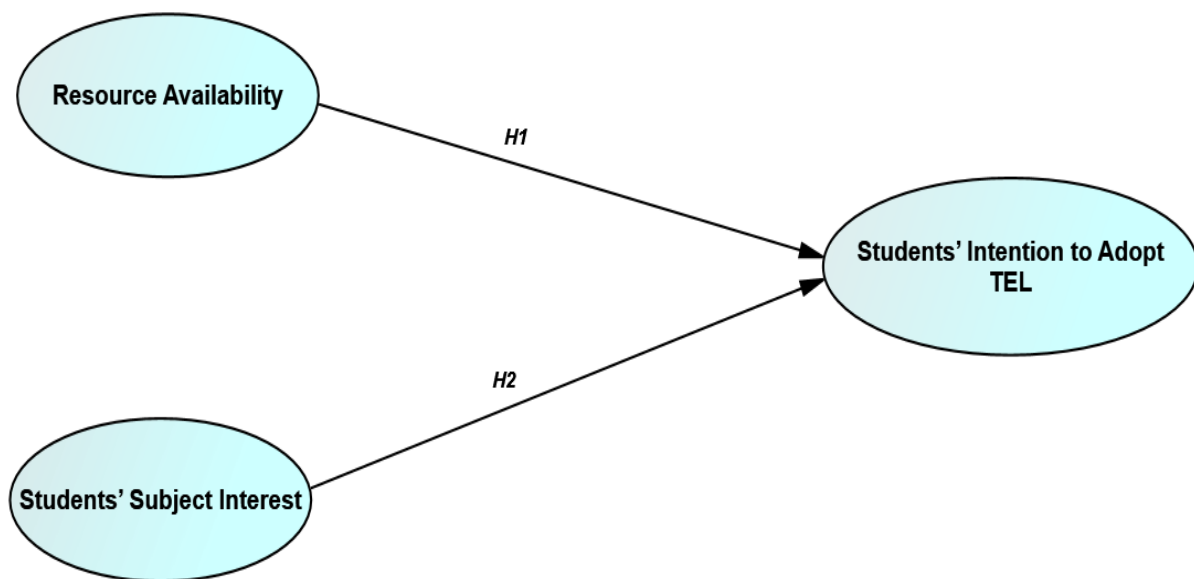


Figure 1. The Proposed Research Model

## Research Hypotheses

**H1:** Resource availability has a positive effect on students' intention to adopt TEL.

**H2:** Students' subject interest has a positive effect on students' intention to adopt TEL.

## Primary Data and Sampling

Purposive sampling was used to collect data from participants. Participants were selected based on those students who use different technologies during their learning whether online or off-line, or by mixed method. A total of 157 students enrolled in different majors (sports science and physical activity, and psychology) in the College of Education at University of Ha'il responded to the survey. Data were collected during first semester of 2022.

## Research Instrument

The items that measure all constructs in the model were adapted and modified from previous studies. Specifically, the items that measure the construct resource availability were adapted from a study by Taylor and Todd (1995); those that measure the construct students' subject interest were adapted from a study by Singh (2016); and those that measure students' intention to adopt TEL were adapted from a study by Ajjan and Hartshorne (2009).

## Results

A total of 157 students in the College of Education at University of Ha'il responded to the survey. Table 1 presents the demographic respondents' information (major and number of technologies used to enhance their learning).

Table 1. Respondents' Demographic Information

		Frequency	Percent
Majors	sports science and physical activity	94	59.9
	psychology	63	40.1
Number of technologies used to enhance students' learning	1	13	8.3
	2	43	27.4
	3	46	29.3
	4	55	35.0
	Total	157	100.0

Regarding majors, most students were enrolled in sports science and physical activity (94; 59.9%); the remainder were enrolled in psychology (63; 40.1%). In terms of number of technologies used to enhance their learning, most students (55; 35.0%) used more than four technologies, such as the content of learning management systems, YouTube, discussion chatting, and WhatsApp, while a few (13; 8.3%) relied on only one technology.

