Barriers of Online Learning during the Covid-19 Pandemic : A Factor Analysis Study

Fuad Husain Akbar
Sharifah Noorhidayah Syed Aziz
Vijayaletchumy Krishnan
Mohd Khairul Fitri Othman
Maymunah Ismail
Muhd Zulhilmi Haron
Siti Azura Bahadin

DOI: https://doi.org/10.37178/ca-c.23.1.187

Fuad Husain Akbar, *Department Dental Public Health, Faculty of Dentistry, Hasanuddin University, Makassar, Indonesia*
E-mail: fuadgi2@gmail.com

Sharifah Noorhidayah Syed Aziz, *Institut Islam Hadhari, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia*

Vijayaletchumy Krishnan, *Universiti Tunku Abdul Rahman, Sungai Long Campus, Kajang, Selangor, Malaysia.*
Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

Mohd Khairul Fitri Othman, *Universiti Teknologi MARA, Sarawak Branch, Sarawak, Malaysia*
Maymunah Ismail, *Faculty of Business and Management, Universiti Teknologi MARA, Melaka Branch, Alor Gajah Campus, Melaka Malaysia*

Muhd Zulhilmi Haron, *Institut Aminuddin Baki, Negeri Sembilan, Malaysia*

Siti Azura Bahadin, *School Applied Psycology, Social Work and Policy, Universiti Utara Malaysia, Sintok, Kedah, Malaysia*

ABSTRACT

Background: *One method of learning that was born from the development of technology ise-learning. During the Covid-19 pandemic online learning applied almost in all educational institutions in the world and become the main learning method replacing conventional methods, one of the tertiary institutions in Indonesia which applies online learning during the pandemic was Hasanuddin University.*

Aim: *To explainanalysis of factors related to implementation barriers online learning during the COVID-19 pandemic at Hasanuddin University students.*

Method*: A cross sectional design with a population of students at Hasanuddin University with snowball sampling technique. This research was conducted at starting from 4-10 July 2020. This research tool is an online questionnaire in the form of Google.*

Results: *The results of the independent t-test and the Anova test found that a significant p value (<0.05) was in the experience variable following the online class before the Covid-19 pandemic and the faculty of science.*

Conclusion: *Male gender rated the barriers higher than women, students who had never taken online classes before the pandemic rated barriers higher than they*

had before, the faculties in the social sciences group and the humanities rated the barriers highest compared to the faculties of other science groups.

Keywords: *Barriers to the application of online learning; Experience in taking online classes before the Covid-19 pandemic; Faculty of Sciences; Gender.*

INTRODUCTION

Globalization causes technology to develop rapidly. The rapid development of technology has an impact on progress in various fields including in the fields of Education and science. Information and communication technology can support the implementation of more effective and efficient education. One form of utilizing information technology to support the learning process is e-learning[1, 2].

E-learning functionally includes a variety of learning strategies and applications for exchanging information and gaining knowledge. Such applications include television and radio; Compact Disc (CD) and Digital Versatile Disc; video conference; cellular technology; web based technology; and electronic learning platforms. And also, in learning e-learning also requires technical implications and costs.[1, 3-7]

One example of e-learning is online learning. E-learning is a more general learning because it covers many aspects related to the use of electronic media. E-learning is a broad scope of online learning that electronic media includes computers, internet, cellphones, intranets, radio, tv, etc. Where as online learning only utilizes online media or the internet in learning. More specifically online learning because there are specifications for the use of electronic media. Not only using computers, but also using the internet to get material or exchange knowledge.[8, 9]

E-Learning has been widely used by educational institutions today. Especially when the Covid-19 pandemic is happening right now, e-learning has become the main learning method for a while. To minimize the spread of the virus, conventional learning methods cannot be applied for a while[1, 8-12]

So far, there are still negative perceptions from students about their online learning experiences in the past, present, or future, students' perceptions can contribute to outcomes such as, low student motivation to learn, and lower student satisfaction with learning experiences. However, this result does not apply to all students, in all situations, and at all times [8, 13, 14].

