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Evaluation of a Customised Online Learning Environment – A Student Perspective

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Abstract: The present study aimed to examine how students evaluate the online learning environment after eight months of its use. The scope and functionalities of the online platform had been recommended by its future users in the process of the platform design and construction. Once the platform was implemented, it constituted the main instructional means in the pandemic period and is being considered to be further used in post-COVID, hybrid model of education. The students who participated in the study encompassed all the undergraduate and postgraduate students of a medium sized tertiary institution. The data was collected with the help of an online survey tool. The online surveys were distributed to all the students after eight months of the distance instruction and made available for the period of four months. The author wished to examine and assess the outcomes concerning the students' perception of the platform in three areas, namely teaching remote classes, conducting student evaluation and reporting their activity. The study revealed positive opinions relating to being given an opportunity to continue studies during the pandemic, the accessibility of online resources and the functionalities the platform offers. Less approving views were expressed in relation to the online communication tools, the methods of teaching and assessment as well as the opportunity to improve IT competence. A possible direction which the contemporary education might take is hyflexing of teaching and learning (Hybrid-Flexible or Hyflex model) which combines the traditional in-class interaction, online synchronous sessions and asynchronous content delivery.

Keywords: Online Platform, Environment, Assessment, Learning, Post-pandemic

1. Introduction

If the recent decades are considered to be copious in the number and scope of the challenges education has faced up to, how can the last two years be described? The only certainty may seem the change which in the educational environment concerns the roles of both teachers and students, teaching methods and approaches, the means of content delivery as well as the emergence of new teaching models. These encompass the hybrid synergy of asynchronous, in-person and distance courses. At first, considered a necessity for some or a curse for others in the post-COVID university, the phygital learning concept may deem a chance on the way to offer open, learner-friendly and accessible education. Although the recent health crises has accelerated the attempts to ensure "a thin-walled university [31]" which welcomes the content from the outside world to enrich its educational offer but also allows its assets to be available worldwide, an approach which offers both online and offline learning environments has long been in place [17, 22, 23]. Also, the rapid virtualisation and hybridisation of education have allowed for the removal of hurdles, such as competence, technological or legislative issues education could not previously overcome. Online learning systems and platforms have had a considerable impact on how contemporary education is evolving. Their main roles as yet are related to enhancing instruction with online content, however, as the available research indicates, the results are diverse and further research is required for appropriate evaluation [19]. The present study constitutes a follow up and an extension of a previous study carried out in the area of designing the functionalities of an online learning platform [20]. The platform setup was a process whose outcome was a customised online environment. The decision was not to buy

a "one-size-fits-all" platform which may offer functionalities that will never be used or lack the ones which in a local context are indispensable. Bearing this in mind, as well as the scarcity of research in the area, the author intends to present in the following parts the examination of the source literature in view of the effectiveness online learning platforms may have and follow up with the evaluation of an online learning platform.

The impact of e-learning with all its varieties has become an interdisciplinary field of interest and research as the inclusion of technology assisted education is not only a common practice but most importantly an opportunity for different players [30]. The development of the information technologies has given rise to the development of online education incorporating similar features and standards in the available environments. On comparing the classifications which have appeared over time [8, 12, 18, 26], the one which most accurately reflects the most contemporary changes postulates that an online learning platform "… combines a number of different tools that are used to systematically deliver content online and facilitate the learning experience around the content [32]."

The available typologies of e-learning platforms [21], despite their accuracy and historical value, may seem to be undertaken in vain. The current trend in platform architecture is to offer all-in-one systems which are composed of both synchronous and asynchronous tools, teacher-assisted and self-access learning paths as well as to integrate own and third parties applications. The most current contribution to the array of existing frameworks includes the intelligent tutoring systems or web-based intelligent tutoring systems which provide personalised, custom-made instruction depending on students' needs, features or previous performance in a way that human teachers would act. They use flexible tutoring depending on pre-programmed responses according to students' input [9, 28].

Taking into account the research to date, an online learning/teaching platform may be delineated as a structured setting composed of mutually complementary hardware and software components which allow for inclusion and interaction of its participants in purposeful social construction and dissemination of knowledge and competence with the use of flexible computer assisted instruction. The phenomenon of social constructivism or social construction of knowledge particularly unassailable in the contemporary connected society and leads to social interaction and knowledge acquisition [4]. At large, students' positive opinions concerning online learning seem to prevail as far as the available research is concerned [3, 11, 15, 24]. Moreover, the available studies indicate a relationship between the facilitation of positive reactions to online learning and student-teacher communication [25]. Finally, as discussed by Bast [2], students show positive motivation and responsiveness towards online learning environments and their usefulness.

