Comparison Between Online Learning and Face to Face Learning

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Abstract

Nowadays, where there is industrial development, there is also a revolution in the educational field; instead of textbooks, PDF digital textbooks are coming. Students are learning online, even if the exam is being done online. The purpose of this research was to compare online and face to face learning to examine which one has more learning and which one has more activity. For this purpose, data was collected from the students enrolled in the universities of Lahore. Data was collected from 28 students through purposive sampling. This data was taken on a 5-point Likert scale, and then the data was entered into SPSS and analyzed with mean, standard deviation and t-test. It was concluded that students prefer face to face learning learning over online learning. However, the trend of female students was seen as positive on both sides. Students face considerable difficulties in online learning, mainly due to the digital infrastructure. Internet speed is very poor in most places; it is suggested that digital infrastructure should be improved in Pakistan. Students don't have good mobile phones or tablets; the government should abolish taxes on tablets and provide cheap tablets to students to promote online learning. Quality of digital materials. should be promoted, books should be properly scanned and converted into PDF, and

teachers should also be trained.
Keywords: Online learning, Face to face learning, PDF, Digital books.

Introduction

Every industry, including education, is being profoundly impacted by the technological revolution. Particularly in the wake of the COVID-19 pandemic, the discussion of the relative merits of online and conventional education has gained considerable traction (Seke, 2020).

The term "online learning" refers to a specific kind of distant learning that takes place on the internet. Conversely, conventional classroom instruction takes place in a fixed location and features a designated instructor delivering a predetermined curriculum. However, there are distinctions between the two methods (Cohen, 1999).

Students participate in online learning by consuming course material in the form of text, images, or videos and then completing assignments and assessments in this digital format. The class time is flexible, but students don't get much personal attention (McGreal & Elliott, 2008).

Face to face education, on the other hand, follows a set pattern of time and location. Because students can participate in activities or projects in smaller groups, this method of learning encourages more interaction between them (Singh et al., 2021).

Studies show that more than three quarters of school administrators value online education as highly as or more highly than conventional classroom instruction. That's understandable. Because of their convenience and accessibility, many students have found success with online courses; this is particularly true for individuals with full-time jobs or other commitments (Smart & Cappel, 2006).

Problem Statement

Online learning is a trend these days, and there is a lot of research showing that online learning improves student learning. The purpose of this research was to compare online learning and face to face learning to assess which learning method is good from the viewpoint of students and determine which approach is more effective in terms of educational outcomes, student engagement, and overall satisfaction. In this research, students' attitudes were checked to determine whether they prefer online learning or face to face learning.

Significance of Research

The results of this research will be very beneficial for students and teachers, as well as parents and policymakers. This research will explore the advantages and disadvantages of online learning and compare it to the face to face learning.

Objectives of the Study

1. To check the effectiveness of online learning and face to face learning.
2. To find out the advantages of online learning and face to face learning.
3. Compare the students' performance in online learning and face to face learning.

Research Questions

1. What is the effectiveness of online learning and face to face learning?

2. What are the advantages of online learning and face to face learning?
3. Is there any significant difference in student performance between online learning and face to face learning?

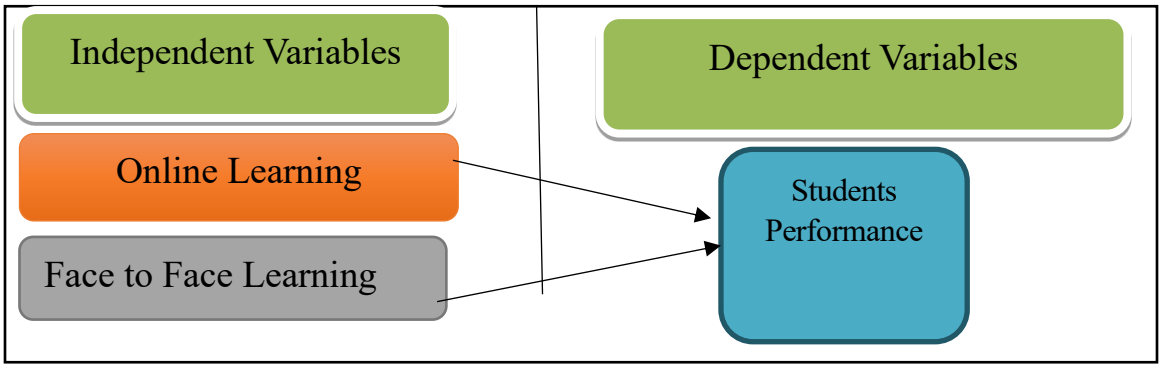
Hypotheses

1. There is no difference in effectiveness between online learning and face to face learning.
2. Face to face classes are better than online learning.