**Confirmatory Factor Analysis**

A pooled CFA using AMOS software was carried out for assessing measurement model of the correlations among constructs, as this is considered the best technique to assess construct validity (Awang, 2015). Furthermore, both convergent and discriminant validities were assessed. Figure 2 shows the output of the pooled CFA.

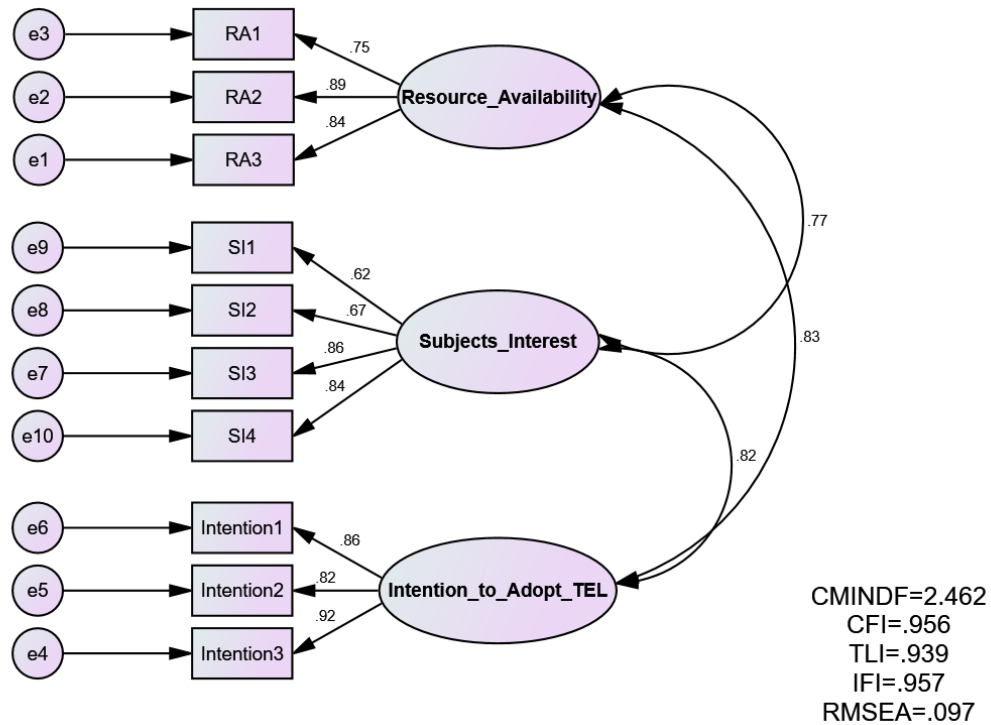


Figure 2. Pooled CFA

The achieved construct validity is considered when indices in proposed model meet the required level mentioned by the literature. The results in Table 2, below, show all the indices in the model and prove that construct validity was achieved.

Table 2. The Results of Indices in the First Run

Category Name	Index Name	Index Value	Acceptance Level	Decision	Reference
"Absolute fit"	RMSEA	0.097	<0.1	Accepted	
	CFI	0.956	>0.90	Accepted	(Hair et al., 2014.
"Incremental fit"	TLI	0.939	>0.90	Accepted	Awang, 2015,
	IFI	0.957	>0.90	Accepted	Awang2018)
"Parsimonious fit"	Chisq/df	2.462	<3.0	Accepted	

Then, convergent validity was assessed. Convergent validity is achieved when the composite reliability (CR) and average variance extracted (AVE) are above 0.60 CR and 0.5, respectively (Hair et al., 2014; Awang, 2015, Awang, 2018). Based on the results in Table 3 below, the CR and AVE are above the suggested values. Thus,

convergent validity is achieved.

Table 3. CR and AVE Values

	CR	AVE
<b>Intention to Adopt TEL</b>	0.902	0.754
<b>Resource Availability</b>	0.866	0.685
<b>Subjects Interest</b>	0.840	0.572

Finally, the discriminant validity was assessed. Discriminant validity is achieved when all values in BOLD, referring to the AVE square root, are higher than those in the column and rows (Awang, 2015). Based on the values presented in Table 4, below, discriminant values were achieved as all values in bold are higher than the others in the column and rows.