Over the years, online courses as shown by Bandura [1], Ruiz et al. [27], Zheng et al. [33], She et al. [29] have enhanced academic accomplishments, motivation, satisfaction and learning, and such courses are well accepted by the students who wish to continue with online instruction once the pandemic is over. On the other hand, student-teacher and student-student interactions have been underachieved because of various constraints online platforms have Bandura [10] and the studies on online education have not explicitly explained or highlighted the significance of interaction in the online environment [5]. Because of the lingering dubiousness which online learning platforms still fuel, the author of the present article aims to embark in the following part on examining their effectiveness in a microcontext of a tertiary institution.

2. Purpose of the Study

The present study tried to asses, in the light of the students' views, the use of a customised online learning environment *eduPortal* (hereinafter referred to as the platform) which was applied over a period of eight months at the East European State Higher College in Przemyśl, Poland. The process of the platform customisation was a result of investigation carried out among the students and it led to equipping the platform with a range of selected functionalities. The student group who partook in the following study encompassed all the undergraduate and postgraduate students of all available courses recorded in the student database. The areas put under examination included methods of teaching and assessment, remote access to materials, communication tools, platform functionalities and the development of IT competence. Moreover, the students could express their opinions regarding the possibility of continuing their studies remotely during the pandemic. Thus, the study tried to determine the following:

1) How do the students evaluate the online learning platform after eight months of its use?
2) Are there any other factors which could contribute to the students' positive or negative evaluation of the platform?

The data were collected so as to examine the platform efficiency and address its further use in post-COVID, hybrid model of education. Any discovered weaknesses of the platform might contribute to its improvement and provide a learning environment which can help in the new normal. The author also wished to investigate any other factors which can have a bearing on the efficacy of the forthcoming model of online education.

3. Method

3.1. Participants

The participant group included all the students who had an active status in the online student database. This encompassed undergraduate and postgraduate degree students of all degree courses which the college offers and who used the online platform during the distance learning

period. The number of the students who sent valid responses in the study was 17% of the total number of 778 students.

3.2. Data Collection and Analysis

The collection of data which was inspected constituted of 134 surveys with the total number of 938 replies collected with the help of online survey tool. The online surveys were distributed to all the students after eight months of the distance instruction with the use of an online platform employed on account of the COVID-19 recommendations. The surveys was available for the period of four months, from the end of the summer term in June 2021 until the start of the new academic year on 1 October 2021. All the students were invited to provide information in two areas, namely the demographic data (see Appendix 1 for English translation) and their opinions about the platform (see Appendix 2 for English translation). The results were determined quantitatively in order to verify the relationships between the students' opinion about the online platform (the variable) and the following measurements:

Demographic measurements
1) sex
2) age
3) study programme
4) year of college studies (first-cycle)
5) year of college studies (second-cycle)
6) average grade for last term

Platform-related measurements
1) methods of teaching
2) remote access to materials
3) methods of assessment
4) communication tools
5) platform functionalities
6) development of IT competence
7) continuation of studies in the pandemic

One-way analysis of comparisons was carried out to assess the dependent samples. Moreover, it was decided to perform a non-parametric, Friedman test that is resistant to the assumption that the distribution of results is normal. In order to standardise the Friedman test, the author assessed the samples and the agreement among their raters as well as evaluated the chance of error in measurements with Kendall W, the Wilcoxon Sign Test, the Bonferroni method. The examination of the normality distributions of the variable was performed with the use of Kolmogorov-Smirnov test. Additionally, the chi-square test was performed with the intention of ascertaining any substantial differences between the groups regarding the sex variable. Next, after the quantitative analysis of the dataset, the qualitative scrutiny was performed to recognise the role of the assumptions made, work out findings from the obtained data using the available research in the area.

4. Findings

The investigation into the demographic variables showed that there was a comparable distribution of men and women who took part in the study. The biggest group were the undergraduate students between 21-30 years of age. The study divulged that the model of distance learning in the pandemic let half of the study participants combine employment and studies at the same time. Besides, the analysis of the variables unveiled the fact that a majority of the participants were students with either good or very good average grades for the last term. Table 1 shows the statistics summarising the variables describing the studied sample and their distribution.

Table 1. Demographic measurements.

