THE 18TH EDITION OF THE INTERNATIONAL CONFERENCE
EUROPEAN INTEGRATION
REALITIES AND PERSPECTIVES

Higher Education Issues,
Policy, and Management

Assessing Student Satisfaction: Opportunities and Challenges in Online Learning

Llesh Lleshaj[1], Suela Agaj[2]

Abstract: This research analyzes online and traditional education satisfaction, highlighting their unique opportunities and challenges. **Objectives**: The study aims to explore the higher education landscape, investigating how students navigate these various environments and the resulting influences on their educational experiences, academic institutions, and more. **Prior Work**: This research evaluates the satisfaction with online learning throughout university education, providing essential insights for educators, policymakers, and students. **Approach**: A survey was conducted to measure the online learning satisfaction of 880 students from public universities in Albania during the 2022-2023 academic year. The data was analyzed using an econometric model incorporating multiple factors with index variables. **Results**: The dependent variable is the satisfaction of online learning, and the independent variables are many dimensions that affect online learning, such as the challenges, disadvantages, and advantages of digitalization and learning platforms, new online teaching methods and relevance, etc. **Value and Implications**: Despite the numerous benefits and opportunities of online learning, such as access to materials, modern study methods, video-recorded lectures, and guest speakers, there are also some challenges, including technological issues, difficulties with interactive communication, and social isolation.

Keywords: online learning; digitization of auditoriums; public university; learning satisfaction

JEL Classification: A23; C13; I21; O35

1. Introduction

In the fast-evolving educational landscape, comparing online learning with traditional education has become a key focus, influencing contemporary teaching methods. With technological advancements, it is crucial to understand the benefits and limitations of satisfaction in these two educational models.

[1]Associate Professor at Department of Finance, Faculty of Economy, University of Tirana, Albania. Address: Sheshi Nënë Tereza 4, Tiranë 1010, Albania, Corresponding author: llesh lleshaj@feut.edu.al.

[2] PhD candidate at Department of Finance, Faculty of Economy, University of Tirana, Albania. Address: Sheshi Nënë Tereza 4, Tiranë 1010, Albania, E-mail: agajsuela@yahoo.com.

Online learning has revolutionized traditional teaching by introducing new possibilities and altering knowledge acquisition. Its flexibility, accessibility, and ability to address individual needs have made it a significant educational influence. However, this transition to digital learning brings unique challenges absent in conventional classrooms. This study delves into the complexities of satisfaction in both online and traditional education, highlighting the distinct advantages and challenges. It aims to illuminate the evolving educational environment, offering insights into how students navigate these varied settings and the implications for educators, institutions, and the broader academic community.

This study will investigate the potential advantages of online learning, such as global accessibility, personalized learning experiences, and the incorporation of innovative technologies. At the same time, we will address the challenges it presents, including concerns about the quality of online education, the digital divide, and the impact on social and interpersonal skills typically developed in physical classrooms. We will also explore the enduring strengths of traditional education, such as face-to-face interactions, established teaching methodologies, and cultural and social connections. However, we will acknowledge the challenges traditional models face, such as limited accessibility, inflexibility, and the difficulty in quickly adapting to the evolving needs of modern learners. This study aims to comprehensively understand learning satisfaction, offering valuable insights for educators, policymakers, and students. As we examine the complex relationship between online learning and traditional education, we seek to uncover the challenges and opportunities of a new era in learning.

Online learning offers numerous advantages for students. Its flexibility and convenience allow access to course materials and lectures anytime, accommodating diverse schedules, especially for those with work or family commitments. It breaks geographical barriers, enabling global access to quality education. Online courses often feature diverse multimedia resources, enhancing the learning experience and catering to different learning styles. Cost savings are significant, as online learning reduces expenses related to commuting, housing, and physical materials, and many programs are more affordable than traditional ones. Personalized learning paths allow students to focus on their interests, revisit challenging concepts, and progress at their own pace, with adaptive technologies providing tailored content and feedback. Enhanced communication is facilitated through various online platforms, fostering interaction among students and instructors and promoting virtual teamwork. Online learning also develops digital approaches and virtual collaboration skills, which are crucial in today's interconnected world. It encourages self-directed learning, fostering self-discipline, time management, independence, and self-motivation. Additionally, online learning offers career advancement opportunities, allowing individuals to acquire new skills or pursue advanced degrees while working, demonstrating adaptability and commitment to employers.