Delimitation of the study

1. Universities of Lahore.
2. University students will be the study population.
3. University students will be the participants in the study.

The variable of the study



Literature Review

It is crucial to compare the learning outcomes of students taking face to face classes with those taking online courses since the usage of online instruction is on the rise. Concerning the perceived level of student achievement being equal, higher, or lower in online vs. face to face classes, the views of chief academic officers at nearly 3,000 colleges are divided. Having said that, according to Allen and Seaman (2013), the chief academic officer of a college is more likely to think that students learn more in online classes than in face to face ones if the college is heavily involved in online learning. A review of quantitative research comparing online and face to face class grades will determine whether the views of higher education officials are reflective of reality.

Academic performance results can be skewed by self-selection to the degree that online students differ from their face to face counterparts in terms of factors like age, marital status, maturity, learning style (audio vs. visual), and grade point average (GPA) (Allen & Seaman, 2013; Bray, Harris & Major, 2007). Secondly, there is a lack of clarity regarding the processes that go into evaluating students' performance. Students may do better in online classes than in conventional ones if exams are taken remotely with little to no teacher oversight. There is

less opportunity for students to collude or cheat in face to face sections of exams because of the presence of examiners. Online students are up to four times more likely to cheat than their in-person counterparts when it comes to all forms of academic dishonesty (Lanier, 2006; Moten et al., 2013). Results showing disparities in student performance across groups should be viewed with suspicion if cheating is more common in online classes than in more conventional classroom settings.

Research has shown mixed results regarding the relative merits of online and face to face learning. Some studies found that students performed better in online sections, while others found the opposite to be true (Brown & Leidholm, 2002; Figlio et al., 2010; Parsons-Pollard et al., 2008; Gratton-LaVoie, 2009; Harmon, 2006; Means et al., 2010). Others claim that students do just as well online as they do in face to face learning settings (Russell, 1999). There are a number of methodological limitations that should be considered when drawing conclusions from this body of work. Some studies, for instance, compare online classes to more conventional ones with the same or different teachers. Differences in results may be attributable more to instructor influences than to delivery method effects in this type of study (Brown & Leidholm, 2002). Some believe that students may be more inclined to cheat in online classes, which could lead to better grades. From what we can tell from surveys, online students are more likely to admit to cheating than their in-person counterparts (Lanier, 2006; Morton et al., 2013).

Online course participants outperform their in-person counterparts on standardized tests, according to a meta-analysis of 86 research (Shachar & Neumann, 2003). A substantial discrepancy, equivalent to half a standard deviation, was reported. Academic performance was higher in online classes compared to face to face ones, according to a more recent meta-analysis (Means et al., 2010). However, this analysis only included 50 findings from the relevant research. Online students may have an advantage, but there are a lot of factors that could be influencing their performance. Factors that may provide online students with an advantage over their face to face counterparts in exam scores were either not controlled for in most studies or were not adequately controlled for. One of these factors, selection bias in choosing between online and face to face delivery methods, and another, opportunities for cheating, particularly in relation to the extent to which exams are proctored, are the main foci of the current investigation.

Due to factors like the lack of comprehensive data on student background characteristics and the practical difficulties in randomly assigning students to online or face to face sections of a course, most research has not been able to control for possible selection bias (Figlio et al., 2010; Bray, Harris & Major, 2007). It is possible that students who opt to take their classes online independently differ from those who prefer more conventional, in-person instruction. For instance, bray, Harris, and Major (2007) found that students who choose to take their classes online tend to be older, have families, and/or have full-time jobs. Because of the time savings associated with not having to commute and the fact that children can be cared for while taking classes online, these groups may find online classes appealing. Due to the flexibility of taking classes online, students can study whenever it is most convenient for them, rather than having to sacrifice work hours for school.

