Available Online
Journal of Education and Social Studies
ISSN: 2789-8075 (Online), 2789-8067 (Print)
http://www.scienceimpactpub.com/jess

A STUDY OF STUDENTS PERCEPTION ABOUT VIRTUAL LEARNING: AN EVIDENCE FROM PUNJAB, PAKISTAN

Ayesha Siddiqa

Department of Economics, University of Lahore, Sargodha Campus, Sargodha, Pakistan

ABSTRACT

This research sheds light on the importance of virtual learning in today's technological era. Virtual learning is a flexible learning environment in which students can learn according to their eases. The purpose of this research is to review the student's perception of virtual learning. For this purpose, primary data has been collected from the five districts of Punjab (Hafizabad, Faisalabad, Lahore, Jhang, and Sargodha) through a pretested questionnaire. A convenient sampling technique was used to collect the data. Descriptive statistics were used for the analysis by using SPSS. Results of the descriptive study shows that the positive perception about virtual learning is 89.0 percent. The students who have access to a computer are 74.7 percent. The number of students who can easily afford the internet are 67.3 percent. The students who positively perceive that the extra cost of getting education traditionally can be saved via virtual learning are 82.9 percent. The positive perception of students about time-saving via virtual learning is 61.7 percent. The students' positive perception that job opportunities are equal for both degree holders is 55.4 percent cumulatively, which is higher than the negative perception. The positive perception for virtual learning is due to the offensive environment of institutions or family restrictions, as students' positive percentage is 59.2 cumulatively. Students' perception about the homogeneous outcomes and achievements via both learning is positive is about 51 percent. Results also suggest that virtual learning enhances the IT skills in students, and it is considered more cost-effective by students as compared to traditional learning. The policy recommendation is that government should concentrate on the importance of virtual learning and take necessary measures for this implementation.

Keywords: Virtual Learning; Students; Perception; Punjab.
Email: siddiqagori@gmail.com

https://doi.org/10.52223/jess.20223105

INTRODUCTION

Virtual learning is technological or internet-based learning. For such learning, classes and other classroom-related materials are not required for the study. In this type of learning, learning guidance is delivered to learners through the internet or other virtual tools such as online courses and online content platforms. Computer software, the internet, or both can be used to teach the students in virtual learning. This reduces or prevents the need for teachers and students to share classrooms. Virtual learning is an innovative learning model that collaborates with the latest applications of the internet and teaching technology such as learning management systems, YouTube, video conferencing, and virtual television (Hussain, 2012). Both online learning and e-Learning are used as generic terms to incorporate multiple variables. Fundamental interaction, data and communication technology, individual, cooperative learning, and support are some of the most important methods that are integrated into the e-learning process (Clarke, 2004). Online learning is massively increasing and is making an attempt to get the place of conventional

strategies of coaching and studying. Based on studies that implanted in 2008 through the US branch of schooling, using online learning and online publications has improved as much as 66% all through the educational years of 2006 and 2007 both in the nation or private universities throughout the USA of America (Jamalifar and chalak, 2014). One type of online environment is called "interactive online learning" (ILO). The ILO relates to "highly sophisticated interactive online courses in which computer-assisted didactics can be replaced some but not all of conventional face-to-face didactics" (Bowen et al., 2014).

In higher education, virtual learning defines a peculiar way of delivering courses or curricula in which students rarely participate in a personalized approach to on-campus institutions because they are learning online (Kasraie and Kasraie, 2010). Several studies have shown that students are more positive about courses and their learning in online contexts (Sandercock and Shaw, 2000; Spiceland and Hawkins, 2002; Stringer and Thomson, 1998; Wegner et al., 1999). In this present era, education is the most powerful weapon for the prosperity of a country and has become a need of everyone. So, to achieve higher education or maintain education with a job is a difficult task for most of a country like Pakistan. Due to the growing demand for education, meeting this demand is not possible with traditional education (Allen and Seamen, 2010). So, it is observed that in the present technological era, this demand could also be fulfilled by virtual learning. Virtual learning is the best choice for those learners who cannot maintain their education on campuses physically due to many reasons of their personal interests. Traditional education is too much expensive, while virtual learning is cost-effective (Elida et al., 2012). The current study is conducted to know the perception of students about virtual learning.