Online learning has several main disadvantages for students. Limited social interaction can lead to feelings of isolation and a diminished sense of community. Technical issues like internet connectivity problems, software glitches, or hardware malfunctions can disrupt the learning experience. Self-motivation and self-discipline can be challenging for some students, as online learning requires effective time management and engagement. Communication can be more complex, with students potentially feeling hesitant to ask questions or seek clarification compared to face-to-face settings. There can be delays in receiving feedback on assignments, hindering timely improvement. Building personal connections with instructors can be more challenging, impacting the quality of mentorship and support. Online exams and assessments may raise concerns about academic integrity due to the potential for cheating. Additionally, networking opportunities are limited in online learning environments compared to traditional classrooms, making it more challenging to build professional relationships with peers.

The questionnaires evaluate students' satisfaction with online learning and compare it to traditional classroom learning. This study is driven by the need to examine the perspectives and challenges of online learning, which has emerged as a novel approach to education in universities and professional qualifications.

2. Literature Review

The start of the COVID-19 pandemic in 2019 had a profound global impact, prompting widespread school closures to prioritize health and safety (Villela, et. al, 2021; Ayittey, et. al, 2020). This sudden shift led to a surge in demand for online learning as educators swiftly pivoted from traditional classroom settings to virtual platforms to ensure uninterrupted student education (Lei & Maxwell, 2021). The pandemic presented unprecedented challenges to the education sector, necessitating schools to bolster emergency readiness and adapt to ongoing changes and periodic outbreaks, often referred to as the "new normal" (Wang, 2020). Educational institutions are now tasked with exploring alternative approaches to traditional in-person education in response to this evolving situation.

Simultaneously, social distancing measures prompted campus closures (Toquero, 2020), accelerating the transition from traditional teaching methods to online learning, which posed significant challenges and barriers in a short span (Crawford, et. al, 2020). Students often require assistance in recognizing the educational merits of online technologies, occasionally perceiving them as irrelevant or hindrances to learning (Ellis & Bliuc, 2019). Research by Cui, et. al. (2020) indicated a decline in students' timely completion of courses and assignments. While the full impact of the COVID-19 pandemic on education continues to unfold, educational institutions worldwide are actively improving online learning environments and resources across various academic disciplines, maximizing available resources (Cui, et. al, 2020).

Numerous studies have delved into online education during the COVID-19 pandemic, yet more research is necessary to delve into college students' technological proficiency, interpersonal dynamics with peers and instructors, and experiences with collaborative learning (Kaur, 2020). Online learning presents novel opportunities for students to engage in self-directed study, collaborate with peers, and forge connections, prompting them to rethink strategies for enhancing technological skills, learning approaches, communication abilities, and team roles. It introduces a fresh perspective on independent study, collaboration, and relationship-building, motivating students to reassess methods for improving technical proficiency, refining learning strategies, and enhancing communication. Recommendations include expanding technical training for faculty and students to bolster practical skills and address communication challenges stemming from insufficient expertise.

The current educational landscape, shaped by the COVID-19 pandemic, starkly contrasts with traditional online learning, resembling an emergency-driven approach that poses significant challenges for students. Issues such as unreliable internet access hinder equal access to online education (La Velle, et. al, 2020), resulting in attendance and participation difficulties, thereby reducing the perceived flexibility of online learning. Students must quickly adapt to new learning methods amidst personal and societal impacts of the pandemic (MacIntyre, et. al, 2020). Teachers' proficiency in educational technology becomes crucial, as research shows a link between students' academic performance and technological skills, underscoring the impact of educators' online teaching abilities on learning outcomes (Masry-Herzallh & Stavissky, 2021). Thus, there is a pressing need for educators to enhance their teaching skills for effective knowledge transfer and communication with students. Exploring and

implementing effective online teaching strategies and prioritizing student engagement are critical to ensuring optimal learning experiences in this evolving educational environment.