As an example, a study comparing online and face to face microeconomics classes found that students' final exam scores were significantly higher in the former (68.1% vs. 61.6%). On the

other hand, the types of students who opted for online classes as opposed to face to face ones varied greatly. For instance, compared to their in-person counterparts, online students tended to be older (25.3 vs. 20.7 years), more likely to be married (29% vs. 6%), have children (21% vs. 4%), have a higher GPA (2.85 vs. 2.57), and to have taken an economics course before (59 vs. 40%). After accounting for these disparities in demographics, test results did not change significantly between the groups (Gratton-Lavoie & Stanley, 2009). Proponents of randomized case-control studies claim that this method allows for the most thorough accounting of confounding variables (Bray et al., 2007). In response to this request, the current research includes a self-selection control.

The frequency or severity of proctoring exams is not documented in the majority of studies. Exam cheating is more likely to occur when a proctor is not present. While some measures have been taken to curb cheating—for example, requiring students to present identification when taking exams via webcam—the extent to which these measures have been effective remains unclear. Online students are up to four times more likely to cheat than their in-person counterparts, according to a 2013 study by Moten et al. In more conventional classroom settings, a proctor is often present when students take tests. It was previously believed that this would not apply to online courses. The specifics of the online testing environment are frequently absent from studies documenting online education (Brown & Leidholm, 2002).

Compared to conventional classroom settings, online introductory economics courses show that having a proctor present makes a difference. According to Waschenheim (2009), students who were given the option to take their exams without a proctor performed marginally better than those whose exams were proctored. This seems to be the reason that this would be the case, given that exams administered without a proctor are often considered "open book" exams, which offer students who aren't proctored a leg up over their proctored counterparts. Means et al. (2010) and Shachar and Neumann (2003) found that online students outperform their counterparts in face to face classes. This finding could be explained by this.

Methodology of the Study

This study was a quantitative cross-sectional survey. Data were collected through a 5-point Likert scale. The researcher applied statistical tools for data interpretation. For this purpose, descriptive and inferential statistics were used to interpret the data. Mean, standard deviation, one sample t-test, and independent sample t-test were used for this purpose.

Population of the Study

The study population was non-parametric because the actual population was not known; all students enrolled at the Universities of Lahore were the population of the study.

Sample and Sampling Technique

According to the nature of the population, a purposive sampling technique was used to select the study sample because the population of the study was unknown and non-parametric. In this way, the researcher conveniently selected 28 students as a sample of the study.

Instrumentation

A 5- 5-point Likert scale was used to collect data from students, to check the effectiveness of

online learning, to know online learning behaviour, online learning advantages, disadvantages and reliability of the online examination and face to face learning advantages, disadvantages and reliability of the examination. The tool was validated through experts' opinions and then ensured reliability.

Data Interpretation

Data were interpreted through statistical tools like mean value and standard deviation, and data were inferred through one sample and independent sample t-test.

Results of the Study

The collected data were analyzed. In the first part, the demographics of the students are described, their gender is defined, and their ages are defined. In the second part, the questionnaire is analyzed. The questionnaire is divided into two parts; in the first part, the students were asked online learning questions, which are ten in number; in the second part, the students' opinion about the face to face learning is nine in number. After taking the data, it was entered into SPSS, and various tests were applied to it, such as mean value, standard deviation, and one-sample t-test. Then, these tables were described.

Demography of the Students

Table 1 Demographic Information of the Students

Demography of Students		Age		Total
		18 to 24y	25 to 34y	
Gender	Male	16	3	19
	Female	9	0	9
Total		25	3	28

Table 1 describes the gender and age of participants. There were a total of 19 male and nine female students in this study. Sixteen male students were in the 18-to-24-year age group, and three male students were in the 25 to 34 years age group; on the other hand, there were nine female students in the 18 to 24 years age group.

