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Στοιχεία δικαιοσύνης στην τριτοβάθμια διαδικτυακή εξ αποστάσεως εκπαίδευση κατά την εποχή της πανδημίας

Elements of fairness in tertiary e-learning distance education in covid-19 era

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Abstract

The unavoidable and almost instant transition from face-to face education to online education due to the covid-10 pandemic has undoubtedly caused problems and dysfunctions in all levels of education including tertiary education. However, each drastic change, apart from problems and dysfunctions, generates benefits and opportunities too. Based on this, the aim of the paper is to point out the benefits and opportunities created for the tertiary e-learning education during the era of pandemic referred to the related literature and to investigate whether these may improve fairness in tertiary e-learning education for all the stakeholders involved. For the purpose of the analysis 15 specific articles are reviewed. These articles are deliberately selected since, from the literature review carried out, these focused on tertiary e-learning education during the covid-19 era. The results show that important benefits and crucial opportunities do have arisen both for students and the academic institutions during the pandemic era. Additionally, these benefits and opportunities proved to work in favor of improving in future fairness in the sector of tertiary e-learning education.

Keywords: *pandemic, distance education, online education, fairness*

Περίληψη

Η αναπόφευκτη και σχεδόν στιγμιαία μετάβαση από τη δια ζώσης εκπαίδευση στη διαδικτυακή εξ αποστάσεως εκπαίδευση εξαιτίας της πανδημίας του covid-19 αναμφίβολα προκάλεσε προβλήματα και δυσλειτουργίες σε όλα τα επίπεδα εκπαίδευσης συμπεριλαμβανομένης και της τριτοβάθμιας εκπαίδευσης. Ωστόσο, κάθε δραστηριότητα, εκτός από προβλήματα και δυσλειτουργίες, συνοδεύεται από οφέλη και ευκαιρίες. Στη βάση αυτή, σκοπός της εργασίας είναι η ανάδειξη των ωφελειών και των ευκαιριών που δημιουργήθηκαν στην τριτοβάθμια διαδικτυακή εκπαίδευση κατά την εποχή της πανδημίας και, επιπλέον, η διερεύνηση εάν αυτά μπορούν να προάγουν τη δικαιοσύνη για όλους τους εμπλεκόμενους στην τριτοβάθμια εκπαίδευση. Για τον σκοπό αυτό πραγματοποιήθηκε ανασκόπηση 15 συγκεκριμένων άρθρων που επελέγησαν σκόπιμα από την ανασκόπηση της βιβλιογραφίας που πραγματοποιήθηκε στη βάση το ότι εστίαζαν στην τριτοβάθμια διαδικτυακή εξ αποστάσεως εκπαίδευση κατά την εποχή της πανδημίας. Η ανάλυση έδειξε ότι υπάρχουν σημαντικά οφέλη αλλά και κρίσιμες ευκαιρίες τόσο για τους φοιτητές όσο και για τα εκπαιδευτικά ιδρύματα κατά το διάστημα της πανδημίας.

Επιπλέον, αυτά τα οφέλη και οι ευκαιρίες μπορούν να λειτουργήσουν προς όφελος της ενίσχυσης της δικαιοσύνης στον τομέα της τριτοβάθμιας εκπαίδευσης.

Λέξεις-κλειδιά: πανδημία, τριτοβάθμια εκπαίδευση, διαδικτυακή εξ αποστάσεως εκπαίδευση, δικαιοσύνη

Introduction

Human beings are more in favor of small step by step changes rather than sudden, enormous and radical ones (Savulesku, 2006). Undoubtedly, the worldwide almost instant transfer from face-to-face educational systems to e-learning educational procedures for all levels of education due to the pandemic of covid-19, can be characterized only as a radical change. The number of people that have gone through this change is considerable high since over 1,5 billion of students all over the world were forced to continue their studies without being physically present in their academic institutions (UN, 2020).