The cause of individual differences in results for online students is the existence of obstacles which are certainly different from each individual. This method of internet-based education or e-learning is a new method that has been implemented and has become the main method of learning for a while, so that there has not been any improvement on any deficiencies in terms of obstacles [14].This is the background of researchers to find out what are the obstacles experienced by students, especially at Hasanuddin University students in carrying out the application of online learning, which is expected in the future can be an evaluation material.

MATERIAL AND METHODS

This type of research is analytical observational research with cross sectional study design. Student characteristics, including gender, faculty, and experience following e-learning before the Covid-19 pandemic became independent variables, then barriers to e-learning application became the dependent variable. This research was conducted on 4-10 July 2020 at the students of Hasanuddin University. This study has obtained ethics from the Health Research Ethics Committee of the Hasanuddin University Dental and Mouth Hospital with Ethical Approval number No.0055 / PL.09 / KLPK FKG-RSGM UNHAS / 2020. The population of this study is Hasanuddin University Students who are still active. Determination of the sample is by using snowball sampling. The inclusion criteria in this study were Hasanuddin University students who were still registered and active; willing to be a respondent and fill out a questionnaire; and can communicate well and cooperatively. Where as

the exclusion criteria are students who did not complete the questionnaire completely. In this study 413 samples were obtained, no samples were excluded because all respondents filled out the questionnaire completely [15-18].

Assessment of the level of obstacles in implementing online learning for Hasanuddin University students was assessed using a questionnaire. The questionnaire used in this study is an online questionnaire adapted from the journal Distance Education Volume 26 Number 1 Pages 29-48 written by Lin Y. Muilenburg from the University of South Alabama, USA and Zane L. Berge from the University of Maryland, USA, who entitled Student Barriers to Online Learning: A factor analytic study. The questionnaire consisting of 8 indicators and consisting of 43 questions. Using a Likert scale. The total new scores are categorized into 5 categories, namely: 1,00-1,80 = not very inhibiting, 1.81-2.60 = not inhibit, 2.61-3.40 = quite inhibiting, 3,41-4,20 = inhibit, 4,21-5,00 = very inhibiting. Data analysis used descriptive test and Anova test, independent t test, Kruskal Wallis test, Mann Whitney test.

RESULT

An online survey of the barriers to implementing online learning during the COVID-19 pandemic has been carried out using a questionnaire made on the Google form. The distribution of questionnaire links was carried out from 4 to 10 July 2020. Questionnaire links distributed to 3 Whatsapp social media groups, namely one group consisting of 340 Hasanuddin University students in 2016 from various faculties, one group containing 106 Hasanuddin University students from the 2016-2019 generation from various faculties, another group, the KSE Hasanuddin University Circle of Friends, consisting of 110 Unhas students from the 2015-2017 generation from various faculties, the researcher then instructed participants from each group to fill out the questionnaire and then spread the questionnaire to their respective faculty groups. On the other hand, the researcher asked 30 Whatsapp accounts of Hasanuddin University students and subsequently the researchers asked these accounts to help spread the research questionnaire links to their respective faculties. After that, the next researcher waited for a response back from the questionnaire that had been distributed for 7 days.The total number of questionnaires filled in was 413 questionnaires. No account was excluded because all respondents filled out the questionnaire completely. The 413 respondents used as a sample in this study (Table 1).

Table 1

Distribution of respondents based on their characteristics (n = 413)

Characteristics		n	%
Gender	Male	114	27.6
	Female	299	72.4
Faculty	Social Sciences and Humanities faculty of Law faculty of Economics and Business faculty of Cultural Studies faculty of Social Science and Political Science	69	16.8
	Health Sciences medical School faculty of Dentistry nursing faculty Faculty of Public Health faculty of Pharmacy	210	50.8
	Science and Technology Faculty of Mathematics and Natural Sciences	46	11.1