Yaghoubi et al. (2008) examined the perceptions of virtual students' attitudes towards e-learning in Iran. A closed web-based questionnaire was surveyed by 110 students. An e-learning specialist from the University of Tehran and using Cronbach's Alpha (α 0.88), the reliability and validity of the questionnaire were determined. In this research, a descriptive correlation technique was used to analyze the statistics through SPSS win 13. The results of the study revealed that students have a positive attitude towards e-learning. The linear regression showed that 68% of variations in the model were determined by four variables: access to the internet, use of computers and the Internet, assessment of current shortcomings in the higher education system, and assessment of students' ability in e-learning. Smart and Cappel (2006) conducted a comparative study about students' perceptions of online learning. The results showed that the candidates for the elective course received significantly better points in the online modules than in the compulsory course. Candidates for elective courses evaluated the online module positively than candidates for compulsory courses, who evaluated the online module negatively. The results also suggest that teachers should be selective when creating combinations of internet units in traditional education. Based on the curriculum context, course content and student characteristics, this combination must be carefully planned. About 83% of graduates have their first attempt at completing an online learning module. The results showed that the reported dissatisfaction factor was the lack of time to complete the online learning module.

Abbasi et al. (2020) examined students' perceptions of e-learning under Covid-19 at a private medical college. He conducted a cross-sectional descriptive study at the Liaquat College of Medicine and Dentistry. The sample size of the study was 377 MBBS and BDS students. They create their own questionnaires. Prior to the implementation of the questionnaire, a pilot study was conducted to confirm its reliability of the questionnaire. The Cronbach's Alpha test is used to verify the reliability and has a confidence value of 0.85. They applied an independent t-test to the results of their study. They received 382 responses, approximately 137 and 245 from boys and girls, respectively. The data output showed that 77% of students had a negative perception of e-learning, and nearly 76% used a cell phone to take their lessons online. The study also shows that students prefer face-to-face study to online study during the lockdown.

An empirical study about the perceptions of students toward e-learning was carried out by Khan et al. (2021) during COVID-19 in India. A quantitative technique was adopted, and responses were taken from 184 students from the University of National Capital Territory of Delhi, India, notably Delhi University, Jamia Millia Islamia, and Guru Gobind Singh Indraprastha University, via an online questionnaire. The duration of the study was June-August 2020. The outcomes of the research showed that intellectuals had positive perceptions toward e-learning, and they wanted to accept this new system during COVID-19 to hold their study. Ali (2014) studied Pakistani students' perceptions of Internet use in educational activities. This research intended to assess students' preferences for online academic life. The results showed that the use of the internet conferred positive and negative aspects for academic purposes, and gender differences were also found in relation to the use of the internet. However, both sexes agreed that the internet played an important role in their academic activities, and female students perceived its use in education more positively than male students.

Shahzad and Khan (2010) examined the evaluation of Virtual learning in the learning process at the higher educational level. They used descriptive research, and data were collected through surveys. After studying the relevant literature, this questionnaire was completed by the faculty and students of the Virtual University of Pakistan. The results of the research are (1) long-run conception must be formulated, (2) there must be a close collaboration with teachers in teaching methods, media designers, and computer scientists (3) technical development of software and hardware must be considered. Alam et al. (2012) studied individual perceptions of distance learning offered by two major universities, namely the Allama Iqbal Open University and the Virtual University of Khyber Pakhtunkhwa Province of Pakistan. Data were collected via structured questionnaires developed by the researchers from 104 respondents. The results of the survey showed that about 55% of young students under the age of 30 preferred this system of distance education. This preference was associated with DL awareness and efficiency and co-factors such as flexibility in time, location, and commitment to work. DL was equally preferred for both singles and married couples.