The current situation in education, shaped by the COVID-19 pandemic, differs significantly from traditional online learning, resembling a crisis-driven approach that poses significant challenges for students. Issues like unreliable internet connections create barriers to equitable access to online education (La Velle, et. al, 2020), resulting in difficulties with attendance and engagement in online sessions, reducing the adaptability of online learning. Students must rapidly adapt to new learning methods while navigating the personal and societal impacts of the pandemic on their daily lives and well-being (MacIntyre, et. al, 2020).

Teachers' proficiency in educational technology significantly impacts student engagement, with research highlighting a positive correlation between students' academic performance and technological skills (Masry-Herzallh & Stavissky, 2021). Educators play a crucial role in enhancing their teaching skills to facilitate effective knowledge transfer and communication with students. Their efforts in prioritizing student-centered online teaching strategies are crucial to enhancing engagement levels.

While online learning has played a crucial role in protecting students and faculty during the COVID-19 pandemic, its effectiveness is under scrutiny compared to traditional methods. Assessing the success of digital transformation in higher education involves evaluating changes, implementation speed, technology use, user capabilities, and economic implications (Kopp, et. al, 2019). Challenges such as technical issues, socio-economic conditions, digital literacy gaps, and workload pressures affect online learning effectiveness, particularly in less developed regions with poor connectivity (Adedoyin & Soykan, 2020).

Online learning, lacking physical presence, hinders the development of face-to-face interactive relationships among students and educators (Alawamleh, et. al, 2020). This gap necessitates a reevaluation of how students and instructors interact and collaborate. Despite the availability of various online tools, instructors often need help to provide timely feedback and support remotely, contributing to student dissatisfaction (Collazos, et. al, 2021). Students identified as "social learners" value interaction with peers and instructors but can easily become distracted and less engaged with online course content (Bozkurt & Sharma, 2020). Maintaining self-discipline also presents a challenge (Nishimwe, et. al, 2022). Overall, students generally prefer face-to-face teaching and learning experiences.

3. Research Methodology and Models

The study uses primary survey data from bachelor's and master's level students at public universities in Albania during the 2023-2024 academic year, with a total of 880 respondents. The methodology involves determining sample sizes for both infinite and finite populations. Initially, the infinite sample size is calculated based on population proportion, confidence level, and Z-score from the normal distribution. Subsequently, the finite sample size is determined using the collected data, with an optimal size exceeding 385 respondents at a 5% confidence interval. Table 1 provides descriptions of the variables used in the model.

Table 1. Meaning of variables and descriptive statistics.

Abbreviation	*Description of the variable*
Dependent variable:	
SOL	*Satisfaction of online learning:* {Assess the general satisfaction levels observed throughout the implementation of online learning compared to traditional teaching within the faculty, using a rating scale from 1 (very low satisfaction) to 5 (completely satisfied)}
Independent variable:	
I_{COL}	*Index of challenges of online learning* is an average of the: - Technology (computers, platforms, internet, etc.); - Interactive communication with the lecturer; - Lack of digitized teaching materials; - Low level of digital knowledge by the student; - Low level of digital knowledge of lecturers; - Time management and organization; - Orientation/ support from the university.
I_{MOL}	*Index of method-developing of online learning* is an average of the: - video conference; - independent reading of recommended literature; - read power point presentation independently; - power point with audio of the lecturer that is followed in video form; - power point with audio and video of the lecturer that is followed in video form; - tracking of proposed video (additional) materials; - reading proposed additional written materials; - guest lecturers; - case studies.
I_{ROL}	Index of relevance of online learning is an average of the: - encourages me to reflect on the aspects I am learning; - encourages critical thinking and creativity; - encourages team work; - online learning platforms help organize materials, assignments and schedules; - I find it difficult to self-organize to learn; - some of these practices I would like to continue when we return to university.
I_{AOL}	Index of advantages of online learning is an average of the: - Ability to access materials at any time; - Possibility of staying at home; - Classroom interactivity; - Possibility to record a lesson.
I_{DOL}	*Index of disadvantages of online learning* is an average of the: - Reduces communication with the lecturer; - Technical problems; - Poor study conditions at home; - Social isolation; - Lack of self-discipline.

