

Impact of Problems Faced by University Students on the Implementation of Hybrid Model in Karachi, Pakistan



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Abstract

Education was shifted to online mode during COVID-19 due to the long closure, which created a lot of problems. This research aims to determine the problems faced by the Higher Education students and how those problems affected the implementation of the Hybrid model. It is quantitative research, having a questionnaire as a research instrument. The targeted population was the students of the higher educational institutes. The sample was collected from the students studying in the Social Science faculty of one of the Government Universities of Karachi, Pakistan. A sample of 80 students was collected through a convenient and simple random sampling method. The data was analysed through a statistical package. The dependent variable of the study is the effective Implementation of the Hybrid model, and the independent variables are the interaction of students with technology and teachers, academic workload, students' attitudes and beliefs, and training of students. The results revealed a positive relationship of all the variables with the implementation of the hybrid Model at Higher Educational institutes except that of the Academic workload of students, which has a negative impact. It was concluded that the effective implementation of the hybrid model will be possible by eliminating these problems.

Keywords

COVID-19
Digital technology
Higher educational institutes
Implementation of hybrid model
Problems faced by students

INTRODUCTION

According to Vijayan (2021) during COVID-19 all the educational institutes including Higher Educational Institutes shifted their focus from fully physical or traditional learning programs to a new approach of blended learning or hybrid learning to continue their teaching-learning process. Dison et al., (2022) stated that due to this incorporation of ICT in the learning process, the educational institutes have transformed into a learning environment; which provides multiple choices regarding flexibility in time and place. The world has been globalized due to advancements in technology. Each sector of the world integrates online aspects to run its affairs. The education sector is no exception to it. The education sector has also introduced a blended approach instead of complete face-to-face or distance learning programs. Both these methodologies alone were discouraged in the present era (Mercader & Gairin, 2020).

Akram et al., (2020) investigated the blended or the hybrid model is the combination of both face-to-face and online teaching which is not time and place-bound. It enables the students as well as the teachers to take their classes from anywhere in the world. According to them, blended learning is the future of education which is spreading quickly throughout the world particularly in higher educational institutes. The students studying at higher educational levels are adults having many other responsibilities on their shoulders apart from education only. Learning through flexible mode will make it easy for the students to meet their other responsibilities also along with their education. According to them blended learning setup not only helps the students in their teaching-learning process but also helps in developing other skills such as digital literacy, collaboration, communication association, creativity, etc. It is believed that if blended learning is properly adapted in Higher Education institutes it will resolve a lot of the issues of the education setup. This online mode of education is also cost-effective and makes education reachable for everyone (Xianghan Christine & Stern, 2022).

Ali (2022) stated that after COVID-19 it was evident that the present policies and setup of education are not good enough to deal with any pandemic situation or closure of educational institutes in the future. Therefore, it was required to bring such changes in education which help in the continuation of teaching-learning process even if the whole world shuts down. Ibrahim and Nat (2019) also found that teaching through digital integration increases the motivation and retention rate of the students from 30 to 60% as compared to traditional education setups. Akram et al., (2020) also determined the positive impact of the blended learning approach on the student's motivation and general performance. Research

on the achievement and satisfaction of the students was also conducted and the results obtained were the same as they showed a high level of achievement and satisfaction among the students due to the integration of the blended learning approach in their teaching-learning process (Ali, 2022).

Problem Statement

Sharjeel et al., (2020) stated that there are also some shortcomings of the hybrid model. The proper functioning of blended learning is the concerning issue for its proper implementation. Lack of support from the institutes to implement the blended learning system, and excess workload become a source of demotivation for the instructors and students (Xianghan Christine & Stern, 2022). Negative perceptions and beliefs of the instructors and students also diminish the effectiveness of the blended learning approach (Vijayan, 2021). Khan and Abid (2021) investigated the interaction of the instructor with the students and found a non-significant interaction between them in the blended learning approach. It was also found to be one of the demotivation in the effective implementation of the blended learning model. Higher Educational Institutes are focusing more on online technologies as the medium of instruction but, still the opinion and the beliefs of the instructors regarding online or blended learning approach are negative (Brinkley-Etzkorn, 2020).