Kazi and Moghal (2019) studied the experiences and impressions of graduate students on blended learning programs in Pakistan. The study used a qualitative research methodology to analyze the experiences and perceptions of faculty students at Lahore Public University in Pakistan, and blended learning was used to improve student access and facilitate communication. Semi-structured interviews were conducted with 11 graduate students, and the results showed positive and negative perceptions of blended learning classes. Negative aspects repeatedly pointed to technical issues, lack of transparency in student performance, and lack of opportunities for student participation. In contrast, positive aspects pointed to easy access, cost-effectiveness, poor environment, and flexible learning. There is less travel time for them. Ansar et al. (2020) researched perception and satisfaction related to online learning under COVID-19 in Pakistan. As a result, online classes through the Zoom app were found to be the primary teaching method. According to the developed scale, a total of 78% of students were dissatisfied with online learning. Students also expressed concerns about assessment methods, communication between students and teachers, fairness of tests, and difficulty in understanding concepts. The majority of students preferred classroom instruction, and 81% of respondents did not want to continue e-learning. The outcomes of the research revealed that students were dissatisfied with e-learning and pointed out some serious flaws in the system. HEC and Chancellor should make this a top priority to provide quality education and save the future of Pakistani university students.

Muthuprasad et al. (2021) conducted a study on perceptions and preferences of e-learning under COVID-19 in India. The results of the study showed that 70% students were willing to choose their online course during the pandemic. Most of the respondents preferred to use the smartphone for online learning. Using content analysis, they found that students prefer recorded quizzes at the end of each class to improve learning effectiveness. Students felt that the flexibility and convenience of online classes made it an

attractive option, while problems with broadband connectivity in rural areas make it difficult for students to take advantage of online learning initiatives. However, the results of this article may be useful in designing curricula with new standards, as many courses may require a complete transition from a practical agricultural education system to an online mode and setting up a hybrid model. Yang and Cornelius (2004) carried out qualitative studies on students' perceptions of the exception of online education. The results of this survey found that the flexibility, fee-effectiveness, availability of electronic surveys, ease of internet connection, and a properly-designed school room interface had been effective stories for college students. Negative Student Experience, Late remarks from teachers, unavailable technical aid from instructors, lack of strength of mind and lack of self-motivation, feelings of loneliness, bad analyzing habits, and terrible direction material. Teachers can utilize the results to recognize student perceptions of online learning and, in the long run, enhance their online coaching strategies.

Liu et al. (2010) studied cultural differences in online learning from the perspective of international students. This article reviews the effects of a case study that analyses the international student's perceptions of the impact of cultural differences on their learning experience in an online MBA program. Research has shown that online educators want to layout courses to address potential cultural obstacles such as language, conversation, time zones and absence of multi-culture performance, which could affect global student performance. The study indicated that a culturally inclusive learning environment ought to keep in mind variety in the curriculum design to ensure the full participation of international students. Mogus et al. (2012) conducted a study to investigate the impact of student activity in a virtual learning environment on their final grade. This study aimed to examine data obtained by students who logged into the virtual learning activity log. Activity logs were used to measure students 'learning effectiveness to determine whether student activity logs in courses supported by the virtual learning environment as part of a mixed learning approach correlate with their final grades and students' perception of using the virtual learning environment. The observed activities include course display, assignment display, resource display, forum display, assignment upload, and project upload when compared to the final grade. The data logging function of the virtual learning environment and the student's perception data collection tool about the use of the virtual learning environment was used. The results showed that there is a positive correlation between the activity records of the students and their final character.

METHODOLOGY

In economics, the empirical analysis is based on two types of data such as primary data and secondary data. The former type of data is collected through observation, interviews, experiments, surveys, and through the questionnaire. In latter type the data is collected through any organizational records, government departments, journal papers, magazines and through any recognized website like World Bank, IMF and Economic surveys etc. In the present study, the former type is used to collect data. Data were collected through a pretested questionnaire.