	Faculty of Engineering Applied Science Faculty of Agriculture Faculty of Animal Husbandry Faculty of Forestry Faculty of Marine and Fisheries Sciences	88	21.3
Experience in following online learning before the Covid-19 pandemic	Ever been	213	51.6
	Has never been	200	48.4
Total		413	100.0

Table 2

Distribution of respondents' choice of answers from each statement on the Indicator Administration and Teacher Problems (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Administrative and teaching issues										
Lack of the role of academic advisors during online learning	6	1.5	61	14.8	132	32.0	158	38.3	56	13.6
Material for online learning material is not always sent stays in time	5	1,2	79	19.1	135	32.7	148	35.8	46	11.1
Teachers do not know how to teach online / e-learning	18	4,4	159	38.5	152	36.8	63	15.3	21	5.1
Lack of clear instructions from teachers about online learning systems	12	2,9	105	25.4	142	34.4	121	29.3	33	8.0
Difficulties to contact acadamics or administrative staff during online learning	12	2,9	91	22.0	127	30.8	134	32.4	49	11.9
Lack of timely feedback from teachers during online learning	7	1.7	87	21.1	154	37.3	117	28.3	48	11.6
Lack of access to teachers or experts during online learning	9	2.2	95	23.0	139	33.7	142	34.4	28	6.8

Lack of support services such as tutors during online learning	4	1,0	79	19.1	144	34.9	153	37.0	33	8.0
The material or instructions given during online learning are of lower quality compared to conventional learning	6	1.5	113	27.4	134	32.4	113	27.4	47	11.4
There is no adequate training provided by teachers for the assignment system during online learning	9	2.2	103	24.9	156	37.8	110	26.6	35	8.5
Class size / number of participants online learning is not appropriate / logical	18	4,4	129	31.2	175	42.4	70	16.9	21	5.1

Table 3

Distribution of respondents' choice of answers from each statement on the Social Interaction indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Social interactions										
Lack of interaction / communication between students during online learning	7	1.7	79	19.1	98	23.7	154	37.3	75	18.2
Personal life becomes disrupted during online learning	22	5,3	90	21.8	133	32.2	107	25.9	61	14.8
Feel like being isolated from social life during online learning	15	3,6	76	18.4	105	25.4	141	34.1	76	18.4
Lack of collaboration between students during online learning	3	0.7	71	17.2	83	20.1	185	44.8	71	17.2
Prefer learning with conventional methods than online learning	9	2.2	32	7.7	98	23.7	117	28.3	157	38.0

Table 4

Distribution of respondents' choice of answers from each statement on the Academic Skills indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Academic Skills										
Lack of language skills for online learning	9	2.2	93	22.5	170	41.2	109	26.4	32	7.7
Lack of writing ability for online learning	12	2,9	102	24.7	140	33.9	118	28.6	41	9.9
Lack of reading ability for online learning	20	4,8	117	28.3	166	40.2	88	21.3	22	5,3
Lack of communication skills for online learning	14	3,4	99	24.0	150	36.3	117	28.3	33	8.0
Lack of typing skills for online learning	42	10.2	165	40.0	153	37.0	40	9.7	13	3.1
Shame / lack of confidence in running online learning	24	5.8	141	34.1	162	39.2	65	15.7	21	5.1

Table 5

Distribution of respondents' choice of answers from each statement on the Technical Skills indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Technical Skills										
Fear of using new tools for online learning	43	10.4	161	39.0	138	33.4	55	13.3	16	3,9
Not accustomed to using computers or tools for online learning	95	23.0	180	43.6	93	22.5	29	7.0	16	3,9
Lack of skills regarding software used for online learning	61	14.8	172	41.6	116	28.1	49	11.9	15	3,6

Lack of skills for online assignment	57	13.8	184	44.6	117	28.3	42	10.2	13	3.1
Fear of the different learning methods used in online learning	33	8.0	130	31.5	158	38.3	69	16.7	23	5.6