Bond et al., (2018) found through literature that Problems faced by the students play an important role in the ineffective implementation of the blended learning but, unfortunately there is a lack of research in this regard in the Pakistani scenario. Ahmed et al., (2021) said that in order to get a proper understanding of the implementation of the blended learning approach in universities it is necessary to have an in-depth understanding of the problems the students regarding the blended learning. Owusu-Fordjour et al., (2020) found that students are the very important stakeholder for the success of any new model or approach in teaching-learning process.

Scope of Study

The study is important as the new era of teaching-learning process is moving toward the implementation of the blended learning. It is said that the blended learning approach will be the future technique of study. Therefore, it is necessary to determine some of the factors that contribute to the motivation of students at the Higher Educational level toward the implementation of the blended, or the hybrid model. Ease in the functioning of any new technique, approach or model made it more popular among students which increases its chances of implementation and usage more.

According to Aziz et al., (2020), the integration of blended learning proved to be beneficial for the students and instructors. A lot of the literature is available on the benefits of the integration of the blended learning approaches at Higher Educational Institutes. It was also proposed that the future pedagogy of education will be a blended learning approach instead of traditional face to face or total online or distant learning programs. Sharjeel et al., (2020) in one of their researchers found that the factors that have been contributing have not been focused a lot particularly at the higher education level. It has been considered that the motivation of teachers, students, and the technical staff are all important to make the integration of the blended or the hybrid learning successful but the teacher and students play the most important role.

Research Questions

- What is the impact of the interaction of HE students with technology on the effective implementation of the hybrid Model?
- What is the impact of the academic workload of HE students on the effective implementation of the hybrid Model?
- What is the impact of the interaction of HE students with instructors on the effective implementation of the hybrid Model?
- What is the impact of HE students' attitudes and beliefs on the effective implementation of the

hybrid Model?

- What is the impact of training of HE students on the effective implementation of the hybrid Model?

LITERATURE REVIEW

Bond et al., (2018) explained the hybrid learning as the combination of face-to-face and online teaching pedagogy. According to Vernadakis et al., (2011), the hybrid learning is the combination of traditional set-up and digital technology. According to Sharjeel et al., (2020), a lot of Higher Educational Institutes are adopting the hybrid learning as a pedagogical approach and it has also been predicted that in the future about 80-90% of the courses of Higher Educational Institute will be shifted to the hybrid learning. At this time this approach is expanding at the fastest rate and will become the normal way of education in the future.

As the students are the most important source for the successful implementation of the hybrid learning, therefore, the factors responsible for motivating the students to adopt the hybrid learning are discussed in this research. A lot of factors are responsible for the motivation of students to make them adopt and accept the hybrid learning approach (Mercader & Gairin, 2020). Some of the factors responsible for the implementation of the hybrid learning are personal interest and learning of the students, self-efficacy of computer literacy, social and personal perception, experience, exposure, external expectation, and skill for improvement, etc. The impact of these factors will depend upon the personal experience of the individual which in return motivated them to accept or reject anything. The most noticeable factor by most of the researchers was the philosophy of the person regarding the hybrid learning approach. According to Moeinikia et al., (2022), there are certain factors such as personal beliefs, interest, self-efficacy, perception of usefulness or outcomes, interaction with technology, support from admin staff members, workload, technical support, infrastructure of the institute, etc. which become major problems for adopting the hybrid learning by students.