This change affected not only the direct environment, namely the educational community -academic staff and learners-, but their families as well. Focusing on the tertiary level of education, academic staff has been driven to excessive workload in order to adjust their learning material to e-platforms (Adedoyin & Soykan, 2020), while learners, due to anxiety and stress, were mentally affected (Chandasiri, 2020). At the same time, students' families needed to support them financially and to provide them with the necessary technological equipment in order to correspond to their online education system. Considerable number of unfairness elements that have been generated due to the problems and dysfunctions arisen from the obligatory sudden transition to e-learning educational procedures has been highlighted (Koutsouba, et al., 2021). This paper focuses on the opposite, namely to issues of fairness.

In particular, fairness is one of the two core principles that OECD (2019) is based on to define and measure equity, i.e., 'the principle that every person has a fair chance to improve his or her life, whatever his or her personal circumstances'. Thus, according to OECD (2019, p.42), the principle of fairness 'refers to the goal of fully realizing every student's potential by removing obstacles over which individual students have no control, such as unequal access to educational resources and school environments'. Constraining the discussion to tertiary education, the issue of fairness has been searched under different spectrums. Among others, fairness has been examined regarding to the access to the tertiary education (Salmi & Basett, 2014), it has been discussed in the context of the distribution of the limited resources available to tertiary educational organizations (Hnat et al., 2015), while fairness considerations have been investigated regarding the application of algorithmic systems in educational contexts (Kizikelc & Lee, 2020).

Another important aspect regarding fairness is that of higher level of members' commitment to their organization when they regard that the organization has established fair procedures and treats its members fairly (van den Bos, 2001). Considering that the benefits arising from obtaining a higher-level degree, both for the individual and for the society, then it would have been a strong asset for academic institutions fairness to prevail since this would enforce commitment of both staff and students.

Within this frame, this paper is focused on two main issues. The first is to record the benefits and opportunities arising from the obligatory adoption of online educational

schemes due to the social restrictions posed during the covid-19 pandemic. The second issue is to enlighten the potential enforcement of fairness gained from these benefits and opportunities generated. Thus, the aim of this paper is to point out the benefits and opportunities created for the tertiary e-learning education during the era of pandemic referred in the related literature and to investigate whether these may improve fairness in tertiary e-learning education for all the stakeholders involved. For the purpose of the analysis, 15 specific articles are reviewed.

Methodology

For the purpose of the analysis, 15 specific articles are reviewed. These articles are deliberately selected since, from the literature review carried out, they focus on tertiary e-learning education during the covid era. Moreover, these specific articles have already been analyzed in terms of dysfunctions and problems arising in tertiary education because of the instant passing from face-to face into online education to bring into light elements of unfairness (Koutsouba, et al., in press). These 15 articles are found in electronic databases like Google scholar, ResearchGate and Academia Edu when searching with specific key words such as tertiary education, covid-19 era, higher education, e-learning, distance learning, pandemic.

Results

Adedoyin and Soykan (2020), in their analysis concerning the opportunities and the challenges of online learning during the pandemic era, recognize that digital transformation of higher education is not something new since it is developed for some years now. However, the authors point out that pandemic crisis resulted in novelties that otherwise would have taken years to happen. Thus, the pandemic accelerated the introduction and adoption of new technologies. Additionally, flexibility, interactivity and self-pacing are considered strong advantages of online learning. Moreover, both students and faculty are becoming keen on technology and tools that will be assets for their professional life as well. Based on their analysis, online learning will prevail and educational systems in future will become more hybrid.

The paper of Ahlburg (2020) investigates the economic losses that result in the covid-19 crisis in the universities of the UK. In this study, special report is presented regarding the opportunities generated from the transition from face-to face education to online systems. What is worth mentioning though is that the authors refer to a certain potential of the least disadvantaged students to benefit due to the reduction of the number of international students and thus to gain a position to higher ranked institute.