Source: Author's Summary

In this study, we have used the multiple linear regression model. This model attempts to establish and estimate the relationship between the dependent and many independent variables. It is one of the most fundamental, usable, and powerful models for many statistical approaches. The questions used in the questionary are on a Likert scale (from 1 to 5), and the classification is from the lowest to the highest level. This type of measure creates a valid variation necessary for applying linear regression. The generalized form of the multiple linear regression is:

$$SOL = \beta_0 + \beta_1 I_{COL} + \beta_2 I_{MOL} + \beta_3 I_{ROL} + \beta_4 I_{AOL} + \beta_4 I_{DOL} + \varepsilon \quad (1)$$

Where,

- Dependent variable (the main purpose of this study);
- Independent variables (other questions that cause variation in the dependent variable or are the factors that affect it);
- β_i = regression parameters which estimate the impact scale of each independent index-variable in the dependent variable (with constrain "ceteris paribus");
- ε = error term (all other variables that are not involved in the model).

Estimating parameters β_i it will be used the ordinary least squares method, this means that we need to minimize the square of errors. To make the parameter evaluation, it will be used the ordinary least square method (Verbeek, 2017). This evaluation set up conclusions with high statistical reliability, we will rely on all the basic assumptions of the Gauss-Markov theorem (Wooldridge, 2016). According to this theorem, as a regression model should be statistically the best and useful for economic analysis it must meet certain assumption:

- *First condition:* the model must be of linear form related to the parameters β_i.
- *Second condition:* the mathematical expectation of the error term must be $E(\varepsilon_{it}) = 0$.
- *Third condition:* the model must have the error variance constant, i.e., $V(\varepsilon_{it}) = E(\varepsilon_{it}^2)=\sigma$.
- *Fourth condition:* the model must not be correlated between error, $Cov(\varepsilon_{it}; \varepsilon_{jt})= 0, i \neq j$.
- *Fifth condition:* the model must not have multicollinearity, i.e., $Cov(x_{it}; x_{jt}) = 0, i \neq j$.

4. Empirical Analysis and Findings

Table 2 below shows the summary of descriptive statistics for all the variables included in the analysis. According to these statistics, the variables have an average index value from 2 to 3, having evaluation positions "satisfied" in positions of "average" challenges and difficulties.

Table 2. Descriptive Statistics

	IAOL	*ICOL*	*IDOL*	*IMOL*	*IROL*	*SOL*
Mean	2.797855	2.644614	3.291458	2.591112	2.512941	2.062642
Median	2.800000	2.714286	3.400000	2.555556	2.461538	2.000000
Maximum	5.000000	5.000000	5.000000	5.000000	5.000000	5.000000
Minimum	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
Std. Dev.	0.958100	0.779085	0.967750	0.863920	0.751490	0.946430
Skewness	0.116149	0.354949	-0.275640	0.220255	0.531766	0.561413
Kurtosis	2.588256	3.458274	2.645799	3.030036	3.613112	2.842689

Source: Authors' calculations in EViews 12

Table 3 illustrates the relationships and their strengths between the variables. Notably, none of the variables exhibit a strong negative or positive correlation (i.e., less than -0.7 or greater than +0.7). This indicates that the linear estimation model is not affected by multicollinearity among the independent variables. Conversely, the correlations between the level of satisfaction and all independent variables are statistically significant ($p < 0.05$). The following factors are positively associated with satisfaction with online learning: (1) the advantages of online learning index, (2) the method-developing index for

online learning, and (3) the relevance of online learning index. Satisfaction with online learning is negatively associated with: (1) the challenges of online learning index and (2) the disadvantages of online learning index. Although these positive and negative relationships were anticipated, it is noteworthy that the factors with positive impacts also have the highest absolute correlation coefficients.