Interaction of Students with Technology

Bond et al., (2018) found that if the interaction of the students with technology is frequent it instigates and encourages them to use technology in their teaching-learning process. However, if there is a lack of technological literacy among the students it also demotivates the integration of the blended learning approach. Therefore, one of the major problems faced by students according to literature was the inadequate literacy of the technology. In the present era information and communication technology is not only an essential part of education but, also a part of daily life (Akram et al., 2020). According to Okagbue et al., (2023), availability of the trained faculty to teach students, complexity or the difficulty level of the technology can be reduced. They also found that if the institute provides training sessions to students along with faculty for the development of technological skills, it also enhances their motivation to use technology and makes the implementation of the hybrid learning easier for them. Unavailability or the lack of access of the students to the appropriate software or the hardware also becomes a reason for the demotivation. Aziz et al., (2020) stated the use of some of social applications was popular among the students but the use of technology as the facilitation of the teaching-learning process was lacking. The following hypothesis has been generated:

H1: The Interaction of HE students with technology and the effective implementation of the hybrid Model are positively related to each other

Academic Workload of Students

According to Sutisna and Vonti (2020), one of the challenges to integrate the hybrid learning in the teaching-learning process is to decide what should be the total number of hours that should be devoted to the hybrid model. It was found that the academic workload of the students is one of the major concerns in employing the hybrid Model effectively. It was found that during the hybrid Learning students were engaged in teaching-learning process all the time. Teachers were conducting class anytime without

following any timetable and the student's learning time was also increased as they were involved with browsing most of the time (Abid et al., 2021). Suryadinata et al., (2024) found that the students lack the spare time for their personal or social life as they have to give a lot of time to each course. The hybrid system is time-consuming and requires serious commitment from the students. If there is a high workload then there will be a negative impact on the motivation of the students to adopt the hybrid learning system. The following hypothesis has been generated:

H2: The Academic workload of HE students and the effective implementation of the hybrid Model are negatively related to each other

Interaction of Students with Instructors

Sharjeel et al., (2020) stated that if the students have positive and frequent interaction with the teachers it gives satisfaction to the students. If the students receive instant feedback from the teachers regarding their learning it encourages the students to use technology more often. According to Ahmed et al., (2021), it was found that the interaction between students and teachers is less in the online mode of learning. The teachers find it difficult to apply the audio discussion approach during online teaching as it creates a lot of disturbance. The students write their queries on the discussion forum; teachers take a lot of time to read those queries and answer them which diminishes the effectiveness of the lesson. Therefore, it is required for the students to have instant interaction with teachers (Mercader & Gairin, 2020). It is highly recommended for the instructors to interact with the students positively to motivate them to apply the hybrid learning otherwise the students will lose their interest in the lesson and the hybrid approach will be rejected by them. On the basis of the literature reviewed the following hypothesis can be generated:

H3: The interaction of HE students with the instructors and the effective implementation of the hybrid Model are positively related to each other.

Students' Attitude and Beliefs

According to Aziz et al., (2020), personal traits of the students that become the source of motivation for them are the attitudes and beliefs of the students towards the blended learning. The acceptance and beliefs of the students towards technology shape their decision towards the acceptance of the hybrid Model. It was also found that the personal interest, beliefs, and attitude of the students is the basic source for the adoption of new techniques and technologies. According to Vijayan (2021) for the students, the biggest hindrance to accept the hybrid learning techniques is the technology anxiety which has a negative impact on the acceptance and readability of the students to use this technique. It was found that those students who have positive attitudes towards the adoption of new technologies were more motivated towards the implementation of the hybrid learning approach. On the basis of the above literature the following hypothesis can be generated:

H4: Attitudes and beliefs of the HE students and the effective implementation of the hybrid Model are positively related to each other

Training of Students

According to Alkhnbash et al., (2024), the training of the students plays a very important role toward the acceptance of the hybrid approach. It can also be achieved through the support of the institutes. It is required by the educational institute to work on the learning of their students and provide them guidance and support to learn new techniques. According to Bryk et al., (2015), the institutes should arrange continuous development programs for the students along with the staff for their growth and development in order to enhance their technological and pedagogical skills. This training reduces the technological anxiety of the students which ultimately increases their motivation to use the hybrid learning approach in their teaching and learning process. On the basis of the given literature, the following hypothesis can be generated:

H5: Training of the HE students and effective implementation of the hybrid Model are positively related to each other.