Variable	N = 134
Sex	
Woman	48%
Man	52%
Age	
21-30	75%
41-50	18%
less than 20	6.0%
Over 60%	1.5%
Study programme	
first-cycle studies (undergraduate)	90%
second-cycle studies (graduate).	10%
Year of studies (first-cycle)	
one	53%
two	42%
three	5%
Year of studies (second-cycle)	
one	57%
two	43%
Employment	
No	54%
Yes	46%
Average grade for last term	
3.5	4.6%
4	35%
4.5	49%
5	11%

Table 2 shows the analysis of the distributions of the platform-related measurements. A general conclusion is that the platform received scores above the average (scale values of 1-5) in terms of all aspects of the platform functioning. Most measurements did not show a distribution similar to the theoretical normal. The non-parametric Friedman test showed significant differences between the tested measurements of the students' opinion about the platform variable $X^2 (6) = 72.67$; $p < 0.001$; $W = 0.18$. The Kendall W showed that the differences between the tested platform-related measurements explained about 18% of the variability in the results of the opinion variable. In order to detect the exact differences between the compared measurements, a series of pairwise multiple comparisons were performed using the Wilcoxon Sign Test with significance correction with the Bonferroni method. An analysis of comparisons made with this technique showed that the difference between *methods of teaching* and *remote access to materials* was significant p <0.001.
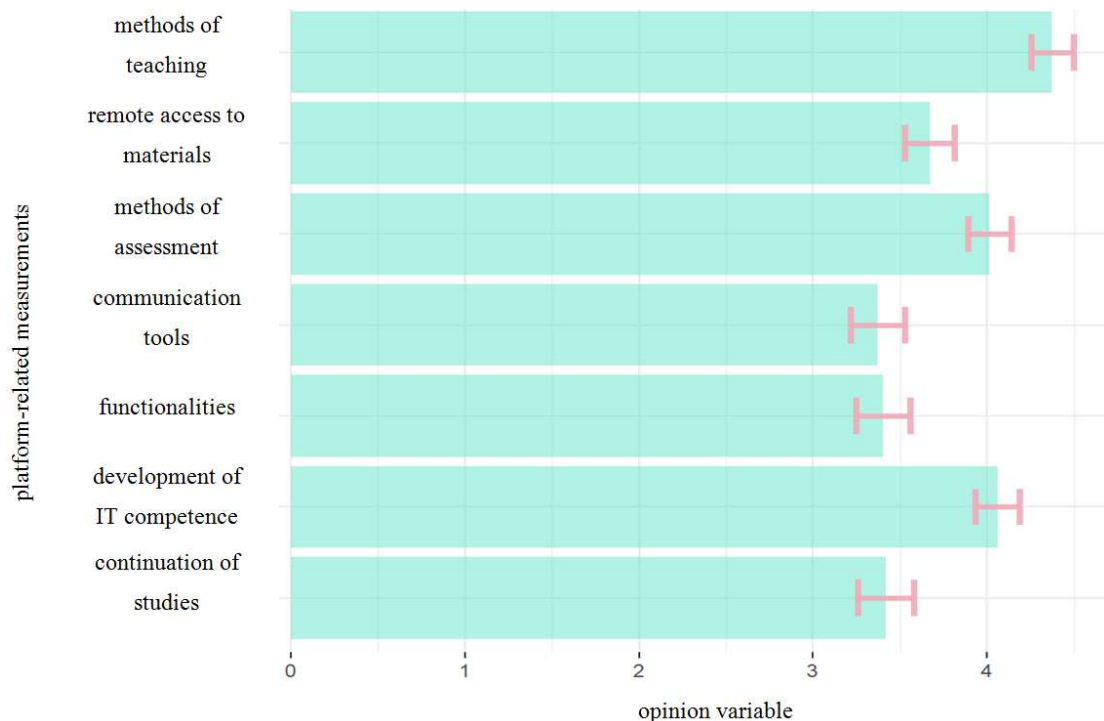
Table 2. Descriptive statistics of the impact of measurements on the variable.

Measurement	Min	Max	M	SD	SE	Rank
methods of teaching	1	5	3.42	1.30	0.16	199.00
remote access to materials	1	5	4.06	1.03	0.13	265.98
methods of assessment	1	5	3.40	1.27	0.16	195.40
communication tools	1	5	3.37	1.28	0.16	192.80
functionalities	1	5	4.02	1.01	0.12	258.48
development of IT competence	1	5	3.67	1.17	0.14	222.37
continuation of studies in the pandemic	1	5	4.37	1.00	0.12	310.96

Note: Min = minimum value; Max = Maximum value; M = arithmetic mean; SD = Standard Deviation; SE = Standard Error of the Mean; Rank = Average rank for the measurement.