Table 3. Matrix of Correlations

Correlation						
Probability	IAOL	ICOL	IDOL	IMOL	IROL	SOL
IAOL	1.000000					

ICOL	-0.033264	1.000000				
	0.3249	-----				
IDOL	-0.129181	0.481217	1.000000			
	0.0001	0.0000	-----			
IMOL	0.537889	0.024661	-0.072162	1.000000		
	0.0000	0.4655	0.0325	-----		
IROL	0.558008	0.038979	-0.167464	0.623349	1.000000	
	0.0000	0.2486	0.0000	0.0000	-----	
SOL	0.509009	-0.112493	-0.334615	0.474432	0.556817	1.000000
	0.0000	0.0008	0.0000	0.0000	0.0000	-----

Source: Authors' calculations in EViews 12. Note: "" for statistical significance level of p < 1%, "**" for statistical significance level of p < 5%.*

Table 4 below shows the parametric statistical estimations of the linear model of variables influencing the level of satisfaction of students in online learning.

Table 4. Parametric Estimations of "The Satisfaction of Online Learning Model"

Dependent Variable: SOL				
Method: Least Squares				
Sample: 1 880				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.858771	0.138858	6.184525	0.0000*
ICOL	-0.003297	0.035683	-0.092390	0.9264
IMOL	0.162456	0.037378	4.346292	0.0000*
IROL	0.369081	0.044332	8.325453	0.0000*
IAOL	0.231344	0.031795	7.276119	0.0000*
IDOL	-0.237918	0.029121	-8.169952	0.0000*
R-squared	0.434454	Mean dependent var		2.062642
Adjusted R-squared	0.431211	S.D. dependent var		0.946430
S.E. of regression	0.713780	Akaike info criterion		2.170325
Sum squared resid	444.2677	Schwarz criterion		2.202974
Log likelihood	-946.7727	Hannan-Quinn criter.		2.182812
F-statistic	133.9743	Durbin-Watson stat		1.933171
Prob(F-statistic)	0.000000*			

Note: "" for statistical significance level of p < 1%.*

Source: Authors' calculations in EViews 12.

Generalized form of the model is:

$$SOL_i = 0.86 + 0.23I_{AOL} - 0.003I_{COL} - 0.24I_{DOL} + 0.16I_{MOL} + 0.37I_{ROL} + \varepsilon_i \quad (2)$$

The model is statistically significant based on the Fisher-test with significance p < 0.01. *SOL-Satisfaction of online learning* has a statistically significant positive relationship with the variables:

○ I_{AOL} - *Index of advantages of online learning,* - the index of advantages of online learning, when improved by one point on the Likert scale, leads to a 0.23-point (or 23%) increase in satisfaction with

online learning. The benefits provided by online learning platforms include the ability for students to access materials at any time, access to recordings of class discussions at their convenience, the comfort of studying from home, etc.;

○ I_{MOL} - *index of method-developing of online learning* - if this index improves by one point on the Likert scale, it will boost satisfaction with online learning by 0.16 points or 16%. Online learning platforms, at the discretion of the students, offer the opportunity to utilize modern study methods, thereby enhancing satisfaction and self-fulfillment in their studies. This includes access to online literature, video-recorded lectures, guest lecturers from various countries without physical movement restrictions, webinars, video conferences, etc.;

○ I_{ROL} - *index of relevance of online learning* - if this index increases by one point on the Likert scale, it will enhance satisfaction with online learning by 0.37 points or 37%. Students find online learning relevant in various ways: it promotes reflection on learning aspects, stimulates critical thinking and creativity, and aids in organizing materials, assignments, and schedules through online platforms.

Meanwhile, *SOL-Satisfaction of online learning* has a statistically significant negative relationship with the variables:

○ I_{DOL} - *index of disadvantages of online learning* - if this index rises by one point on the Likert scale, it will reduce satisfaction with online learning by 0.24 points or 24%. Students cite several limitations or disadvantages of online learning, including reduced interaction with lecturers, technical issues, social isolation, and a lack of self-discipline.

Even though the satisfaction with online learning is not statistically significant, it is negatively correlated. To ensure that the models are accepted and valid for future evaluations and predictions of similar phenomena, the error term or residuals will be tested.