METHODOLOGY

The research was a descriptive analysis with quantitative approach which was conducted through a questionnaire as a tool. The research was intended to confirm an already existing theory and literature. The survey analysis method has been used for the research. The method of sampling that has been used in this study is convenient and simple random sampling as the university was selected on the basis of convenience and then the random sampling was done. An equal number of questionnaires were distributed to two of the departments of social science faculty from one of the Government Universities of Karachi, Pakistan.

Instrument Development

The data for the research was collected through a questionnaire which comprised the following variables: interaction of the students with the technology, the academic workload of students, the interaction of students with the instructors, students' attitude, and beliefs and training of students are the independent variables and effective implementation of the hybrid model is the dependent variable. At initial the questionnaire comprised 38 items altogether but after pilot testing some of the items were removed from the questionnaire. The questionnaire comprised of a total of 25 items. Out of these 25 items, 4 items comprise of the interaction of the students with the technology, 4 items comprise the academic workload of the students, 4 items for the interaction of students with instructors, 4 items for students' attitude and beliefs, and 4 items for the training of students and 5 items comprise the effective implementation of the hybrid Model. The items for the interaction of students with technology were adopted from Lim (2024), items for the academic workload of students were adopted from Chang et al., (2015), items for the interaction of the students with instructors were taken from Cheung and Vogel (2013), items for students' attitude and beliefs and for training of students were adopted from Holley and Oliver (2010) and items for effective implementation of a model were taken from Ifinedo (2017). The questionnaire was designed for the Higher Educational Institutes students on a Likert scale ranging from 1 to 5 where 1 stands for strongly disagree, 2 stands for disagree, 3 stands for neutral, 4 stands for agree and 5 stands for strongly agree. The language of the questionnaire was English.

Collection of Data

The data was collected from the students of Higher Educational Institutes. One of the Government University located in Karachi was targeted for the collection of data. Two of the departments of the social science faculty were targeted. The participants were asked in advance to participate voluntarily. The questionnaires were distributed to the students and the total number of questionnaires collected back was 80 altogether. The questionnaire was filled in the form of hard copy. The students targeted were final year students so they had experienced the hybrid learning setup in their teaching-learning process at university.

RESULTS & FINDINGS

Constructs Reliability and Validity

Reliability and validity tests of the study are necessary to be conducted. Reliability is the consistency of the test and validity is the measurement of the accuracy of the test. After adopting and organizing the questionnaire, it was tested by doing a pilot test and after analysis 13 items were removed from the questionnaire that were not aligned according to confirmatory factor analysis. CFA (Confirmatory Factor Analysis) is done on the research instrument in order to determine the validation for the inter-consistency of the items for each of the variables. The items that constitute one variable should form aligned factors if they have inter-consistency and are valid to measure that particular variable (Weir, 2005). The reliability of the questionnaire is determined by Cronbach's alpha value. The Cronbach's alpha value greater than 0.5 is acceptable and higher values are considered to be good and represent the high level of reliability of the items. If the value is greater than 0.7 then it is considered a standard tool to be accepted according to

Jani et al., (2018). The Cronbach’s alpha value for each of the variables is greater than 0.7 and is therefore acceptable. The Cronbach’s alpha for the whole of the instrument is 0.877. The values of factor loading and Cronbach’s alpha are represented in Table 5.