Description of the Questionnaire

Different questions were included in questionnaire. Two categories were used during the preparation of the questions. In first category, socio-economic questions and in second category, questions about perception of virtual learning were included. A pretested questionnaire is distributed among the individuals of selected districts of Punjab by using convenient sampling technique. The questionnaire was circulated via the internet through emails and whatsapp.

Data description

The data for the present study is collected from 392 respondents. Data is collected from all types of the student whether the learner is traditional learner, virtual learner or blended learner. Unit of responses for

variables is different. Some variables are in dichotomous form; some are on the Likert scale. Five districts of Punjab, i.e., Hafizabad, Faisalabad, Lahore, Jhang and Sarghoda were selected for data collection.

RESULTS AND DISCUSSION

This section shows the results of socio-economic characteristics of the sampled respondent and the results of the perception about the virtual learning. The results are obtained by SPSS statistics 26. In Table 1, the frequency of gender is given. From 392 respondents, the female responses are 237, and the male are 155. The percentage of the female respondents is 60.5, which is greater than the male percentage, which is 39.5 percent. Unmarried frequency is 224 and married is 168. Results show that unmarried respondents are 57.1 percent which is greater than married percentage of 42.9. Results of the distribution of respondents according to education shows that 68.6 percent respondents studying in master degrees while Bachelors and MPhil percentage is 8.9 and 22.4 respectively.

Table 1. Socioeconomic characteristics of sampled respondents.

Socioeconomic Characteristics		Frequency	Percent
Gender	Female	237	60.5
	Male	155	39.5
Marital status	Unmarried =0	224	57.1
	Married=1	168	42.9
Education	Bachalors	35	8.9
	Masters	269	68.6
	M.Phill	88	22.4
Total family members	less than 5	128	32.7
	5 to 8	189	48.2
	8 to 11	49	12.5
	11 to 15	19	4.8
	more than 15	7	1.8
Income of father	less than 50000	186	47.4
	50000 to 55000	49	12.5
	55000 to 60000	28	7.1
	60000 to 65000	52	13.3
	65000 to 70000	16	4.1
	more than 70000	61	15.6
Age	20 to 25	27	6.8
	26 to 30	235	59.9
	31 to 35	108	27.5
	36 to 40	22	5.6
Residence	Rented	29	7.4
	Own residence	363	92.6
Region	Rural=0	144	36.7
	Urban=1	248	63.3

The frequency of Table 1 shows the distribution of respondents according to family members. Students whose family members are between 5 to 8 were 48.2 percent which is comparatively high as compared to others. Table 1 shows the distribution of respondents according to their father's income. The highest number of student is about 47 percent whose father's income is less than 50000, as the percentage is 47.4, which is greater than other percentages.

The frequency distribution of sampled respondents shows that 59.9 percent of student's age fall between 26 to 30 percent. At the same time, the students with age of 31 to 35 years are 27 .5 percent. The result shows that 92.6 percent students have their own house. In Table 1, the frequency of the region is given. The results of the table show that the students living in urban areas are 63.3 percent while 36.7 percent live in rural areas.

Table 2. Students' perception of virtual learning.

Students' perception of virtual learning in binary form	Frequency	Percent
Negative	43	11.0
Positive	349	89.0

In Table 2, the results show that students have positive perception about virtual learning as percentage 89.0 which is greater than negative perception such as percentage 11.0. The highest percentage of positive response shows that students want to adopt this learning method over traditional method.

Table 3. Access to computer (AC).

Access to computer	Frequency	Percent
Strongly disagree	13	3.3
Disagree	41	10.5
Neutral	45	11.5
Agree	207	52.8
Strongly agree	86	21.9

Access to a computer is the main source for getting education via the virtual method. In Table 3, the results show that the percentage of the students who have easy access to a computer is 52.8, which is greater than other percentages.

Table 4. Access to the internet (AI).