Table 4. Discriminant Validity

	<b>Intention to Adopt TEL</b>	<b>Resource Availability</b>	<b>Subject Interest</b>
<b>Intention to Adopt TEL</b>	<b>0.868</b>		
<b>Resource Availability</b>	0.835	<b>0.847</b>	
<b>Subjects Interest</b>	0.821	0.766	<b>0.876</b>

**Standardized Estimate**

Structural equation modelling (SEM) produces two outputs: a standardized estimate and an unstandardized estimate. The standardized estimate is used to show the factor loading items, the R square of the depended-on factor, and the strength of relationships among the constructs, while the unstandardized estimate is used to assess the critical ratio and test the research hypotheses. Figure 3 shows the standardized estimate.

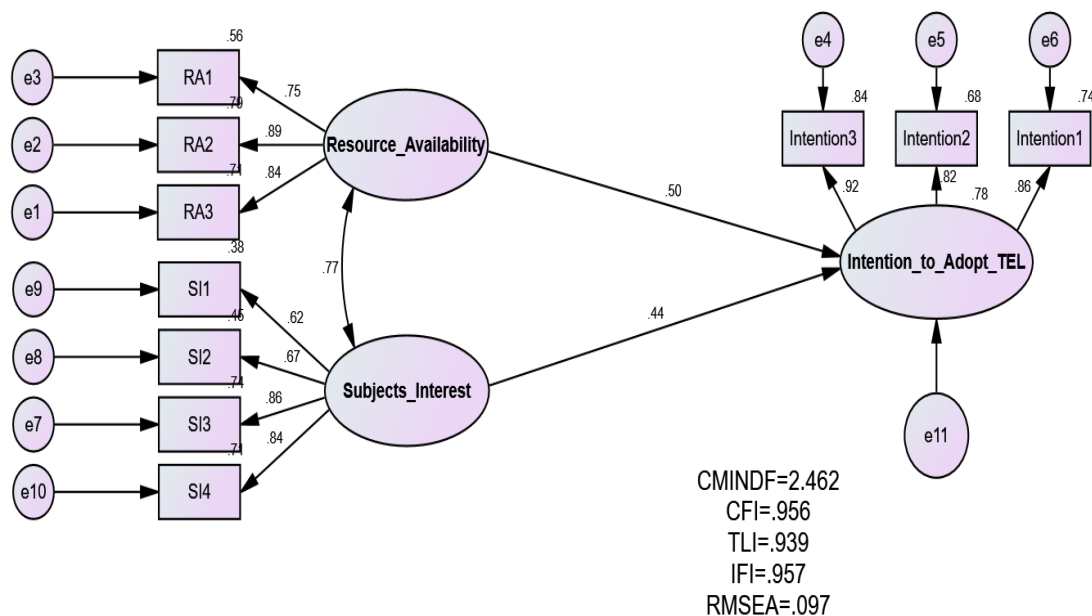


Figure 3. Standardized Estimate

**Unstandardized Estimate**

An unstandardized estimate was made to assess the critical ratio and test the research hypotheses. Fig 4., below, shows the output of the unstandardized estimate.