Table 1
Cronbach’s Alpha and Confirmatory Factor Analysis

Items	Factor loading	Cronbach's alpha
ISWT1	0.830	0.862
ISWT2	0.840	
ISWT3	0.866	
ISWT4	0.810	
AW1	0.640	0.871
AW2	0.710	
AW3	0.770	
AW4	0.600	
ISWI 1	0.791	0.841
ISWI 2	0.976	
ISWI 3	0.876	
ISWI 4	0.880	
SA&B1	0.991	0.857
SA&B2	0.863	
SA&B3	0.843	
SA&B4	0.819	
TS1	0.773	0.766
TS2	0.768	
TS3	0.714	
TS4	0.759	
EIHM1	0.845	0.899
EIHB2	0.900	
EIHM3	0.760	
EIHM4	0.840	
EIHM5	0.950	

ISWT=Interaction of Students with Technology
 AW=Academic Workload
 ISWI=Interaction of Students with Instructors
 SA&B=Students' Attitude and Belief
 TS=Training of Students
 EIHM=Effective Implementation of Hybrid Model

The one-sample t-test and linear regression model tests were conducted to determine the individual analysis of the variables and to determine the impact of independent variables on dependent variables. The questionnaire was designed in such a way that strongly agree means that the participants agreed to the hypothesis. The mean values of different variables were determined and were compared with the standard value of 2. In this case, two hypotheses are generated null hypothesis and alternate hypothesis. The null hypothesis states that the two means are equal and the alternate hypothesis state that two means are not equal. If the significant value is less than 0.05 then it indicates that the two means are not equal and the null hypothesis is rejected. Table 2 represents the mean values and significant values of

each of the variables.

Table 2
Results of One-Sample t Test

Variables	Mean values	Significant values
ISWT	2.68	0.000
AW	2.38	0.000
ISWI	2.738	0.000
SA&B	2.98	0.000
TS	2.641	0.000
EIHM	2.431	0.000

The significant values for all the variables are less than 0.05 which means that the null hypotheses are rejected in all the cases. It means that the mean value of each variable and the standard values are not equal and the means values are greater than 2 which shows a high level of agreement of participants with the statements of variables. A linear regression model was conducted to determine the impact of the independent variables on the dependent variables. The significant values indicate if the independent variable has a significant impact on dependent variable or not and if the significant value is less than 0.1 then it shows that there exists a significant relation between the variables. The sign of the co-efficient value indicates if the relationship is positive or negative. Table 3 represents the significant and co-efficient values of all the variables obtained by the linear regression model.

Table 3
Linear Regression Model Results

Variables	Co-efficient values	t-stats	Sig.
Constant	1.704	15.656	.000
ISWT	0.031	1.095	.0274
AW	-0.027	1.048	.0295
ISWI	0.002	0.104	0.0917
SA&B	0.498	0.188	0.001
TS	0.993	1.436	0.0629
EIHM	0.044	2.109	0.035

The significant values of all the variables are less than 0.1 which shows that there exists a significant relationship between the dependent and independent variables and the positive sign of the co-efficient values shows that the relationship between the two variables is positive. There exists a negative sign with the co-efficient value of the Academic workload of the students which shows the negative relationship of academic workload with the effective implementation of the hybrid Model.

Discussion

The problems faced by higher educational students responsible for the ineffective implementation of the hybrid Model are elaborated with the help of this research. According to the first hypothesis if there exists higher interaction of the students with the technology then there will be effective implementation of the hybrid Model by the students. This means that if the students frequently use Technology or ICT in their daily lives or for their teaching-learning process they will be highly motivated for the integration of the hybrid learning approach in their teaching-learning process and will quickly adopt the new techniques and advancements in this aspect. Results showed that the interaction of the students with the technology and the implementation of the hybrid Model are significantly and positively related to each other. The results are in accordance with the findings of Bond et al., (2018), Okagbue et al., (2023), and Akram et

al., (2020), who were also in agreement with the statement. The use of technology made them easy to handle the new one and also they adopted the new change quickly as they were already familiar with it.