Bao (2020) characterizes the sudden transfer of all the courses online as ‘a massive, disruptive shift’. Five principles for delivering large-scale online education are presented without any further reference on the opportunities generated from massive online learning. Brammer and Clark (2020) recognize the major change caused to the universities. Among others, they also point out the significant innovation that resulted due to the conditions prevailed. They also mention that the new technologies will generate impacts that will be present even after the pandemic era. Additionally, the authors point out that the communication among leadership and colleagues has been more direct and intensive, and, as a result, distance between each other has been diminished. They also refer to the reduction in the number of international students. Finally, they highlight that large technological partners have entered into the market.

Chandasiri (2020), referring to the mental impacts the students may suffer during covid-19 era, expresses the view that a blended learning system is more appropriate, and that additional attention should be given to teaching and new technology. Coman et al. (2020) have reviewed, among others, the advantages of online learning referred to the benefits resulted in from online education as following: student-centeredness, flexibility and interactivity, distribution of educational content at the same time to a large number of users, control over the content and over the time spent learning, adoption according to the learner needs and objectives of learning, faster system that is easily accessed, less costly and time saved. It is important that the authors consider that it is highly unlikely the educational systems to return to their former status.

Dawadi et al. (2020), analyzing the situation in educational systems in Nepal, refer to the danger the number of drop-out rates may be increased during the pandemic. However, they also recognize that the incorporation of online education is a need of the present time. Dubey and Pandey (2020), focusing on the problems along with the measures regarding education in the era of covid-19 in India, conclude that it is necessary for academic institutions to change their concept and working components in favor of digital learning in order to face the crisis of corona.

El Firdoussi et al. (2020) recognize the adaptability both of academic staff and students to the new conditions of the pandemic. They mention the mandatory use of IT tools and they also acknowledge that online learning has rapidly changed the concept of traditional education generating education flexibility where the constraints of distance, space and time are absent. The limitation of cost is another factor that it is reported along with the fact that someone has the chance to study from anywhere and at any time, a parameter that favors mostly students from suburban or other cities who wish to study in big universities with their own learning pace.

Gupta et al. (2020) investigate the issue of assessment in health education during the covid-19 era. Despite the problems arising, online learning is the most viable option during the pandemic period. It is considered positive that there are plenty of innovative online tools that could improve interaction. Moreover, fairness and integrity issues could be overcome with the use of the appropriate tools such as video and recording. Heng and Sol (2020) examine online learning in developing societies like Cambodia. Despite the numerous problems and challenges, the need of using online learning as the only way to keep education going on has inevitably motivated the digital transformation of education.

Jena (2020) points out a number of opportunities arising for educational organizations because of the limitations posed during the covid-19 period. The acceleration of importing new digital technology, the development of new improved skills, the ability to access large number of learners at the same time, collaborations developed worldwide, increase of digital literacy, opportunities for the students to learn from a variety of resources and to adjust learning according to their needs, are some of the benefits referred. Sahu (2020) also focuses on the mental health issues regarding students and academic staff arising during the covid-19 period. Due to the instant change, the challenges are for both sides enormous. This adjustment requires great effort that may lead to unfavorable stress situations. As a result, there is a danger for the participants' mental health to be affected. However, and despite these challenges, it is supported that online learning may turn to become the greater opportunity of covid-19 crisis.

Widodo et al. (2020) who examine the student readiness for online education, refer to fundamental changes that have resulted in education due to pandemic. Digital technology and learning innovation are considered as the two key words for

education during covid-19 era. Also, in this paper, the benefits of e-learning systems are referred and, largely, they coincide with the ones that have been listed in other papers. Thus, independent learning, life-long learning, connectivity, flexibility interaction, extended collaboration through the available discussion tools, rich e-content which may reinforce and extend learning, motivation through multimedia resources, are assets that promote online education. Finally, Yılmaz İnce et al.(2020) conduct a survey regarding the students' knowledge and beliefs on distance learning at the Isparta University of Applied Sciences. One of the most interesting findings of the survey is that the beliefs of the participants were affected from whether they had a computer or internet access, apart from their phones or not. In any case, according to the authors, distance learning will not only continue during the pandemic, but it will also result in changes in education even after the pandemic.