Questionnaire Analysis

Table 2 One sample t-test of the questions of online learning

Questions about online learning	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Online learning makes you study well	28	3.64	.911	21.150	.000
Online learning makes you clear all the concepts	28	3.14	1.008	16.500	.000
In online learning, videos, graphs, and images help me understand better	28	3.82	.945	21.400	.000
Internet speed is very good in our area, so there is no problem with online learning	28	2.32	1.156	10.622	.000
Online learning is flexible, so it is very convenient	28	3.68	.723	26.929	.000
The online test is wild and reliable	28	3.39	1.166	15.404	.000

Online learning helps children prepare for exams well	28	3.50	1.139	16.267	.000
Online learning is easy to understand with practical work videos	28	3.71	.937	20.972	.000
Online learning also meets the needs of co-curricular activities	28	3.14	1.145	14.518	.000
Online learning plays an important role in character-building	28	3.21	.957	17.778	.000

Table 2 describes the data analysis of questions regarding online learning. Descriptive statistics was used to calculate the mean value and standard deviation, and a t-test was used to infer the data. All student's mean value was less than (4.00), and $p< 0.05$.

Table 3 One sample t-test of the questions of Face to face learning

Questions about face to face learning	N	Mean	Std. Deviation	t	Sig. (2-tailed)
You read well in a face to face learning	28	4.32	.819	27.923	.000
You get all the concepts clear from the face to face learning	28	4.04	.962	22.209	.000
In a face to face learning, I can easily understand books and teacher's lectures	28	4.18	1.020	21.671	.000
In our area, the internet speed is poor, which is why face to face learning learning is better	28	3.75	.967	20.519	.000
Teaching is good in the face to face learning; in online learning, Facebook and Twitter apps start playing	28	3.89	1.100	18.724	.000
Test conducted through face to face learning method is wild and reliable	28	4.04	.881	24.235	.000
Children prepare well for exams with the face to face method	28	4.00	1.155	18.330	.000
Practical work in the laboratory is easily understood by the face to face method	28	3.96	.744	28.177	.000
The face to face learning method also meets the needs of co-curricular activities	28	4.25	.799	28.136	.000

Table 3 describes the data analysis of questions regarding face to face learning. Descriptive statistics was used to calculate the mean value and standard deviation, and a t-test was used to infer the data. The majority of students' mean value was more than (4.00), and $p< 0.05$.

Table 4 Comparison of Online and Face to Face Learning

Learning Methods	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Online Learning	28	3.3571	.64316	27.621	.000
Face to Face Learning	28	4.0476	.61933	34.583	.000

Table 4 shows the results of both online and face to face learning methods. From the viewpoint of students, the mean value of online learning was (3.3571), the standard deviation was (.64316), the t-test was (27.621), $p< 0.05$. While the mean value of face to face learning

was (4.0476), the standard deviation was (.61933), the t-test was (34.583), and p< 0.05. According to the results, the in-view point of students' face to face learning is best as compared to online learning. The null hypothesis (Ho. 1), that There is no difference in effectiveness between online learning and the face to face learning, was rejected. It was found that a face to face learning was better than online learning (Ho. 2).

Table 5 Students' perceptions according to their gender

Learning Methods	Gender	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Online Learning	Male	19	3.2421	.59471	-1.399	.174
	Female	9	3.6000	.70887		
Face to Face Learning	Male	19	3.9532	.69519	-1.180	.249
	Female	9	4.2469	.37588		

Table 5 illustrates the results of students' perceptions according to their gender. The mean value of females was higher than male students towards online learning, and the mean value of females was also higher towards face to face learning as compared to male students. It was concluded that female students were positive in both perspectives.

Table 5 Students' perception according to their age group

Teaching Methods	Age	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Online Learning	18 to 24y	25	3.3600	.65955	.067	.947
	25 to 34y	3	3.3333	.60277		
Face to Face Learning	18 to 24y	25	4.0533	.63677	.138	.891
	25 to 34y	3	4.0000	.55556		

According to the results of Table 5, the mean group of 18 to 24 years was more positive towards online learning; on the other hand, the students of 18 to 24 years were also positive towards face to face learning. It was concluded that the age group of 25 34-year-old students was positive for both students.