Hypothesis two stated that the student's academic workload and the effective implementation of the hybrid Model are negatively related to each other. This hypothesis was based on the previous literature and was also proved to be true on the basis of this research. It can be explained that the implementation and the use of the hybrid Model is a time-consuming job as it includes both face to face and online learning systems. Therefore, the students' workload increases as they have to put extra effort into browsing and learning technology. The online part of the blended learning is quite hectic work as it requires a great number of hours for the student to spend online. The results obtained through this research were in accordance with the findings of Abid et al., (2021) and Bryk et al., (2015). These are the researchers who also produced similar findings in their studies. According to them the implementation of the blended learning system increases the workload of the students as a result of which they are not motivated to adopt this the hybrid Model.

According to hypothesis three it is stated that the interaction of HE students with the instructor and effective implementation of the hybrid Model are positively related to each other. It means that if there is greater interaction between the students and the instructors it will minimize the chances of error which will increase the confidence level of the students. The finding of this research also supports the ideas and the results are in accordance with the findings of (Sharjeel et al., 2020; Ahmed et al., 2021; Mercader & Gairin, 2020) which also stated that if the students interact with the instructor and receive the instant feedback it becomes a source of motivation for them. The students receive feedback from the instructors which not only helps them to understand the concept in a better way but also helps the students to avoid errors and provide timely support to them. The results of this study also provide the same concept that the instant and effective interaction between the student and teacher is a positive source of effective implementation of the hybrid Model.

Hypothesis four states that the beliefs and attitudes of the students are positively related effective implementation of the hybrid Model. If the Student has anxiety, lack of confidence, and distrust in the advancement of modern approaches he will not be able to accept the change positively. The results of this study also state that there exists a positive relation Higher Education students' attitudes and beliefs and the effective implementation of the hybrid Model. The results are in accordance with the literatures proposed by Aziz et al., (2020) and Vijayan (2021).

According to hypothesis five, it was stated that the training of the students and the effective implementation of the hybrid Model are positively related to each other. It means that if the learning and development of the student is high then his technological anxiety will be low which will make him more eager and motivated to use the hybrid learning approach. The training of the students will make them aware of modern digital applications and approaches which will help them to use the hybrid Model.

CONCLUSION

It was evident that the future of education lies in technological integration. It was during the lockdown and the closure of the educational institutes that made us realize the importance of changes that are highly needed in education sector. In order to cope with any of such problems in the future, blended or the hybrid learning approach was found to be the only solution. The blended learning approach is a combination of online and face-to-face learning. During the sudden shift of pedagogy, the students faced a number of problems which made them reluctant to use the blended or the hybrid Models in the future. The above research was conducted to determine the impact of problems faced by the University students on the effective implementation of the hybrid Model. Through this research, it was found that the problems recorded in the literature have a very big impact on the motivation and eagerness of the students to implement hybrid Model in their teaching-learning process. The problems identified were the interaction of the students with the technology, academic workload of the students due to the use of the digital applications, interaction of students with the instructors, personal attitude and beliefs of the

students, and the training facilities provided to the students. It was concluded that due to these problems, the students were reluctant to use the new model of hybrid learning and if these problems are eliminated then it will prove to be beneficial for the acceptance of the new model by higher education students.

Recommendations

This study has contributed to the literature to identify the impact of different problems faced by Higher Education students on the effective implementation of the hybrid Model. From the findings of the research, it can be recommended that institutions should have clear policies and visions regarding the use of the hybrid model. It should have been decided by the institutes which software and applications will be used and proper training of those should be provided to the students. It is also recommended for policymakers to integrate technology and digital courses in early grades to make the students aware of ICT. The institutes should also use such applications that eliminates the problems and make sure that the students and teachers have maximum interaction between them. The curriculum and pedagogy should be designed in such a way that make the students use it with ease and efficiency. It will motivate the students to apply the hybrid learning approach.

Limitation of Research

As every other research has its limitations this research also has some. First of all, this research has only targeted the students of one of the Government University of Karachi. Similarly, all the districts of the city were also not targeted therefore results of the research cannot be generalized but this research will give a future pathway for the researchers to conduct their study in this area. It was also accepted that the participants had filled the questionnaire with accurate information. The results were also not compared on the basis of the gender.