Table1: Summary of the 15 papers reviewed

AUTHOR	YEAR	REFERENCE	COUNTRY SPECIFIED OR NOT	ELEMENTS OF FAIRNESS (benefits and opportunities generated)
Adedoyin O., B., & Soykan, E.	2020	Interactive Learning Environments	x	<ul style="list-style-type: none"> ▪ Novelties at the universities that would have taken years to apply ▪ Sudden increase in participants of online learning that could provide novel innovations to meet latest challenges of online learning ▪ Online learning to become a general accepted mode ▪ Students and faculty get used to application of technological devices and tools, that potentially in future will be applicable to their work positions ▪ Flexibility and self-pacing
Ahlburg, D. A.	2020	The Political Quarterly	UK	X
Bao, W.	2020	Hum. Behav. & Emerg. Tech.	China	X
Brammer, S., & Clark, T.	2020	British Journal of Management	x	<ul style="list-style-type: none"> ▪ Reduce perceived distance between leadership and colleagues. ▪ Significant innovation regarding the processes and timetables of academic governance, and quality of colleagues' adaptation ▪ Remote education tools that enable external partners to play a more prominent role
Chandasiri, O.	2020	International Journal of Advanced Education and Research	Sri Lanka	Teacher-centred learning is being converted into the Student-centered learning.
Comanet <i>et al.</i>	2020	Sustainability	Romania	<ul style="list-style-type: none"> ▪ Online learning proved to be effective especially in the case of shy, easily intimidated, and slow learning students who usually do not have the courage to speak up and express themselves in the

				<p>classroom.</p> <ul style="list-style-type: none"> ▪ Flexibility in delivering education and accessing content and resources. ▪ Due to its flexibility, E-learning eliminates barriers of space and time, the user can have access to a wide range of information, it facilitates collaboration, allows students to learn in their own rhythm. ▪ Motivates students to interact with their peers, discuss and exchange points of view and ideas. ▪ Online learning is faster, it saves time and money.
Dawadiet <i>al.</i>	2020	Sage Submissions preprint	Nepal	X
Dubey, P.& Pandey, D	2020	The International Journal of Indian Psychology	India	X
El Firdoussiet <i>al.</i>	2020	Education Research International	Morocco	<p>Education flexibility without being limited by distance, space, and time.</p> <p>Online learning also reduces cost without reducing the quality of learning</p> <p>Students can connect to online lectures, following their schedules and learning at their own pace</p>
Gupta <i>et al.</i>	2020	Education sciences	x	<ul style="list-style-type: none"> ▪ It broadens the assessment possibilities and offers the teacher and opportunity to explore innovative tools ▪ It encourages students to familiarize themselves and engage with online learning tools whilst understanding the concepts from their homes. ▪ Challenges of fairness and integrity can be suitably addressed by implementing technological tools such as video and audio recording surveillance software.
Heng, K., & Sol, K.	2020	Cambodian Education Forum	Cambodia	<ul style="list-style-type: none"> ▪ It has paved the way for the digital transformation of education and enhanced the adoption of Information and Communication Technologies (ICT) in the classroom.
Jena, P. K.	2020	International Journal of Current Research	India	<p>It has worked as a catalyst for the educational institutions to grow and opt for platforms with technologies, which have not been used before</p> <p>It encouraged all teachers and students to become more technology savvy</p> <p>It also gives access to large pools of learners at a time</p> <p>Students are able to manage their</p>