Access to internet	Frequency	Percent
Strongly disagree	18	4.6
Disagree	41	10.5
Neutral	69	17.6
Agree	186	47.4
Strongly agree	78	19.9

Access to internet is the most important component for virtual learning. In Table 4, the percentage of 47.4, which is greater than other percentages, shows that many students have easy access to the internet.

Table 5. Traditional educational expenses (TEE).

Traditional education expenses	Frequency	Percent
Strongly disagree	8	2.0
Disagree	20	5.1
Neutral	39	9.9
Agree	260	66.3
Strongly agree	65	16.6

In Table 5, the percentages of agree and strongly agree responses are greater than other percentages, such as 66.3 and 16.6, respectively. These percentages show that in virtual learning, the extra traditional educational expenses except study can be saved. And these saved expenses can be used in other economic activities.

Table 6. Time-saving (TS).

Time saving	Frequency	Percent
Strongly disagree	10	2.6
Disagree	23	5.9
Neutral	33	8.4
Agree	242	61.7
Strongly agree	84	21.4

In Table 6, the agree and strongly agree percentages are 61.7 and 21.4, respectively, which are higher than other percentages. This shows that time is limited in nature, and this time can be saved only via virtual learning, and this saved time can be spent on other economic activities.

Table 7. The geographical location (GL).

Geographical Location	Frequency	Percent
Strongly disagree	11	2.8
Disagree	65	16.6
Neutral	49	12.5
Agree	205	52.3
Strongly agree	62	15.8

Geographical location is the main reason why many students cannot maintain their education on campus. So virtual learning provides an opportunity for such students to get an education. This can be seen in Table 7 by the highest percentage of 52.3 of agree responses for virtual learning, which is greater than other percentages.

Table 8. Job career (JC).

Job Career	Frequency	Percent
Strongly disagree	19	4.8
Disagree	73	18.6
Neutral	83	21.2
Agree	161	41.1
Strongly agree	56	14.3

In Table 8, the highest percentage for agree is 41.1, and the strongly agree percentage is 14.3, which cumulatively 55.4 shows that virtual learners also have equal chances of getting jobs as a traditional learner.

Table 9. Institutional environment (IE).

Institutional environment	Frequency	Percent
Strongly disagree	30	7.7
Disagree	86	21.9
Neutral	44	11.2
Agree	177	45.2
Strongly agree	55	14.0

The institutional environment is the main reason why many students, especially females, quit education. Their families don't allow them to education on campus. So virtual learning can be proved beneficial for them. This can be seen in Table 9 by the cumulative percentages of agreeing and strongly agree 59.2 for virtual learning.

Table 10. Outcomes and achievement.

Outcomes and Achievements	Frequency	Percent
Strongly disagree	21	5.4
Disagree	99	25.3
Neutral	69	17.6
Agree	153	39.0
Strongly agree	50	12.8

If outcomes and achievements are the same in both virtual and traditional methods, then getting a virtual education will benefit students. In Table 10, the cumulative percentage of 51.8 of agree 39.0 and strongly agree 12.8 is greater than disagree percentage of 25.3, which shows that students have positive preferences for virtual learning because both methods have the same outcome and achievements.

Table 11. Gender preferences (GP).

Gender Preferences	Frequency	Percent
Strongly disagree	15	3.8
Disagree	26	6.6
Neutral	42	10.7
Agree	212	54.1
Strongly agree	97	24.7

In Table 11, the results show that females mostly prefer virtual learning as compared to male students. This can be checked by percentages of agree 54.1 and strongly agree 24.7 for this statement which is greater than other percentages.

Table 12. Job career (JC).

Job Career	Unit of response	Frequency	Percent
Strongly disagree	1.00	19	4.8
Disagree	2.00	73	18.6
Neutral	3.00	83	21.2
Agree	4.00	161	41.1
Strongly agree	5.00	56	14.3
Total		392	100.0

In Table 12, the highest percentage for agree is 41.1, and the strongly agree percentage is 14.3, cumulatively showing that virtual learners also have equal chances of getting jobs as traditional learners.