Future Directions

This research will give future direction for the effective implementation of the hybrid Model at Higher Educational Institutes. It will make the teaching-learning process modern and flexible to handle any challenges of the future.

Competing Interest

The authors reported no potential conflict of interest.

Authors' Biography

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REFERENCES

- Abid, T., Zahid, G., Shahid, N., & Bukhari, M. (2021). Online teaching experience during the COVID-19 in Pakistan: Pedagogy–technology balance and student engagement. *Fudan Journal of the Humanities and Social Sciences*, 14(3), 367-391.
<https://doi.org/10.1007/s40647-021-00325-7>
- Ahmed, S., Khan Farooqi, M. T., & Iqbal, A. (2021). A Study of Teachers' Teaching Styles and Students' Performance. *Ilkogretim Online*, 20(2).
- Akram, H., Aslam, S., Saleem, A., & Parveen, K. (2021). The challenges of online teaching in COVID-19 pandemic: A case study of public universities in Karachi, Pakistan. *Journal of Information Technology Education: Research*, 20, 263-282.
<https://doi.org/10.28945/4784>

- Akram, M., Anjum, F., & Batool, Z. (2020). COVID-19: A reason behind digital education in Pakistan. *Mediterranean Journal of Social Sciences*, 11(4), 19.
- Ali, A. (2022). Learning losses during Covid-19 pandemic in Pakistan: A critical assessment of online education system. *Global Educational Studies Review*, VII.
[https://doi.org/10.31703/gesr.2022\(VII-I\).01](https://doi.org/10.31703/gesr.2022(VII-I).01)
- Alkhnabashi, O. S., Mohammad, R., & Bamasoud, D. M. (2024). Education in transition: Adapting and thriving in a post-COVID world. *Systems*, 12(10), 402.
<https://doi.org/10.3390/systems12100402>
- Aziz, N., Waseem, M., Fatima, A., Anwar, A., Khalid, F., & Asghar, T. (2020). Impact of Covid-19 on education of undergraduate medical students of PAKISTAN. *Journal of University Medical & Dental College*, 11(4), 7-15.
<https://doi.org/10.37723/jumdc.v11i4.448>
- Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1), 1-20.
<https://doi.org/10.1186/s41239-018-0130-1>
- Brinkley-Etzkorn, K. E. (2020). The effects of training on instructor beliefs about and attitudes toward online teaching. *American Journal of Distance Education*, 34(1), 19-35.
<https://doi.org/10.1080/08923647.2020.1692553>
- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better*. Harvard Education Press.
- Chang, C. C., Hung, S. W., Cheng, M. J., & Wu, C. Y. (2015). Exploring the intention to continue using social networking sites: The case of Facebook. *Technological Forecasting and Social Change*, 95, 48-56.
<https://doi.org/10.1016/j.techfore.2014.03.012>
- Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & education*, 63, 160-175.
<https://doi.org/10.1016/j.compedu.2012.12.003>
- Dison, L., Padayachee, K., De Klerk, D., Conradie, W., MacAlister, F., Moch, S., & Krull, G. (2022). Reframing purpose and conceptions of success for a post-Covid-19 South African higher education. *Scholarship of Teaching and Learning in the South*, 6(1), 33-54.
<https://doi.org/10.36615/sotls.v6i1.222>
- Holley, D., & Oliver, M. (2010). Student engagement and blended learning: Portraits of risk. *Computers & Education*, 54(3), 693-700.
<https://doi.org/10.1016/j.compedu.2009.08.035>
- Ibrahim, M. M., & Nat, M. (2019). Blended learning motivation model for instructors in higher education institutions. *International Journal of Educational Technology in Higher Education*, 16(1), 1-21.
<https://doi.org/10.1186/s41239-019-0145-2>
- Ifinedo, P. (2017). Examining students' intention to continue using blogs for learning: Perspectives from technology acceptance, motivational, and social-cognitive frameworks. *Computers in Human Behavior*, 72, 189-199.
<https://doi.org/10.1016/j.chb.2016.12.049>
- Jani, J., Muszali, R., Nathan, S., & Abdullah, M. S. (2018). Blended learning approach using frog vle platform towards students' achievement in teaching games for understanding. *Journal of Fundamental and Applied Sciences*, 10(5S), 1130-1141.
- Khan, Z. H., & Abid, M. I. (2021). Distance learning in engineering education: Challenges and opportunities during COVID-19 pandemic crisis in Pakistan. *The International Journal of Electrical Engineering & Education*, 0020720920988493.
<https://doi.org/10.1177/0020720920988493>
- Lim, J. (2024). Students' interaction, satisfaction and cognitive presence in online discussions. *Educational Technology & Society*, 27(1), 35-49.
<https://www.jstor.org/stable/48754840>