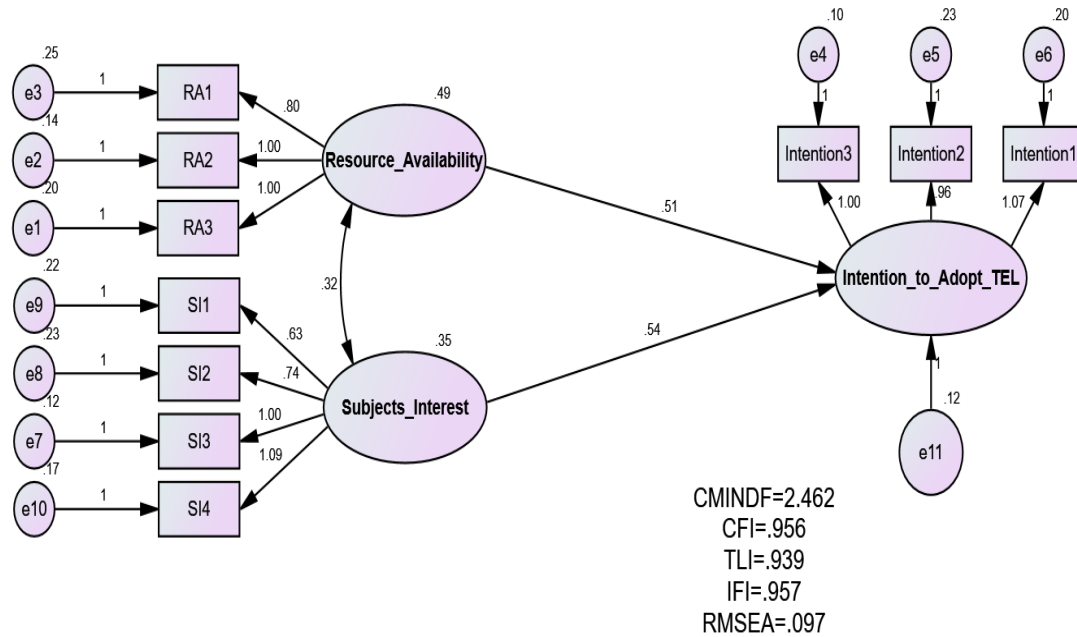


Figure 4. Unstandardized Estimate

**Justification of Hypotheses**

The results of the assessment of the relationships show that both factors, resource availability and students’ subject interest, have a significant positive effect on students’ intention to adopt TEL ( $\beta = 0.510, p < 0.001$ ), ( $\beta = 0.535, p < 0.001$ ). Thus, H1 and H2 are supported, as shown in Table 5, below.

Table 5. The Hypothesis Results

		Estimate	S.E.	C.R.	p	Results
Resource_Availability	--> Intention_to_Adopt_TEL	.510	.103	4.943	***	Supported
Subject_Interest	--> Intention_to_Adopt_TEL	.535	.122	4.377	***	Supported

**Discussion**

The study aimed at examining the effect of perceived resource availability and students’ subject interest on students’ intention to adopt TEL. The results show that the perceived resource availability has a significant positive effect on students’ intention to adopt TEL. These results are in line with some previous studies (Tarhini et al., 2017; Sharma et al., 2016; Salloum et al., 2018) and indicate that the higher the online resources provided for learning, the higher the adoption of TEL among students. Furthermore, the availability of resources and



learning technologies strongly affect students' adoption of TEL and lead to students' engagement with it.

The results also reveal that the students' perceived subject interest had a significant positive effect on students' intention to adopt TEL. These findings are in line with some previous studies (Barksdale et al., 2021; Chiraz, 2022; Ibrahimi et al., 2022; Khan et al., 2021; Lampropoulos et al., 2021; Lee et al., 2005; Liu et al., 2010; Mecias & Palaoag, 2022; Maheshwari, 2021; Moore, 2021; Zare & Yazdanparast, 2013). Thus, if students' interest in learning a specific subject is high, their curiosity will be encouraged, which has a positive influence on learning through an online medium. It could be said that students prefer learning through an online medium when their curiosity about learning a specific subject is high, as this will encourage them to adopt and use different technologies for learning.

The study contributes theoretically and practically to the field of technology in literature. Theoretically, this study enhances the literature, especially in developing countries, as, to our knowledge, this is the first study conducted in the Arab context, namely Saudi Arabia, examining the effect of perceived resource availability and students' subject interest on students' intention to adopt TEL. Practically, the results can inform decision makers in higher education about the factors that may affect the adoption of TEL. It can also assist universities in their administration and management of different services offered through technologies. It has become essential to understand students' needs and what causes them to adopt or not adopt a specific service through online learning.

The current study provides solutions and answers for universities and other educational institutions looking to use different strategies to enhance their teaching process. Two external factors, namely perceived resource availability and students' subject interest, were investigated in regard to students' intention to adopt TEL. The results revealed that both factors predict students' intention to adopt TEL. These findings assist policy makers in universities and other educational institutions to devise policies and strategies which lead to a successful implementation and adoption of TEL.