Table 6

Distribution of respondents' choice of answers from each statement on the Learning Motivation indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Motivation to learn										
During online learning, it is often procrastinating and difficult to start learning / work assignments	13	3.1	60	14.5	100	24.2	150	36.3	90	21.8
Lack of motivation to run online learning	14	3,4	58	14.0	125	30.3	150	36.3	66	16.0
During online learning, must take more responsibility for learning	5	1,2	32	7.7	141	34.1	156	37.8	79	19.1
Feel bored because of continuous online learning	9	2.2	30	7.3	79	19.1	148	35.8	147	35.6

Table 7

Distribution of respondents' choice of answers from each statement on the Time and Support for Learning indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	N	%	n	%	n	%
Time and support for learning										
The environment does not motivate to run an online learning system	18	4,4	95	23.0	127	30.8	117	28.3	56	13.6
Fear of family life at home will be disrupted as long as I take online learning	34	8.2	146	35.4	109	26.4	83	20.1	41	9.9
Online learning cuts	22	5,3	89	21.5	144	34.9	103	24.	55	13.3

personal time								9		
Lack of support from friends, family, or relatives to carry out online learning	40	9.7	147	35.6	158	38.3	42	10.2	26	6.3
There are enough distractions during online learning from home	19	4,6	69	16.7	108	26.2	133	32.2	84	20.3
Lack of independent learning time during online learning	26	6.3	91	22.0	168	40.7	86	20.8	42	10.2

Table 8

Distribution of respondents' choice of answers from each statement on the Cost and Access to Internet indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Costs and access to the internet										
Lack of adequate internet access	14	3,4	64	15.5	88	21.3	116	28.1	131	31.7
Online learning costs more	7	1.7	37	9.0	83	20.1	101	24.5	185	44.8

Table 9

Distribution of respondents' choice of answers from each statement on the Technical Issues indicator (n = 413)

Barriers and Statement Indicators	1 Strongly disagree		2 Disagree		3 Hesitating		4 Agree		5 Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Technical problem										
The technology needed for online learning is not available	25	6.1	127	30.8	160	38.7	64	15.5	37	9.0
Lack of platforms, browsers, software that is consistent with online	19	4,6	124	30.0	142	34.4	85	20.6	43	10.4

learning										
The software used for online learning is not suitable	21	5.1	128	31.0	189	45.8	43	10.4	32	7.7
Lack of technical assistance from institutions	4	1,0	48	11.6	149	36.1	123	29.8	89	21.5

Table 10

Category of barriers to each indicator

Barriers indicators	Mean	SD	Category
Administrative and teaching issues	3.19	0.66	Simply inhibit
Social interactions	3.54	.77	Inhibit
Academic Skills	2.96	.73	Pretty Inhibiting
Technical Skills	2.52	.82	Not inhibit
Motivation to learn	3.67	.76	Inhibit
Time and support for learning	3.09	.83	Pretty Inhibiting
Costs and access to the internet	3.85	1,00	Inhibit
Technical problem	3.09	.82	Pretty Inhibiting

Table 11

Independent t test and ANOVA test between the characteristics of respondents with barriers to the application of online learning (overall indicator barriers)

Characteristics		Overall Indicator		
		Mean	SD	Value of p
Gender	Male	3.25	0.61	0.067 *
	Female	3.14	0.54	
Experience in following online learning before the Covid-19 pandemic	Ever been	3.09	0.56	0.001 *
	Has never been	3.26	0.55	
Faculty of Sciences	Social Sciences	3.33	0.51	.001 **

	and Humanities			
	Health Sciences	3.07	0.50	
	Science and Technology	3.21	0.71	
	Applied Science	3.28	0.61	
Total		3.17	0.56	

* Independent t test
** Anova Test
p value significant at p<0.05

Table 12

Independent t test, Anova test, Mann Whitney test, and Kruskall Wallis test between respondents characteristics and barriers to the application of online learning indicators