Findings of the Study

There was a total of 19 male and nine female students in this study. Sixteen male students were in the 18-to-24-year age group, and three male students were in the 25 to 34 years age group; on the other hand, there were nine female students in the 18 to 24 years age group.

For the data analysis of questions regarding online learning, descriptive statistics was used to calculate the mean value and standard deviation, and a t-test was used to infer the data. All student's mean value was less than (4.00), and p<0.05.

The data analysis of questions regarding face to face learning. Descriptive statistics was used to calculate the mean value and standard deviation, and a t-test was used to infer the data. The majority of students' mean value was more than (4.00), and p<0.05.

From the viewpoint of students, the mean value of online learning was (3.3571), the standard deviation was (.64316), the t-test was (27.621), p<0.05. While the mean value of face to face learning was (4.0476), the standard deviation was (.61933), the t-test was (34.583), and p<0.05. According to the results, the in-view point of students' face to face learning is best as compared to online learning. The null hypothesis (Ho.1), that There is no difference in effectiveness between online learning and the face to face learning, was rejected. It was found that a face to face learning was better than online learning (Ho. 2).

The mean value of females was higher than male students towards online learning, and the mean value of females was also higher towards face to face learning as compared to male students. It was concluded that female students were positive in both perspectives.
The mean group of 18 to 24 years was more positive towards online learning; on the other hand, the students of 18 to 24 years were also positive towards face to face learning. It was concluded that the age group of 25 34-year-old students was positive for both students.

Discussion

In total, nine female students and 19 male students participated in this study. On the other hand, there were nine female students in the age group of 18 to 24 years old. There were sixteen male students in the age group of 18 to 24 years old, and there were three male students in the age group of 25 to 34 years old. For the purpose of analyzing the data pertaining to questions concerning online learning, descriptive statistics were utilized to compute the mean value and standard deviation, and a t-test was utilized to infer the data. Each and every student had a mean value that was lower than four, and the students did not have a favourable attitude towards online learning. For the purpose of analyzing the data pertaining to questions concerning face to face learning, descriptive statistics were utilized to compute the mean value and standard deviation, and a t-test was utilized to infer the data. When compared to online learning, the majority of students' mean value was greater than four, and students reported feeling more positive about the experience. When compared to online learning, the results indicate that face to face learning is significantly more beneficial to students from a learning perspective. The results of the study showed that face to face learning instruction was superior to online learning. The mean value of female students was higher than the mean value of male students when it came to online learning. Additionally, the mean value of female students was higher when it came to face to face learning than male students. The conclusion reached was that female students had a positive attitude towards both points of view. On the other hand, students between the ages of 18 and 24 were also positive about face to face learning. The mean group of students between the ages of 18 and 24 had a more positive attitude towards teaching through the Internet. In conclusion, it was determined that the age group of 25 students between the ages of 34 and 35 was beneficial for both students. While online learning has some advantages, it also has some disadvantages because quality digital textbooks, PDFs and soft learning materials are not available in Pakistan, and internet speed is very poor. Students do not even have good mobile phones or tablets. Students don't even have the foundation to understand online learning properly because they are used to learning in a face to face learning. The engagement of students towards online learning was found to be low, and its effectiveness was also found to be low. There is no basic structure of online learning in Pakistan. Almost all over Pakistan, learning takes place in face to face learnings, so even the teachers do not have the training. Therefore, students face a lot of difficulties in online learning. Therefore, the infrastructure must be improved first.

Conclusions

The study found that face to face learning learning was more effective than online learning, with female students having a higher positive attitude towards both. Students aged 18-24

were more positive about face to face learning, while those aged 34-35 were more positive. However, online learning has disadvantages such as lack of quality digital materials, poor internet speed, and lack of mobile devices. Students' engagement and effectiveness in online learning are low due to the lack of a basic structure and inadequate training for teachers.

Recommendations

1. The following recommendations are made from the findings of the study;
2. Students face a lot of difficulties in online learning, mainly because of the digital infrastructure. Internet speed is very poor in most places; digital infrastructure should be improved in Pakistan.
3. Students do not have good mobile phones or tablets; the government should abolish the tax on tablets and provide cheap tablets to students to promote online learning.
4. The quality of digital material should be improved, the books should be properly scanned and converted to PDF, the quality of the videos should be very good, and the expert teachers should record good and short videos.
5. Teachers should also have good training for online teaching. Teachers can teach students better with the help of digital textbooks.