The box-and-whisker plots (see Figure 1) based on the values of the collected platform-related measurements were developed to better present the distribution of the variable. All the outcomes demonstrate that the most approving opinions were given about the possibility of the continuation of studies despite the pandemic (77% of students), remote access to the resources (68%) and the methods of assessment (67%). The less positive views were aired regarding the communication tools (51%), teaching methods (52%), the functionalities the platform offers (54%) and the development of IT competence (57%).

Figure 1. Impact of platform-related measurements on the variable.

Note: The box-and-whisker plots show the standard errors of the means in the platform-related measurements. The overlapping whisker lines between the bars show approximately the similarity of results between measurements for the opinion variable. On the other hand, non-overlapping whiskers lines show approximately significant differences between the measurements in terms of the opinion about the platform.

5. Discussion

Online learning platforms constitute a multifaceted phenomenon which depends on many factors for their eventual success. When confronted with the pressure of time or the uncertainty of future, as it is the case now, the issue of a platform implementation, maintenance and adjustment becomes even more effort-consuming and challenging. The available research has delivered interesting findings which often require further examination.

The present study may support the growing research which integrates tools, concepts, and theories from numerous disciplines to advance understanding and contribute to the issue of the technology assisted education [30]. Regarding the first research question which addressed the students' evaluation of the online learning platform after eight months of its use the following was discovered. The platform permits the inclusion of its participants and provides access to instructional materials with the use of flexible, responsive computer technologies [9, 28, 32]. This may collate with the results of the current study in the area of carrying on the

studies despite the global epidemic. The remote access to resources, the aspect of the platform highlighted by a large number of survey participants, parallels the source literature because the platform augmented traditional instruction with online content available on responsive devices, anytime and anywhere [7, 25]. Students' positive reaction to online learning platforms as presented by Dziuban et al., [11], Rajabalee & Santally [24] and Bast [2] were also confirmed in the present study because approving opinions prevailed as far as the usefulness of the platform and its functionalities are concerned. Less positive views were aired regarding the communication tools (half of the students) which may not match the phenomenon of social construction of knowledge which results from communication and social interaction [4]. Finally, the low result concerning the limited repertoire of assessment and teaching methods used in distance teaching. It may stem from the teachers' lack or limited competence to use the online resources. The success of the online instruction largely depends on teacher training in online delivery and methodologies. This may have a direct impact on the scope of the platform use and the development of students' IT competence because it is the method itself which applies various technical tools and thus allows participants develop their computer literacy. Also, hands-on courses should not be taught online because the online tools may not contribute to the achievement of the learning aims [6, 14].

Pertaining to the second research question which sought other factors which could contribute to the students' perception of the platform, although the available research confirms the good impact of the online instruction on academic accomplishments [1, 27, 29, 33], this study revealed that the students' positive opinions about the online platform were higher with a decrease in their average grades for the last academic term and the year of studies. This can imply that students who attain better results or whose intellectual process are better developed require other stimuli to progress. Low-graders need the types of encouragement the digital learning offers or may be under its negative influence [13, 16]. Moreover, no significant differences between the men and women groups in terms of the variable were discovered, which implies that the distribution of variable was comparable in both groups.

6. Conclusion

The implementation of an online learning platform although necessitated by external circumstances and founded on solid prior investigation hinges on a number of variables which may be recognised only from inside and with the passing of time. As the available source literature delineates and the present study confirmed that any online learning environment and its users require continuous assessment so as to deliver an educational process which caters for different needs and requirements in the new reality. An interesting approach to overcome the existing hurdles and a challenging area for research at the same time might be the hyflexing of learning (Hybrid-Flexible or Hyflex model) which combines the traditional in-class interaction, online synchronous sessions and asynchronous content delivery enhanced with some modern teaching methods, including hybrid teaching, flipped classroom, experimental-observatory strategy, gamification, mind mapping or webquest. The above study does not exhaust all the uncertainties online learning platforms give rise to. The limitations of the study include a limited number of the students, duration of the study or the online platform per se. Hence, further investigation is recommended which would comprise a larger sample of participants, analyse their progress over a longer period of time or recognise the complexity of the apparently obvious concept of online learning.