Table 5. Analysis of the Residuals

The test	*Description of hypothesis*	*Test result*
Multicollinearity: VIF-test (Variance inflation factors)	This test evaluates whether the independent variables are correlated with the residuals or errors of the model. *Null hypothesis:* model does not have multicollinearity	According to the VIF test, all independent variables have values less than 10, indicating that our models do not suffer from multicollinearity.
Autocorrelation: LM-test (Breusch-Godfrey)	This test assesses whether the residuals or errors of the model are correlated. *Null hypothesis:* model does not have autocorrelation	According to the test, the null hypothesis is not rejected, indicating that the models do not have autocorrelation.
Heteroskedasticity: Breusch-Pagan Godfrey-statistic	This test estimates whether the residuals of the model exhibit constant variance. *Null hypothesis:* model does not have heteroskedasticity	According to the test, the null hypothesis is not rejected, indicating that the models do not exhibit heteroskedasticity.
Normality of the residual distribution: Jarque-Bera-test	This test assesses whether the residuals of the model follow a normal distribution. *Null hypothesis:* the residual of the model has normality distribution.	According to the test, the null hypothesis is not rejected, suggesting that the model does not have issues with normality of residuals.

Source: Authors' calculations in EViews 12

These models successfully complete the main criteria for creating efficient models according to the main assumptions of the Gauss-Markov theorem (Table 5). Therefore, the models are statistically reliable for explaining the direction and strength of correlations among the variables.

5. Conclusions

This study examines online learning experiences among bachelor's and master's level students at public universities in Albania during the 2023-2024 academic year. It highlights the advantages of online learning, including flexibility, accessibility to diverse resources, cost savings, personalized learning, improved communication, skill development, and career opportunities. However, challenges such as limited social interaction, technological dependence with potential issues, self-motivation hurdles, communication difficulties, delayed feedback, and concerns about academic integrity are also noted. The research relies on primary survey data to explore these dynamics comprehensively. By focusing on both the positive aspects and drawbacks of online learning, the study aims to provide insights into how these factors impact students' educational experiences in the Albanian context.

In conclusion, this study uncovers significant associations between satisfaction in online learning and several factors. Positive correlations were observed with the Index of Benefits of Online Learning, Index of Development of Online Learning Methods, and Index of Relevance of Online Learning. Specifically, an uptick in these indices corresponds to heightened satisfaction levels, underscoring the advantages of online learning such as flexible access to resources, modern study techniques, and the perceived pertinence of internet-based education. Conversely, satisfaction with online learning displays adverse associations with the Index of Challenges in Online Learning and Index of Drawbacks in Online Learning. An escalation in these indices is linked to diminished satisfaction, suggesting that obstacles like technological glitches, difficulties in interactive communication, and perceived drawbacks such as reduced interaction with instructors contribute to lower satisfaction levels among students participating in online learning. These findings underscore the necessity of addressing challenges and disadvantages to bolster overall student satisfaction in online learning environments. Based on the findings of this study, there are some recommendations to improve student satisfaction in online learning environments:

- Enhance Technological Infrastructure and Support Services: investing to improve technological resources and providing support services to minimize technical issues experienced by students;
- Facilitate Interactive Communication Channels: implementing platforms and tools that facilitate seamless interactive communication between students and instructors, ensuring timely feedback and engagement;
- Promote Modern Study Methods: encouraging the adoption of contemporary study methods and resources that enhance learning flexibility and relevance, aligning with students' educational needs and preferences;
- Continuous Evaluation and Improvement: establishing mechanisms for ongoing evaluation of online learning practices based on student feedback and evolving educational trends.

References

Adedoyin, O.B. & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments,* Vol. 11, pp. 1–13.

Alawamleh, M.; Al-Twait, L. M. & Al-Saht, G. R. (2020). The effect of online learning on communication between instructors and students during Covid-19 pandemic. *Asian Education and Development Studies,* Vol. 11(2), pp. 380–400.

Ayittey, F. K.; Kamasah, J. S.; Ayittey, M. K.; Chiwero, N. B. & Dzuvor, C. (2020). Economic impacts of Wuhan 2019-nCoV on China and the world. *Journal of medical virology,* Vol. 92(5), pp. 473–475.