				time more efficiently in online education during pandemics. It encourages self-learning providing opportunities to learn from diverse resources and customized learning based on students' needs
Sahu, P.	2020	Cureus	x	Online learning could be a greater opportunity as a result of this crisis. Students are young and energetic, and they are capable of learning through the online platform. Faculty can motivate the younger minds and draw them into active participation.
Widodo <i>et al.</i>	2020	Journal of Physics: Conference Series	x	Six key dimensions about e-learning system benefits: (1) connectivity access to information is available on a global scale, (2) flexibility, learning can take place any time, any place, (3) interactivity, learning can be immediate and autonomous, (4) collaboration, collaborative learning beyond the classroom, (5) extended opportunities, e-content which can reinforce and extend classroom-based learning, and (6) motivation where multimedia resources can make learning fun. Improve the efficiency of learning, and make lifelong learning opportunity for all.
Yılmaz İnceet <i>al.</i>	2020	International Journal of Technology in Education and Science	Turkey	Individuals are free from learning resources and have no time constraints Increase access to education in rural communities due to personal or financial circumstances. Flexibility of asynchronous eLearning may provide wider access. Hybrid or blended forms may help improve the quality of face-to-face teaching.

Discussion-Conclusion

In order the elements of fairness to be investigated, the benefits and opportunities are categorized in 3 groups regarding academic institutions and learners (1), students (2) and academic and administrative staff (3). In particular:

- (1) Benefits and opportunities generated for both academic institutions and learners.
 - a. Enhancement with the use of novel technological tools
 - b. Reduced costs
 - c. Improved collaboration outside the classroom
 - d. Remote tools that enable the greater involvement of external partners
- (2) Benefits and opportunities generated for the students.

- a. Lifelong learning -Online education gives more opportunity to people who for personal, financial, social or other reasons have not reached their desired level of education (improve fairness in access)
 - b. Accomplishing skills that potentially in future could be desired in their job sector (improve fairness regarding the skills obtained)
 - c. Flexibility and self passing in learning (improve fairness between the students)
 - d. Motivation achieved through multimedia tools (improve dedication to the educational organization)
 - e. Reduce space and time constraints (improve fairness in access)
 - f. Broader educational sources (improve fairness in the access of learning sources)
- (3) Benefits and opportunities generated for the academic and administrative staff.

- a. Become more technological advanced (improve fairness concerning the skills required because of the application of novel technologies)
- b. Improve communication and reduce perceived distance between leadership and colleagues (improve the feeling of fair treatment within the institution)
- c. Flexibility in distance, space and time

Finally, from a unified horizontal spectrum, it can be supported that through the violent and difficult passing to online education, tertiary education has been double benefited to the followings:

- Acceleration of changes (mainly into the introduction and the use of new technological tools) and processes which otherwise would have taken years to happen (Adedoyin, & Soykan, 2020) and
- The fact that even after covid-19 era some of the procedures and tools adopted will be maintained driven education into more hybrid educational systems (Yilmaz İnce et al., 2020).

In a previous analysis of these 15 articles (Koutsouba et al., in press) the aim was to investigate the dysfunctions and constraints generated from the new conditions that have prevailed in tertiary e-learning education after the almost instant transfer from face-to-face education to online education due to the covid-19 pandemic. Specifically, the constraints and dysfunctions recorded have revealed certain elements of unfairness in five different levels, namely: (1) across countries (i.e. more problems arising in less developed countries due to lack of means to support online education), (2) within countries (i.e. urban versus rural areas), (3) among universities, (4) within universities (diversifications between different departments) and (5) among students (i.e. international versus national students, more financial advanced students versus less financial advanced). The analysis of elements of unfairness proved that students, departments, universities and even countries were in different positions regarding their ability, their preparedness and the impacts that were forced to face.

Nevertheless, the analysis of the same papers from the opposite point of view, that is tracing the benefits and the future opportunities formed, constituted the aim of the present paper. In this case, the benefits and opportunities that potentially could improve fairness were recorded and categorized in 3 groups regarding academic institutions and learners, students and academic and administrative staff. The current analysis also revealed that, if benefits and opportunities arising come into realization, then these will spread, and fairness will improve for all stakeholders.