## **Conclusion**

Most universities and institutions focus on adopting TEL to enhance their teaching and learning process and remain competitive. TEL has greater advantages than traditional methods of teaching and learning as students' learning can be enhanced when online sources are available to them and they have an interest in a specific subject. The study examined the effect of students' perceived resource availability and subject interest on their intention to adopt TEL. The findings show that both factors, namely students' perceived resource availability and subject interest, have a significant positive effect on students' intention to adopt TEL.

## **References**

- Ajjan, H., & Hartshorne, R. (2008). Investigating faculty decisions to adopt Web 2.0 technologies: Theory and empirical tests. *The internet and higher education, 11*(2), 71-80.
- Akturk, AO & Delen, A. (2020). Öğretmenlerin teknoloji kabul düzeyleri ile öz-yeterlik inançları arasındaki ilişki

- [The Relationship between Teachers' Technology Acceptance Levels and Self-Efficacy Beliefs]. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi) [Science, Education, Art and Technology Journal (SEAT Journal)]*, 4(2), 67-80.
- Al-Busaidi, K. A. (2013). An empirical investigation linking learners' adoption of blended learning to their intention of full e-learning. *Behaviour & Information Technology*, 32(11), 1168-1176.
- Alshammari, S. H. (2020). The Influence of Technical Support, Perceived Self-Efficacy, and Instructional Design on Students' use of Learning Management Systems. *Turkish Online Journal of Distance Education*, 21(3), 112-141.
- Altunışık, M. & Aktürk, A. O. (2021). Türkiye'de web 2.0 araçlarının eğitim-öğretim ortamlarında kullanımına bir bakış: 2010-2020 dönemi tezlerinin incelenmesi [A literature review on the usage of Web 2.0 tools in educational environments in Turkey: Analysis of the theses between the years 2010 and 2020]. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi) [Science, Education, Art and Technology Journal (SEAT Journal)]*, 5(2), 205-227.
- Altunisik, M., & Akturk, A. O. (2021). Analysis of the use of web 2.0 tools in educational environments in Turkey. In M. Shelley, I. Chiang, & O. T. Ozturk (Eds.), *Proceedings of ICRES 2021-- International Conference on Research in Education and Science* (pp. 177-184), Antalya, Turkey. ISTES Organization.
- Awang, P. (2015). *SEM made simple: A gentle approach to learning Structural Equation Modeling*. MPWS Rich Publication, Bangi.
- Awang, Z. (2018) *Pendekatan Mudah SEM (Structural Equation Modeling)*. MPWS Rich Resources, Selangor. ISBN 978-967-0942-58-2.
- Barksdale, S., Upadhyay, B., & Vernon, M. (2021). Teacher Professional Development: Mobile and Limited Technology-enhanced Pedagogy. *International Journal of Technology in Education and Science (IJTES)*, 5(4), 486-511. <https://doi.org/10.46328/ijtes.249>
- Barkus, F. & Koç, M. (2019). Dijital mahremiyet kavramı ve ilgili çalışmalar üzerine bir derleme [A Review on the Concept of Digital Privacy and Related Studies]. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi) [Science, Education, Art and Technology Journal (SEAT Journal)]*, 3(1), 35-44.
- Chiraz, A. (2022). The Use of Gamification and Digital Activities in A Foreign Language Online Class. In P. Dankers, M. Koc, & M.L. Ciddi (Eds.), *Proceedings of ICEMST 2022-- International Conference on Education in Mathematics, Science and Technology* (pp. 145-157), Antalya, Turkey. ISTES Organization.
- Clark, R. and Mayer, R.E. (2011), *E-learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*, 3rd ed. John Wiley & Sons, San Francisco.
- Duygu H. S. & Aktürk, A. O. (2021). Investigation of Cyberloafing Levels of High School Students. In S. Jackowicz & O. T. Ozturk (Eds.), *Proceedings of ICSES 2021-- International Conference on Studies in Education and Social Sciences* (pp. 147-159), Antalya, Turkey. ISTES Organization.
- Fayter, D. (1998). Issues in training lecturers to exploit the Internet as a teaching resource. *Education+ Training*.
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European business review*, 26(2), 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Homan, G., & Macpherson, A. (2005). E-learning in the corporate university. *Journal of European Industrial*