Variable		Administrative and Teaching Issues		Social interactions		Academic Skills		Technical Skills		Motivation to learn		Time and support for learning		Costs and access to the internet		Technical problem	
		mean	SDl	mean	SD	mean	SD	mean	SD	mean	SDl	mean	SD	mean	SD	mean	SD
Gender	Male	3.33	0.64	3.57	0.81	2.98	0.80	2.55	0.89	3.64	0.85	3.23	0.82	3.96	1.07	3.25	0.89
	Female	3.13	0.66	3.53	0.75	2.95	0.70	2.51	0.80	3.68	0.72	3.03	0.83	3.82	.97	3.03	0.78
	Value of p	0.006 *		0.616 **		0.962 **		0.920 **		0.678 **		0.037 **		0.085 **		0.029 **	
Experience in participating in E-Learning	Ever been	3.07	0.65	3.51	0.77	2.89	0.71	2,41	0.82	3.59	0.77	3.02	0.87	3.77	1.03	2.99	.83
	Has never been	3.31	0.64	3.58	0.76	3.04	0.74	2.63	0.81	3.76	0.73	3.16	0.78	3.94	0.96	3.20	0.79
	Value of p	0,000 *		0.332 **		0.016 **		0.004 **		0.026 **		0.069 **		0.115 **		0.019 **	
Faculty of Sciences	Social Sciences and Humanities	3.41	0.43	3.77	0.73	3.05	0.75	2.54	0.79	3.83	0.66	3.27	0.78	4.00	.97	3.21	.74
	Health Sciences	3.03	0.61	3.43	0.73	2.87	0.67	2.47	0.77	3.63	0.71	2.97	0.78	3.78	.97	2.97	.76
	Science and Technology	3.28	0.69	3.49	0.85	3.00	0.95	2.35	0.94	3.65	0.90	3.22	0.94	3.85	1.12	3.05	.91
	Applied Science	3.35	0.68	3.66	0.78	3.08	0.69	2.61	0.90	3.65	0.84	3.15	0.89	3.91	1.01	3.30	0.90
	Value of p	0,000 ***		0.008 ***		0.130 ***		0.762 ***		0.254 ***		0.019 ***		0.310 ***		0.017 ***	
Total		3.19	0.66	3.54	0.77	2.96	0.73	2.52	0.82	3.67	0.76	3.09	0.83	3.85	1,00	3.09	0.82
* Independent t test ** Mann Whitney Test																	
*** Kruskal Wallis Test p value significant at p<0.05																	

Table 13

Independent t test, Anova test, Mann Whitney test, and Kruskall Wallis test between respondents characteristics and barriers to the application of online learning indicators

Variable	Administrative and Teaching Issues	Social interactions	Academic Skills	Technical Skills	Motivation to learn	Time and support for learning	Costs and access to the internet	Technical problem
Gender	0.006 *	0.616 **	0.962 **	0.920 **	0.678 **	0.037 **	0.085 **	0.029 **
Experience in participating in E-Learning	0,000 *	0.332 **	0.016 **	0.004 **	0.026 **	0.069 **	0.115 **	0.019 **
Faculty of Sciences	0,000 ***	0.008 ***	0.130 ***	0.762 ***	0.254 ***	0.019 ***	0.310 ***	0.017 ***
* Independent t test								
** Mann Whitney Test								
*** Kruskal Wallis Test p value significant at p<0.05								

DISCUSSION

Results in this study found in general, that of the three independent variables, based on the results of the bivariate analysis, there were two significantly different mean scores of barriers between groups in these variables, namely the experience variable following e-learning before the Covid-19 pandemic and the knowledge family faculty.