Appendix

1. Sex
   1). Male
   2). Female

2. Age
   1). Under 20
   2). 21-30
   3). 31-40
   4). 41-50
   5). 51-60
   6). Over 60

3. Level of studies:
   1). first-cycle studies (undergraduate)
   2) second-cycle studies (postgraduate), *please go to question 5.*

4. Year of undergraduate studies
   1). One
   2). Two
   3) Three

5. Year of postgraduate studies
   1). One
   2). Two

6. Employment
   1). Yes
   2). No
7. Do you have any comments on distance learning or this survey?

Table 3. *Platform Opinion Questionnaire.*

I am satisfied with...	1 - definitely not	2 - rather not	3 - hard to say	4 - rather yes	5 - definitely yes
1) methods and work used during remote learning on eduPortal (e.g. online lecture, discussion, case study, project, content co-creation).	1.	2.	3.	4.	5.
2) access to didactic materials available on the platform (e.g. videos, audio files, text materials).	1.	2.	3.	4.	5.
3) methods of assessing student work during remote classes (e.g. online tests, case study, presentation, written work, portfolio).	1.	2.	3.	4.	5.
4) communication between lecturers and students through the tools available on the eduPortal platform, including information on the results obtained by students (e.g. email, forum, virtual meeting).	1.	2.	3.	4.	5.
5) functionalities offered by the eduPortal platform (e.g. access to materials in one place, no restrictions on space and time for access to materials, analysis of achievements).	1.	2.	3.	4.	5.
6) the possibility of developing my IT competences (e.g. co-creating content, using information and data posted on the Internet, digital security).	1.	2.	3.	4.	5.
I appreciate the possibility of continuing my studies remotely during the pandemic.	1.	2.	3.	4.	5.

References

[1] Bandura, A. (1982). Self-efficacy mechanism in human agency. *Am. Psychol.* 37, 122–147. doi: 10.1037/0003-066X.37.2.122.

[2] Bast, F. (2021). Perception of Online Learning Among Students From India Set Against the Pandemic. *Frontiers in Education*. 6. 10.3389/feduc.2021.705013.

[3] Bayrak, F., Tibi, M., H., & Altun, A. (2020). Development of online course satisfaction scale. *The Turkish Online Journal of Distance Education*, 21, 110-123.

[4] Berger, P. & Luckmann, T. (1991). *The social construction of reality*. London: Penguin Books.

[5] Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M. & Surkes, M. A. (2009). A meta-analysis of three types of interaction treatments in distance education. *Rev. Educ. Res.* 79, 1243–1289. doi: 10.3102/0034654309333844.

[6] Caena, F., & Redecker, C. (2019). Aligning Teacher Competence Frameworks to 21st Century Challenges: The Case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education* 54 (3): 356–369. doi: 10.1111/ejed.12345.

[7] Cojocariu, V. M., Lazar, I., Valentin, N. & Lazar, G. (2013), SWOT analysis of E-learning educational services from the perspective of their beneficiaries. *Procedia - Social and Behavioural Sciences*, Elsevier B. V., Vol. 116, pp. 1999-2003, 2013, doi: 10.1016/j.sbspro.2014.01.510.

[8] Comas-Quinn, A., Arcos, de los B., & Mardomingo, R. (2012). "Virtual learning environments (VLEs) for distance language learning: Shifting tutor roles in a contested space for interaction". *Computer Assisted Language Learning* Vol. 25. Issue 2, pp. 129-140.

[9] Craig, S. (2018). *Tutoring and intelligent tutoring systems*. Mesa, AZ: Nova Science Publishers.

[10] Downing, K. J., Lam, T., Kwong, T., Downing, W., & Chan, S. (2007). Creating interaction in online learning: a case study. *ALT-J* 15, 201–215. doi: 10.1080/09687760701673592.

[11] Dziuban, C., Moskal, P., Thompson, J., Kramer, L., DeCantis, G., & Hermsdorfer, A. (2015). Student satisfaction with online learning: Is it a psychological contract? *Online Learning*, 19 (2). https://doi.org/ 10.24059/olj.v19i2.496.

[12] Hall, B. (2003). *New Technology Definitions*. http://www.brandonhall.com/public/glossary/index.htm.

[13] Joshi, S. C,. & Rose, G. (2018). Information Technology, Internet Use, and Adolescent Cognitive Development. *3rd International Conference on Computational Systems and Information Technology for Sustainable Solutions* (CSITSS), 22-28, http://doi: 10.1109/CSITSS.2018.8768780.