- Mercader, C., & Gairín, J. (2020). University teachers' perception of barriers to the use of digital technologies: The importance of the academic discipline. *International Journal of Educational Technology in Higher Education*, 17(1), 4.
<https://doi.org/10.1186/s41239-020-0182-x>
- Moeinikia, M., Mehravar Giglou, S., Kazami, S., Mirzaei Shojakhanlou, M., & Omidvar, A. (2022). Analysis of Strengths, Weaknesses, Opportunities and Threats of E-learning from the Perspective of Experts in the Period of COVID-19 Pandemic. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 13(2), 127-136.
<http://10.30476/IJVLMS.2022.94428.1133>
- Okagbue, E. F., Ezeachikulo, U. P., Nchekwubemchukwu, I. S., Chidiebere, I. E., Kosiso, O., Ouattaraa, C. A. T., & Nwigwe, E. O. (2023). The effects of Covid-19 pandemic on the education system in Nigeria: The role of competency-based education. *International Journal of Educational Research Open*, 4, 100219.
<https://doi.org/10.1016/j.ijedro.2022.100219>
- Owusu-Fordjour, C., Koomson, C. K., & Hanson, D. (2020). The impact of Covid-19 on learning-the perspective of the Ghanaian student. *European Journal of Education Studies*, 7(3), 89.
<https://doi.org/10.5281/zenodo.3753586>
- Sharjeel, M. Y., Dool, M. A., & Shah, S. T. A. (2020). Analysis of pedagogic concerns about COVID-19 in educational institutions in Pakistan. *Pakistan Social Sciences Review*, 4, 839-853.
- Suryadinata, N., Eka, N. G. A., Manik, M. J., Puspitasari, V., Marlina, M., & Houghty, G. S. (2024). Effectiveness of online interprofessional education-communication course during the COVID-19 pandemic. *Heliyon*, 10(4).
<https://doi.org/10.1016/j.heliyon.2024.e25764>
- Sutisna, E., & Vonti, L. H. (2020). Innovation development strategy for hybrid learning based English teaching and learning. *English Review: Journal of English Education*, 9(1), 103-114.
<https://doi.org/10.25134/erjee.v9i1.3783>
- Vernadakis, N., Antoniou, P., Giannousi, M., Zetou, E., & Kioumourtzoglou, E. (2011). Comparing hybrid learning with traditional approaches on learning the Microsoft Office Power Point 2003 program in tertiary education. *Computers & Education*, 56(1), 188-199.
<https://doi.org/10.1016/j.compedu.2010.08.007>
- Vijayan, R. (2021). Teaching and learning during the COVID-19 pandemic: A topic modeling study. *Education Sciences*, 11(7), 347.
<https://doi.org/10.3390/educsci11070347>
- Weir, J. P. (2005). Quantifying test-retest reliability using the intraclass correlation coefficient and the SEM. *The Journal of Strength & Conditioning Research*, 19(1), 231-240.
- Xianghan Christine, O. D., & Stern, J. (2022). Virtually the same?: Online higher education in the post Covid-19 era. *British Journal of educational technology*, 53(3), 437.
<https://doi.org/10.1111/bjet.13211>