Before the COVID-19 pandemic, e-learning had been widely applied, since it was pioneered by Bernard Luskin in 2001. Research on the factors of obstacles in implementing e-learning has also been carried out. In a study conducted in the journal Science Direct Procedia Social and Behavioral Sciences entitled Are there gender differences in e-learning use and assessment? Evidence from an interuniversity online project in Europe, specifically discusses differences in the assessment of barriers to the adoption of e-learning in the sexes of men and women. In this journal, there are 3 items that become obstacles namely, extrinsic motivation, extrinsic motivation, and satisfaction. The results of the study found thatonly two of the four extrinsic motivational items showed different values for male students compared to their female classmates. Specifically, male students feel that class activities have a negative impact on their social lives and other values compared to female students. Regarding intrinsic motivation, no significant differences were observed. In line with the results of this study, specifically, male students stated for discussion / online learning that they needed more help using online software than their female classmates, while women found no problems when using online technology.[2, 3, 9, 15, 17-24] [19]

The factor of experience obstacles following e-learning is related to overcoming the obstacles themselves. The meaning is that the more often someone takes an online class the more they can handle these obstacles. As research in the Australian Adult Learning Journal titled Learners' perspectives on e-learning barriers. Barriers that can be overcome by respondents after having experience attending online classes are related to the use of technology.

In this study, obtained rthe Social and Humanities sciences have the highest obstacles compared to other sciences on the indicators of Administrative and Teacher Problems, Social Interaction, Learning Motivation, Time and Support for Learning, and Costs and Access to the Internet. For the other three indicators namely Technical Skills, Academic Skills, and Technical Problems are rated the highest by the Applied science family compared to other science families.

Differences in the assessment of these obstacles are most likely due to the facilities and infrastructure factors of each faculty, as well as to individuals and teachers both within the faculty.

There are a number of limitations in this study, the sampling technique uses snowball sampling, which makes the results of this study difficult to generalize in the wider population.

CONCLUSION

The conclusion obtained in this study is that there are 2 variables that significantly differ in the average value of inter-group barrier scores in these variables, namely the variable and faculty experience following e-learning before the Covid-19 pandemic.

Students who had never taken online classes before the COVID-19 pandemic rated the barriers higher than those who had. And the faculties of the social sciences and humanities clusters rate the barriers higher than other science clusters.

It is recommended for the development of this research that it is expected that research on research with similar topics but with the addition of independent variables, such as how many times have attended online classes / e-learning before

and the effectiveness of e-learning compared to conventional learning, and research is conducted by involving respondents from levels more qualified magister (S2) and doctor (S3) education.