- Training*, 29(1), 75-90. <https://doi.org/10.1108/03090590510576226>
- Hwang, A., & Arbaugh, J. B. (2009). Seeking feedback in blended learning: competitive versus cooperative student attitudes and their links to learning outcome. *Journal of Computer Assisted Learning*, 25(3), 280-293.
- Ibrahimi, E., Miri, F., Berberi, S., Rruci, E., Hyska, E., & Xhelili, P. (2022). Access and Use of ICTs by Albanian Natural Science Students. In P. Dankers, M. Koc, & M.L. Ciddi (Eds.), *Proceedings of ICEMST 2022-- International Conference on Education in Mathematics, Science and Technology* (pp. 79-89), Antalya, Turkey. ISTES Organization.
- Imamoglu, S.Z. (2007), "An empirical analysis concerning the user acceptance of e-learning", *Journal of Ituma*, A. (2011). An evaluation of students' perceptions and engagement with e-learning components in a campus based university. *Active Learning in Higher Education*, 12(1), 57-68.
- Jagannath, J. (2020). *Covid-19 will be with us for a long time and be easily ignite*. WHO.
- Janda, S. (2016). Segmenting students based on study abroad motivations, attitudes, and preferences. *Journal of International Education in Business*, 9(2), 111-122. <https://doi.org/10.1108/JIEB-06-2016-0013>
- Johnston, S., & McCormack, C. (1996). Integrating information technology into university teaching: identifying the needs and providing the support. *International Journal of Educational Management*, 10(5), 36-42. <https://doi.org/10.1108/09513549610146123>
- Keller, C., & Cernerud, L. (2002). Students' perceptions of e-learning in university education. *Journal of Educational Media*, 27(1-2), 55-67.
- Khan, M. A., Sardahi, Y., & Castellanos, C. I. H. (2021). Robust multi-objective optimal design of a racing car suspension system. In M. Shelley & V. Akerson (Eds.), *Proceedings of IConEST 2021-- International Conference on Engineering, Science and Technology* (pp. 12-25), Chicago, USA. ISTES Organization.
- Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: what is 'enhanced' and how do we know? A critical literature review. *Learning, media and technology*, 39(1), 6-36.
- Lampropoulos, G., Siakas, K., Makkonen, P., & Siakas, E. (2021). A 10-year Longitudinal Study of Social Media Use in Education. *International Journal of Technology in Education (IJTE)*, 4(3), 373-398. <https://doi.org/10.46328/ijte.123>
- Lee, M. K., Cheung, C. M., & Chen, Z. (2005). Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation. *Information & management*, 42(8), 1095-1104.
- Liaw, S. S., Huang, H. M., & Chen, G. D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers & education*, 49(4), 1066-1080.
- Liu, I. F., Chen, M. C., Sun, Y. S., Wible, D., & Kuo, C. H. (2010). Extending the TAM model to explore the factors that affect intention to use an online learning community. *Computers & education*, 54(2), 600-610.
- Lorenzo Gales, N., & Gallon, R. (2018). *Event horizon: helping students to learn what nobody knows yet*. Innovations, Technologies, and Research Indication, Cambridge Scholars Publishing, University of Latvia, 1-16.
- Maheshwari, G. (2021). Factors affecting students' intentions to undertake online learning: an empirical study in Vietnam. *Education and Information Technologies*, 26(6), 6629-6649.