One of the assumptions made for this analysis was that technological enhancement improves fairness (Savulesku, 2006). Another one was that fairness is desired for many reasons among which that of increasing commitment to the organization (van den Bos, 2001). If both of these assumptions hold for those involved in tertiary e-learning education is a question left open for future investigation. Finally, a

fundamental, and from our point of view the most crucial, question concerns the feelings and beliefs of the stakeholders themselves. More specifically, do stakeholders feel and believe that changes occurred during and because of the covid-19 pandemic lead to more or less fair educational systems? Extended surveys in the future will answer the question.

Bibliographical references

- Adedoyin, O., A., EmSoykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, 28, 1-13. DOI:10.1080/10494820.2020.1813180.
- Ahlburg, D. A. (2020). Covid-19 and UK Universities. *The Political Quarterly*, 91(3), 649-654.
- Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2, 113–115. <https://doi.org/10.1002/hbe2.191>
- Bøyum, S. (2014). Fairness in education – a normative analysis of OECD policy documents. *Journal of Education Policy*, 29(6), 856-870. DOI: 10.1080/02680939.2014.899396.
- Brammer, S., & Clark, T. (2020). COVID-19 and management education: Reflections on challenges, opportunities, and potential futures. *British Journal of Management*, 31, 453-456. DOI: 10.1111/1467-8551.12425
- Brewis, E. (2017). Book review: Meyer, H.-D., St. John, E.P., Chankseliani, M. & Uribe, L. (Eds.). (2013). Fairness in Access to Higher Education in a Global Perspective: Reconciling Excellence, Efficiency, and Justice. Rotterdam: Sense Publishers. *Journal of Student Affairs in Africa*, 5(2), 183–185. DOI: 10.24085/jsaa.v5i2.2708 183.
- Chandasiri, O. (2020). The COVID-19: impact on education. *International Journal of Advanced Education and Research*, 5(3), 13-14.
- Coman, C., Tîru, L., G., Mesesan-Schmitz, L., Stanciu, C., Bularca, M., C. (2020). Online teaching and learning in higher education during the coronavirus pandemic: students' perspective. *Sustainability*, 12, 1-24. <https://doi.org/10.3390/su122410367>
- Dawadi, S., Giri, R., & Simkhada, P. (2020). *Impact of COVID-19 on the Education Sector in Nepal - Challenges and Coping Strategies*. Sage Submissions. Preprint. <https://doi.org/10.31124/advance.12344336>.
- Dubey, P., & Pandey, D. (2020). Distance learning in higher education during pandemic: challenges and opportunities. *The International Journal of Indian Psychology*, 8(2), 42-46. DOI: 10.25215/0802.204.
- Duru-Bellat, M., & Gajdos, T. (2012). *Access to higher education: What counts as fairness in both an individual and systemic perspective? Methodological Discussion Paper*. Paris: Laboratoire interdisciplinaire d'évaluation des politiques publiques. Retrieved from <https://hal-sciencespo.archives-ouvertes.fr/hal-01069535/document>
- El Firdoussi, S., Lachgar, M., Kabaili, H., Rochdi, A., & Goujdami, D. (2020). Assessing distance learning in higher education during the COVID-19 pandemic. *Education Research International*, 2020, 1-13. <https://doi.org/10.1155/2020/8890633>
- European Commission (2020). *Survey on the impact of COVID-19 on European Universities - Main conclusions*. *European Universities Initiative*. Retrieved from: https://ec.europa.eu/programmes/erasmus-plus/resources/documents/coronavirus-european-universities-initiative-impact-survey-results_en.
- Gupta, M. M., Jankie, S., Pancholi, S., S., Talukdar, D., Sahu, P. K., & Sa, B. (2020). Asynchronous environment assessment: A pertinent option for medical and allied health profession education during the COVID-19. *Pandemic. Education Sciences*, 10(12), 352-366. <https://doi.org/10.3390/educsci10120352>
- Heng, K., & Sol, K. (2020). *Online learning during COVID-19: Key challenges and suggestions to enhance effectiveness*. Cambodian Education Forum. Retrieved from: <https://cambodianeducationforum.wordpress.com/2020/12/08/onlinelearning-during-covid-19-key-challenges-and-suggestions-to-enhanceeffectiveness/>
- Hnat, H., Mahony, D., Fitzgerald, S., & Crawford, F. (2015). Distributive Justice and Higher Education Resource Allocation: Perceptions of Fairness. *Innovative Higher Education*, Vol. 40(1), 79-93.
- Hughes, J. (2013). Book Review: Fairness in Access to Higher Education in a Global Perspective Reconciling Excellence, Efficiency, and Justice H-D.Meyer, E.P. St. John, M. Chankseliani and