REFERENCE

1. Cuadrado-García, M., M.-E. Ruiz-Molina, and J.D. Montoro-Pons, *Are there gender differences in e-learning use and assessment? Evidence from an interuniversity online project in Europe.* Procedia-Social and Behavioral Sciences, 2010. **2**(2): p. 367-371.DOI: https://doi.org/10.1016/j.sbspro.2010.03.027.
2. Raja, R. and P.C. Nagasubramani, *Impact of modern technology in education.* Journal of Applied and Advanced Research, 2018. **3**(1): p. 33-35.DOI: https://doi.org/10.21839/jaar.2018.v3iS1.165.
3. Lakbala, P., *Barriers in implementing E-learning in Hormozgan University of Medical Sciences.* Global journal of health science, 2016. **8**(7): p. 83.DOI: https://doi.org/10.5539/gjhs.v8n7p83.
4. Abou El-Seoud, M.S., et al., *E-learning and students' motivation: A research study on the effect of e-learning on higher education.* International journal of emerging technologies in learning (iJET), 2014. **9**(4): p. 20-26.DOI: https://doi.org/10.3991/ijet.v9i4.3465.
5. Al-Azawei, A., P. Parslow, and K. Lundqvist, *Barriers and opportunities of e-learning implementation in Iraq: A case of public universities.* The International Review of Research in Open and Distributed Learning, 2016. **17**(5).DOI: https://doi.org/10.19173/irrodl.v17i5.2501.
6. Ali, M., S.M.K. Hossain, and T. Ahmed, *Effectiveness of E-learning for university students: evidence from Bangladesh.* Asian Journal of Empirical Research, 2018. **8**(10): p. 352-360.DOI: https://doi.org/10.18488/journal.1007/2018.8.10/1007.10.352.360.
7. Appana, S., *A review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty.* International Journal on E-learning, 2008. **7**(1): p. 5-22.
8. Demuyakor, J., *Coronavirus (COVID-19) and online learning in higher institutions of education: A survey of the perceptions of Ghanaian international students in China.* Online Journal of Communication and Media Technologies, 2020. **10**(3): p. e202018.DOI: https://doi.org/10.29333/ojcmt/8286.
9. N, L., P. S, and S. S., *Analysis of the use of e-learning for the learning process. E-jur Tech Inf 2018; 13 (1): 4-5.* . 2018.
10. Arkorful, V. and N. Abaidoo, *The role of e-learning, advantages and disadvantages of its adoption in higher education.* International Journal of Instructional Technology and Distance Learning, 2015. **12**(1): p. 29-42.
11. Becker, K., C. Newton, and S. Sawang, *A learner perspective on barriers to e-learning.* Australian Journal of Adult Learning, 2013. **53**(2): p. 211-233.
12. C., G., *Role of Technology in Indian Education. Int Proc Econ Dev Res.63 (15): 73-7.* . 2013.
13. Abbasi, S., et al., *Perceptions of students regarding E-learning during Covid-19 at a private medical college.* Pakistan journal of medical sciences, 2020. **36**(COVID19-S4): p. S57.DOI: https://doi.org/10.12669/pjms.36.COVID19-S4.2766.
14. Muilenburg, L.Y. and Z.L. Berge, *Student barriers to online learning: A factor analytic study.* Distance education, 2005. **26**(1): p. 29-48.DOI: https://doi.org/10.1080/01587910500081269.
15. Eom, S.B. and N.J. Ashill, *A system's view of e-learning success model.* Decision Sciences Journal of Innovative Education, 2018. **16**(1): p. 42-76.DOI: https://doi.org/10.1111/dsji.12144.
16. Fajriah, F., *Improving Teaching Strategies Through Students' Reflections. Sukma.* Jurnal Pendidikan, 2017. **1**(2): p. 301-327.DOI: https://doi.org/10.32533/01204.2017.
17. Jokiaho, A., et al., *Barriers to using E-Learning in an Advanced Way.* International Journal of Advanced Corporate Learning, 2018. **11**(1).DOI: https://doi.org/10.3991/ijac.v11i1.9235.
18. Kaur, N., et al., *Study of the effectiveness of e-learning to conventional teaching in medical undergraduates amid COVID-19 pandemic.* National Journal of Physiology, Pharmacy and Pharmacology, 2020. **10**(7): p. 563-567.DOI: https://doi.org/10.5455/njppp.2020.10.04096202028042020.
19. Mosbiran, N.F.B., M.Z. bin Mustafa, and M.N. bin Nordin, *Special Elements and Values Needed in Leadership for Special Education. Review of International Geographical Education Onlinethis link is disabled, 2021, 11(4), pp. 712–722.* 2021.
20. S., G., *New educational technologies. Procedia - Soc Behav Sci, 2 (2): 5646-9.* 2010.DOI: https://doi.org/10.1016/j.sbspro.2010.03.922.

21. Sangrà, A., D. Vlachopoulos, and N. Cabrera, *Building an inclusive definition of e-learning: An approach to the conceptual framework*. International Review of Research in Open and Distributed Learning, 2012. **13**(2): p. 145-159.DOI: https://doi.org/10.19173/irrodl.v13i2.1161.
22. Taherdoost, H., *Sampling methods in research methodology; how to choose a sampling technique for research.* How to Choose a Sampling Technique for Research5 (2): 18–24, 2016.DOI: https://doi.org/10.2139/ssrn.3205035.
23. Tetteh, G.A., *The impact of a student's study time journal as a lesson and learning study.* International Journal for Lesson and Learning Studies6 (1): 97–115., 2017.DOI: https://doi.org/10.1108/IJLLS-05-2016-0013.
24. Zhou, G. and J. Xu, *Adoption of Educational Technology: How Does Gender Matter?* International Journal of Teaching and learning in higher education, 2007. **19**(2): p. 140-153.