- Mecias, L.L., & Palaoag, T.D. (2022). Assessment in Students' Performance and Behavior towards the Use of Online Platform through Data Analysis. In O. Noroozi & I. Sahin (Eds.), *Studies on Education, Science, and Technology 2022* (pp. 311-330). ISTES Organization.
- Mehra, V., & Omidian, F. (2012). Note for editor: Development an Instrument to Measure University Students' Attitude Towards E-Learning. *Turkish Online Journal of Distance Education*, 13(1), 34-51.
- Moore, S. W. (2021). Adopting a project-based learning framework in an online course to enhance the quality of student projects. In V. Akerson & M. Shelley (Eds.), *Proceedings of IConSES 2021-- International Conference on Social and Education Sciences* (pp. 144-149), Chicago, USA. ISTES Organization.
- Muir-Herzig, R. G. (2004). Technology and its impact in the classroom. *Computers & Education*, 42(2), 111-131.
- Newton, R. (2003). *Staff attitudes to the development and delivery of e-learning*. New library world.
- Nikou, S. A., & Economides, A. A. (2017). Mobile-based assessment: Investigating the factors that influence behavioral intention to use. *Computers & Education*, 109, 56-73.
- Noroozi, O., Banihashem S. K., & Biemans, H. J. A. (2021). The Role of Education Level in Online Peer Feedback Performance for Argumentative Essay Writing. In S. Jackowicz & O. T. Ozturk (Eds.), *Proceedings of ICSES 2021-- International Conference on Studies in Education and Social Sciences* (pp. 135-140), Antalya, Turkey. ISTES Organization.
- Öztürk, Ö. T., Türe, A., & Yağlıcı, S. C. (2021). The Relationship of Futurism Dynamism and Today's Technology. In S. Jackowicz & O. T. Ozturk (Eds.), *Proceedings of ICSES 2021-- International Conference on Studies in Education and Social Sciences* (pp. 160-170), Antalya, Turkey. ISTES Organization.
- Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Journal of Educational Technology & Society*, 12(3), 150-162.
- Peled, A. (2000). Bringing the Internet and multimedia revolution to the classroom. *Campus-wide Information systems*, 17(1), 16-22. <https://doi.org/10.1108/10650740010317023>
- Salloum, S. A., AlHamad, A. Q., Al-Emran, M., & Shaalan, K. (2018). A survey of Arabic text mining. In *Intelligent natural language processing: Trends and applications* (pp. 417-431). Springer, Cham.
- Singh, J. (2016). *Acceptance of technology-enhanced learning: a study among technical students in India* (Doctoral dissertation, Thesis, Indian Institute of Management, Indore).
- Sivin-Kachala, J. and Bialo, E.R. (2000). *The Effectiveness of Technology in Schools*, 7th ed. Software.
- Subakan, Y. & Koç, M. (2019). Özel eğitim gereksinimli bireylerin gelişim ve eğitimlerinde kullanılan mobil cihazlar ve yazılımlar [Mobile Technologies Used for the Development and Education of Individuals with Special Educational Needs]. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi) [Science, Education, Art and Technology Journal (SEAT Journal)]*, 3(2), 51-61.
- Subakan, Y. & Koç, M. (2021). Giyilebilir Teknoloji Bedenleşme Ölçeğini Türkçeye uyarlama ve geçerlik çalışması [Adaptation and validation of the Wearable Technology Embodiment Scale to Turkish language]. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi) [Science, Education, Art and Technology Journal (SEAT Journal)]*, 5(2), 180-204.
- Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2017). Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments*, 25(3), 306-328.


- Tarhini, A., Scott, M., Sharma, S., & Abbasi, M. S. (2015). Differences in intention to use educational RSS feeds between Lebanese and British students: A multi-group analysis based on the technology acceptance model. *Academic Conferences and Publishing International*.
- Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information systems research*, 6(2), 144-176.
- Tetteh, G. A. (2016). Effects of business school student's study time on the learning process. *Journal of International Education in Business*, 9(2), 111-122. <http://dx.doi.org/10.1108/JIEB-06-2016-0013>
- Wenglinsky, H. (1998). *Does it compute? The relationship between educational technology and student achievement in mathematics*. Retrieved from <https://files.eric.ed.gov/fulltext/ED425191.pdf> on April 14, 2022.
- Yılmaz, O., & Hebebcı, M. T. (2022). Examining the Opinions of Faculty Members on Online Exams with SWOT Analysis. In M. Shelley, H. Akcay, & O. T. Ozturk (Eds.), *Proceedings of ICRES 2022-- International Conference on Research in Education and Science* (pp. 76-90), Antalya, Turkey. ISTES Organization.
- Zare, H., & Yazdanparast, S. (2013). The causal Model of effective factors on intention to use of information technology among payamnoor and traditional universities students. *Life Science Journal*, 10(2), 46-50.

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