Table 13. Institutional environment (IE).

Institutional environment	Unit of response	Frequency	Percent
Strongly disagree	1.00	30	7.7
Disagree	2.00	86	21.9
Neutral	3.00	44	11.2
Agree	4.00	177	45.2
Strongly agree	5.00	55	14.0
Total	-	392	100.0

The institutional environment is the main reason why many students, especially females, quit education. Their families don't allow them to get education on campus. So virtual learning can be proved beneficial for

them. This can be seen in Table 13 by the cumulative percentages of agree and strongly agree, which is 59.2 percent for virtual learning.

Table 14. Cost-effectiveness (CE).

Cost-effectiveness	Frequency	Percent
Strongly disagree	13	3.3
Disagree	70	17.9
Neutral	45	11.5
Agree	194	49.5
Strongly agree	70	17.9

In Table 14, the frequencies of agreeing 194 and strongly agree 17.9 as the cumulative percentage of these two responses of 67.4 show that virtual learning is considered more cost-effective by students as compared to traditional learning.

Table 15. Cultural barriers (CB).

Cultural barriers	Frequency	Percent
Strongly disagree	25	6.4
Disagree	86	21.9
Neutral	30	7.7
Agree	187	47.7
Strongly agree	64	16.3

Cultural barriers are also the hurdles to getting education for many students. So virtual learning gives them a platform for learning. In Table 15, the cumulative percentage of 64.0, including 47.7 percent for agree and 16.3 percent for strongly agree, is greater than the percentage of disagree, showing that many most students prefer virtual learning due to cultural barriers.

CONCLUSIONS

Results of the study show that the positive perception about the virtual learning is 89.0 percent which is greater than negative perception of 11 percent. The students who have access to a computer are 74.7 percent, which is an aggregate of agree and strongly agree for easy access to a computer. The number of students who can easily afford the internet are 67.3 percent. The students who positively precept that the extra cost of getting education traditionally can be saved via virtual learning are 82.9 percent. The positive perception of students about time saving by virtual learning is 61.7 percent for agree and 21.4 percent for strongly agree, which is greater than the negative perception. The students who live in far-flung or backward areas of the country more positively contributed to the positive perception of virtual learning. The students' positive perception that job opportunities are equal for both degree holders is 55.4 percent. The positive perception of students for virtual learning is 59.2 percent due to the offensive environment of institutions or family restrictions. The student's perception of homogeneous outcomes and achievements via both learning is positive as the cumulative percentage of agree and strongly agree for this is 51.8 percent which is greater than disagree (25.3 percent). A cumulative percentage of 78.8 of agree and strongly agree shows that virtual learning is preferred mainly by females as compared to males. Virtual learning enhances students' IT skills; the positive perception about this statement is 81.9 percent cumulatively. Results show that about 70 percent of students' perception about the cost-effectiveness of virtual learning is favorable as compared to traditional learning. The cumulative percentage of 64.0 perceived that most students prefer virtual learning due to cultural barriers. It is strongly recommended based on results that government and higher education institutions should make appropriate policies for the improvement of virtual learning and

should provide access to each student to get education through virtual learning so that students who are unable to attend university physical due to economic and cultural issues can easily get the education. It will reduce the cost of education, and the low-income families would be able to educate their children, especially females, through virtual learning.

REFERENCES

Abbasi, S., Ayoob, T., Malik, A., & Memon, S. I. (2020). Perceptions of students regarding E-learning during Covid-19 at a private medical college. Pakistan journal of medical sciences, 36(COVID19-S4), S57.

Alam, Z., Waqar, A., Zaman, K., Shehzadi, B., & Mehmood, Y. (2012). Perception of students towards distance learning: A case study of Pakistan. Journal of American Science, 8(11), 509-517.

Ali, Z. S. (2014). Pakistani students' perceptions about use of the internet in their academic activities. E-Learning and Digital Media, 11(3), 222-230.