References

1. Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Sloan Consortium. PO Box 1238, Newburyport, MA 01950.
2. Bray, N.J., Harris, M.S., & Major, C. (2007). *New verse or the same old chorus: Looking holistically at distance education research*. Research in Higher Education, 48, 889-908
3. Brown, B.W., & Leidholm, C.E. (2002). *Teaching microeconomic principles*. American Economic Review, 92, 444- 448.
4. Brown, B.W., & Leidholm, C.E. (2002). *Teaching microeconomic principles*. American Economic Review, 92, 444- 448.
5. Cohen, A. (1999). Instructional technology and distance learning through the internet. *Education Media International*, *36*(3), 218-229.
6. Cybinski, P., & Selvanathan, S. (2005). Learning experience and learning effectiveness in undergraduate statistics: Modeling performance in traditional and flexible learning environments. *Decision Sciences Journal of Innovative Education*, *3*(2), 251-271.
7. Daymont, T., Blau, G., & Campbell, D. (2011). Deciding between traditional and online formats: Exploring the role of learning advantages, flexibility, and compensatory adaptation. *Journal of Behavioral and Applied Management*, *12*(2), 156.
8. El Mansour, B., & Mupinga, D. M. (2007). Students 'positive and negative experiences in hybrid and online classes. *College student journal*, *41*(1).
9. Figlio, D.N., Rush, M., & Yin,L. (2010). *Is it live or is it internet? Experimental estimates of the effects of online instruction on student learning*. Working paper 16089, National Bureau of Economic Research, Cambridge, Ma.
10. Gratton-Lavoie, C., & Stanley,D. (2009). *Teaching and learning principles of micro economics online: An empirical assessment*. Research in Economic Education. Winter, 3-25.
11. Lanier, M.M. (2006). *Academic integrity in distance education. Journal of Criminal Justice Education*, 17, 244-261.
12. McGreal, R., & Elliott, M. (2008). Technologies of online learning (e-learning). *Theory and practice of online learning*, *115*.
13. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). *Evaluation of evidence based*

practices in online learning: A Meta analysis and review of online learning studies. Washington: US Department of Education.

14. Moten, J. Jr., Fitterer, A., Brazier, E., Leonard, J. & Brown, A. (2013). *Examining online college cyber cheating methods and prevention measures. The Electronic Journal of e-Learning*, 11, 139-146.
15. Parsons-Pollard, N., Lacks, T.R., & Grant, P.H. (2008). *A comparative assessment of student learning outcomes in large online and traditional campus based introduction to criminal justice courses*. Criminal Justice Studies, 2, 225-239.
16. Russell, T. L. (1999). *No significant difference: A comparative research bibliography on technology for distance education*. Raleigh, NC. North Carolina State University.
17. Seke, M. M. (2020). Would we Be able to absorb the new normal brought by COVID-19 as another educational revolution?. *International Journal of Advanced Corporate Learning*, *13*(4).
18. Singh, J., Steele, K., & Singh, L. (2021). Combining the best of online and face-to-face learning: Hybrid and blended learning approach for COVID-19, post vaccine, & post-pandemic world. *Journal of Educational Technology Systems*, *50*(2), 140-171.
19. 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.
20. Sumbawati, M. S., Basuki, I., Ismayati, E., & Rijanto, T. (2020, November). Student Learning Independence in Online Learning Depends on Motivation. In *International Joint Conference on Science and Engineering (IJCSE 2020)* (pp. 342-347). Atlantis Press.
21. Thomson, D. L. (2010). Beyond the classroom walls: Teachers' and students' perspectives on how online learning can meet the needs of gifted students. *Journal of Advanced Academics*, *21*(4), 662-712.
22. Wachenheim, C. (2009). *Final exam scores in introductory economics courses: Effect of course delivery method and proctoring*. Review of Agricultural Economics, 31, 640-652.