Bozkurt, A. & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to coronavirus pandemic. *Asian Journal of Distance Education,* Vol. 15(1).

Collazos, C. A.; Fardoun, H. M.; Alsekait, D.; Pereira, C. S. & Moreira, F. (2021). Designing online platforms supporting emotions and awareness. *Electronics,* Vol. 10(3), pp. 251–269.

Crawford, J.; Butler-Henderson, K.; Rudolph, J. & Glowatz, M. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching.* Vol. 3(1), pp. 1–20.

Cui, S.; Zhang, C.; Wang, S.; Zhang, X.; Wang, L. & Zhang, L. et al. (2020). Experiences and attitudes of elementary school students and their parents toward online learning in china during the COVID-19 pandemic: questionnaire study. (Preprint). *Journal of Medical Internet Research,* Vol. 23(5).

Ellis, R. A. & Bliuc, A. M. (2019). Exploring new elements of the student approaches to learning framework: the role of online learning technologies in student learning. *Active Learning in Higher Education,* Vol. 20(1), pp. 11–24.

Jeffrey, M. Wooldridge (2016). *Introductory econometrics: A Modern Approach.* 6th Ed. Cengage Learning Press.

Kaur, G. (2020). Digital life: boon or bane in teaching sector on COVID-19. *CLIO: An Annual Interdisciplinary Journal of History.* Vol. 6, pp. 416–427.

Kopp, M.; Gröblinger, O. & Adams, S. (11–13 March, 2019). Five common assumptions that prevent digital transformation at higher education institutions. *INTED2019 Proceedings, 13th International Technology, Education and Development Conference*. Valencia, pp. 1448–1457.

La Velle, L.; Newman, S.; Montgomery, C. & Hyatt, D. (2020). Initial teacher education in England and the COVID-19 pandemic: challenges and opportunities. *Journal of Education for Teaching,* Vol. 46(1), pp. 596–608.

Lei, M. & Medwell, J. (2021). Impact of the COVID-19 pandemic on student teachers: how the shift to online collaborative learning affects student teachers' learning and future teaching in a Chinese context. *Asia Pacific Education Review,* Vol. 22, pp. 169–179.

MacIntyre, P. D.; Gregersen, T. & Mercer, S. (2020). Language teachers' coping strategies during the Covid-19 conversion to online teaching: correlations with stress, wellbeing and negative emotions. *System,* Vol. 94.

Masry-Herzallh, A. & Stavissky, Y. (2021). The attitudes of elementary and middle school students and teachers towards online learning during the corona pandemic outbreak. *SN Social Sciences,* Vol. 1, pp. 71–93.

Ming, T. R.; Norowi, N. M.; Wirza, R. & Kamaruddin, A. (2021). Designing a collaborative virtual conference application: challenges, requirements, and guidelines. *Future Internet,* Vol. 13(10), p. 253.

Nishimwe, G.; Kamali, S.; Gatesi, E. & Wong, R. (2022). Assessing the perceptions and preferences between online and in-person classroom learning among university students in Rwanda. *Journal of Service Science and Management,* Vol. 15(1), pp. 23–34.

Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: the Philippine context. *Pedagogical Research,* Vol. 5(4), pp. 1–5.

Verbeek, M. (2017). *A guide to modern econometrics.* 5th Ed. New York: John Wiley & Sons, Ltd.

Villela, E.; López, R. M.; Sato, A.; Oliveira, F. M. D.; Waldman, E. & Van den Bergh, R. et al. (2021). Covid-19 outbreak in Brazil: adherence to national preventive measures and impact on people's lives, an online survey. *BMC Public Health,* Vol. 21(1), pp. 152–161.

Wang, X. M. (2020). Teachers' professional development under the new normal of foreign language education at tertiary level: connotation and approach. *Shandong Foreign Language Teaching,* Vol. 41, pp. 10–18.

Xia, Y.; Hu, Y.; Wu, C.; Yang, L. & Lei, M. (2022). Challenges of online learning amid the COVID-19: College students' perspective. *Frontiers in Psychology*, Vol. 13, pp. 1-13.