Allen, I. E., & Seaman, J. (2010). Learning on demand: Online education in the United States, 2009. Sloan Consortium. PO Box 1238, Newburyport, MA 01950

Ansar, F., Ali, W., Khattak, A., Naveed, H., & Zeb, S. (2020). Undergraduate students' perception and satisfaction regarding online learning system amidst COVID-19 Pandemic in Pakistan. J Ayub Med Coll Abbottabad, 32(4), S644-S650.

Bowen, W. G., Chingos, M. M., Lack, K. A., & Nygren, T. I. (2014). Interactive learning online at public universities: Evidence from a six-campus randomized trial. Journal of Policy Analysis and Management, 33(1), 94-111.

Clarke, A. (2004). E-learning skills (pp. 1-2). New York: Palgrave Macmillan.

Elida, T., Nugroho, W., & Suyudi, I. (2012). Cost effectiveness of web based learning. Procedia-Social and Behavioral Sciences, 65, 1071-1076.

Hussain, I. (2012). Study on Instructional Paradigms of Virtual Education in Pakistan: A Learners' Perspective. Turkish Online Journal of Educational Technology-TOJET, 11(2), 178-186.

Jamalifar, G., & Chalak, A. (2014). The use of internet in English language learning: practices, attitudes, and challenges of the learners. Advances in English language and literature (AELL), 1(2), 1-6.

Kasraie, N., & Kasraie, E. (2010). Economies of elearning in the 21st century. Contemporary Issues in Education Research (CIER), 3(10), 57-62.

Kazi, A. S., & Moghal, S. (2019) Experiences and Perceptions of Postgraduate Students about a Blended Learning Program in Pakistan.

Khan, M. A., Vivek, N., Khojah, M., & Tahir, M. (2021). Students' perception towards e-learning during covid-19 pandemic in India: An empirical study. Sustainability (Switzerland), 1-14.

Liu, X., Liu, S., Lee, S. H., & Magjuka, R. J. (2010). Cultural differences in online learning: International student perceptions. Journal of Educational Technology & Society, 13(3), 177-188.

Mogus, A. M., Djurdjevic, I., & Suvak, N. (2012). The impact of student activity in a virtual learning environment on their final mark. Active Learning in Higher Education, 13(3), 177-189.

Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID-19 pandemic. Social Sciences & Humanities Open, 3(1), 100101.

Sandercock, G., & Shaw, G. (2000). Learners' performance and evaluation of attitude towards web course tools in the delivery of an applied sports science module. Journal of Asynchronous Learning, 3(2), 1-10.

Shahzad, A. H., & Khan, A. (2010). Virtual learning and students perception-a research study. Procedia-Social and Behavioral Sciences, 2(2), 5463-5467.

Smart, K. L., & Cappel, J. J. (2006). Students' perceptions of online learning: A comparative study. Journal of Information Technology Education: Research, 5(1), 201-219.

Spiceland, J. D., & Hawkins, P. C. (2002).The impact on learning of an asynchronous active learning course format. Journal of Asynchronous Learning Networks, 6(1), 68-75.

Stringer, S. B., & Thomson, J. S. (1998). Evaluating for distance learning: Feedback from students and faculty (pp. 2-7). ERIC Document Reproduction Service No. ED422879.

Wegner, S., Hollyway, K. C., & Carton, E. M. (1999). The effect of internet-based instruction on student learning. Journal of Asynchronous Learning Networks, 3(2), 1-9

Yaghoubi, J., Mohammadi, I. M., Iravani, H., Attaran, M., & Gheidi, A. (2008). Virtual Students' Perceptions of E-Learning in Iran. Turkish Online Journal of Educational Technology, 7(3), 89-95.

Yang, Y., & Cornelius, L. F. Students' Perceptions towards the Quality of Online Education: A Qualitative Approach. 2004 Annual Proceedings-Chicago: Volume, 861-876.