- L. Uribe (Eds.), Sense Publishers, Rotterdam. *Widening Participation and Lifelong Learning*, 15(4), 81-84.
- Jena, P., K. (2020). Impact of pandemic covid-19 on education in India. *International Journal of Current Research*, 12(7), 12582-12586.
- Kizilcec, R. F. & Lee, H. (2020). Algorithmic Fairness in Education. In W. Holmes & K. Porayska-Pomsta (Eds.), *Ethics in Artificial Intelligence in Education*. Taylor & Francis. Available at: <https://arxiv.org/ftp/arxiv/papers/2007/2007.05443.pdf>.
- Koutsouba, K. Koutsouba, M., & Giossos, Y. (in press). Elements of unfairness in e-learning distance higher education in covid-19 era. *Open Education-The Journal for Open and Distance Education and Educational Technology*.
- OECD (2019). *PISA 2018 Results (Volume II): Where All Students Can Succeed*. Retrieved from: <https://www.oecd-ilibrary.org/docserver/b5fd1b8f-en.pdf?expires=1632973716&id=id&accname=guest&checksum=00FFB82F5E943F89062413DB759FF943>
- Roache, D., Rowe-Holder, D., & Muschette, R. (2020). Transitioning to Online Distance Learning in the COVID-19 Era: A Call for Skilled Leadership in Higher Education Institutions (HEIs). *International Studies in Educational Administration*, 48(1), 103-110.
- Sahu, P. (2020). Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus* 12(4), e7541. DOI 10.7759/cureus.7541
- Salmi, J., Bassett, R., M. (2014). The equity imperative in tertiary education: Promoting fairness and efficiency. *International Review of Education* 60(3), 361-377. DOI:10.1007/s11159-013-9391-z
- Saso, L. (2020). Digitalization and innovation of University Education in the Post-Covid Era. Retrieved from: https://www.unica-network.eu/wp-content/uploads/2021/01/chapter_on_innovating_university_education_in_the_post-covid_era.pdf.
- Savulescu, J. (2006). Justice, Fairness and Enhancement. In W. Sims Bainbridge, & M. C. Roco, Eds.), *Special Issue: Progress in Convergence: Technologies for Human Wellbeing*. *Annals of the New York Academy of Sciences* 321-338). doi: 10.1126/science.1127990.
- United Nations (2020). *COVID-19 and Higher Education: Education and Science as a Vaccine for the Pandemic*. Retrieved from: <https://www.un.org/en/academic-impact/covid-19-and-higher-education-education-and-science-vaccine-pandemic>.
- van den Bos, K. (2001). *Fairness heuristic theory: Assessing the information to which people are reacting has a pivotal role in understanding organizational justice*. Retrieved from: https://www.researchgate.net/publication/46609419_Fairness_heuristic_theory_Assessing_the_information_to_which_people_are_reacting_has_a_pivotal_role_in_understanding_organizational_justice
- Widodo, SFA, Wibowo, Y.E., & Wagiran, W. (2020). Online learning readiness during the Covid-19 pandemic. *Journal of Physics: Conference Series* 1700 (2020) 012033. doi:10.1088/1742-6596/1700/1/012033.
- Yılmaz İnce, E., Kabul, A., & Diler, İ. (2020). Distance education in higher education in the COVID-19 pandemic process: A case of Isparta Applied Sciences University. *International Journal of Technology in Education and Science (IJTES)*, 4(4), 343-351.