[14] König, J., Jäger-Biela, D. J. & Glutsch, N. (2020) Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, 43: 4, 608-622, DOI: 10.1080/02619768.2020.1809650.

[15] Krajka, J. 2021. Teaching grammar and vocabulary in COVID-19 times: Approaches used in online teaching in Polish schools during a pandemic. *The JALT CALL Journal*, 17/2 112–134. https://doi.org/10.29140/jaltcall.v17n2.379.

[16] Mills, K. L. (2016). Possible effects of Internet use on cognitive development in adolescence. *Media and Communication*, vol. 4, no. 3, 4–12.

[17] Moreno, V., Cavazotte, F., & Alves, I. (2017). Explaining university students' effective use of e-learning platforms. Br. J. Educ. Technol., 48, 995–1009.

[18] O'Connor, L. (2015). *Learning Management System Definition and Bloom's Taxonomy*. http://www.vcamp360.com/learning-management-system-definition-and-blooms-taxonomy/.

[19] Oliwa, R. (2020). *Design and management of the virtual learning environment for foreign language instruction in adult learner groups*. Frankfurt am Main: Peter Lang.

[20] Oliwa, R. (2021). The process of designing the functionalities of an online learning platform – a case study. Jarek Krajka, Chris Alexander (eds), *Teaching English with Technology*, 21 (3), 101-120, http://www.tewtjournal.org.

[21] Ouadoud, M., Rida, N. & Chafiq, T. (2021). Overview of E-learning Platforms for Teaching and Learning. *International Journal of Recent Contributions from Engineering, Science & IT* (iJES), 9 (1), pp. 50–70. https://doi.org/10.3991/ijes.v9i1.21111.

[22] Passey, D., & Higgins, S. (2011). Learning platforms and learning outcomes – insights from research. Learning, Media and Technology, 36 (4), 329-333. https://doi.org/10.1080/17439884.2011.626783.

[23] Rabiman, R., Nurtanto, M., & Kholifah, N. (2020). Design and Development E-Learning System by Learning Management System (LMS). Vocational Education 9, 1059–1063.

[24] Rajabalee, Y., B., & Santally, M., I. (2020). Learner satisfaction, engagement and performances in an online module: Implications for institutional e-learning policy. *Education and Information Technologies*, 26: 2623–2656.

[25] Rizvi, Y., & Nabi, A. (2021). Transformation of learning from real to virtual: an exploratory-descriptive analysis of issues and challenges. *Journal of Research in Innovative Teaching & Learning*. Vol. 14 No. 1, 2021. pp. 5-17. Emerald Publishing Limited 2397-7604. doi: 10.1108/JRIT-10-2020-0052.

[26] Rouse, M. (2005). *Essential Guide: Talent Management System Essential Guide*. http://searchfinancialapplications.techtarget.com/essentialguide/Talent-management-system-essential-guide.

[27] Ruiz, J. G., Mintzer, M. J. & Leipzig, R, M. (2006). The impact of e-learning in medical education. *Acad Med*. 81 (3): 207–12.

[28] Shadiev, R. & Yang, M. (2019). *Review of Studies on Technology-Enhanced Language Learning and Teaching*. https://www.mdpi.com/2071-1050/12/2/524/pdf.

[29] She, L., Ma, L., Jan. A, Sharif, N. H. & Rahmatpour, P. (2021). Online Learning Satisfaction During COVID-19 Pandemic Among Chinese University Students: The Serial Mediation Model. *Front. Psychol*. 12: 743936. doi: 10.3389/fpsyg.2021.743936.

[30] Tomczyk, Ł., Potyrała, K., Włoch, A., Wnek-Gozdek, J. & Demeshkant, N. (2020). Evaluation of the Functionality of a New E-Learning Platform vs. Previous Experiences in E-Learning and the Self-Assessment of Own Digital Literacy. *Sustainability*. 12. 10219. 10.3390/su122310219.

[31] Turula, A. (2016). The thin-walled university of the 21st century. *Prace Naukowe Akademii im. Jana Długosza w Częstochowie. Pedagogika*. 25. 31-44. doi: 10.16926/p.2016.25.02.

[32] Weller, M. (2007). *Virtual Learning Environments*. London: Routledge. p. 5.

[33] Zheng, M., Bender, D. & Lyon, C. (2021). Online learning during COVID-19 produced equivalent or better student course performance as compared with pre-pandemic: empirical evidence from a school-wide comparative study. *BMC Med Educ* 21, 495 https://doi.org/10.1186/s12909-021-02909-z.