

Comparison between Virtual and Traditional Modes of Teaching: A Case Study on Students of Higher Education during the Pandemic Period

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Most of us must have read the story of Aruni. There we have seen the traditional methods of teaching that were famous in ancient India. India has the tradition of the Gurukul system of education in which the sishya or the students resided with the Guru or Guru's clan and the central emphasis was on communicating knowledge to the students in usual surroundings. It was more predominant in the Vedic period where pupils were trained on several subjects and were also taught how to live a cultured and self-controlled life. Transforming the Vedic period's Gurukul system of learning into the brick and mortar classrooms led to the chalk and talk method of teaching. The classroom teaching method inculcated among the pupils conflict resolving skills, communication and listening power, and team spirit development along with the peers. Thus, the classroom method of teaching prospered for decades and helped mankind in their personality development, career building, developed social skills, and promoted shared wisdom.

The contagion effect of COVID 19 has locked down the classrooms and has popularized a new technique of learning i.e., the virtual or online education system. But the question is that can the brick and mortar classrooms be replaced with the virtual classroom in which the teacher remains behind the computer screen and can it be better than the traditional teaching system?

For this, we have conducted a study selecting a sample of students from both PG and UG levels of the University of Burdwan. In surveying them through the questionnaire method, we have categorized their responses on an ordinal scale and to find the variation between virtual and traditional modes of teaching, Kruskal Wallis Test has been applied in the present study to draw the conclusion of the study.

Introduction

Most of us must have read the story of Aruni. There we have seen the traditional methods of teaching that were famous in ancient India. India has the tradition of the Gurukul system of education in which the sishya of the students resided with the Guru or Guru's clan and the central emphasis was on communicating knowledge to the students in usual surroundings. It was more predominant in the Vedic period where pupils were trained on several subjects and were also taught how to live a cultured and self-controlled life. Transforming the Vedic period's Gurukul system of learning into the brick and mortar classrooms led to the chalk and talk method of teaching. The

classroom teaching method inculcated among the students conflict resolving skills, communication and listening power, and team spirit development along with the peers. Thus, the classroom method of teaching prospered for decades and helped mankind in their personality development, career building, development of social skills, and promoted shared wisdom.

The contagion effect of COVID 19 has locked down the classrooms and has popularized a new technique of learning i.e., the virtual or online education system. But the question is that can the brick and mortar classrooms be replaced with the virtual classroom in which the teacher remains behind the computer screen and can it be better than the traditional teaching system? For this, we have conducted a comparative study on virtual and traditional modes of teaching by selecting a sample of students from both PG and UG levels of the University of Burdwan.

Literature Review

Black(2002)has studied the course design and delivery factors that affect students' learning in the traditional classroom courses as well as online classes or in the blended mode of learning. The author concludes that the use of blended mode may deliver an ideal "mix" for students' education. Suanpanget. al.(2004) have compared traditional classroom teaching as well as online teaching for two groups of students. The results of the study show that there are significant differences in attitudes towards traditional classroom teaching and online teaching.

Hameedet.al. (2008) have highlighted the blended learning environment which can be used effectively by the teachers, students, and alike. According to the authors, a blended learning environment provides an effective E-Learning approach to the students.

Emersonet.al.(2011) have compared traditional classroom-based learning and online learning in relation to students. The results of the study show that pupils who sat for the examination in off-line mode performed better than those who sat for the examination in online mode. However, the authors do not provide any explanation for their results.

Golchaiet.al.(2012) have undertaken a study with the help of a clinical trial method among the pupils studying at Guilan Medical Sciences University. The authors have divided the students into intervention group and control group. The traditional lecture-based education system in histology course is being followed by the control group intervention group follows the e-learning lecturing method. The authors conclude that the marks of histology of pupils using the learning lecturing method are significantly more than pupils using the traditional learning method.

Mosalanejad *et al.* (2012) have tried to find the efficiency of online systems for the first-year nursing pupils. The theory and practical contents are trained in one group by traditional method and in another by interactive online mode. Paired t-test and independent sample t-test are applied by the authors. The study shows that the average score in the online teaching group is more than traditional teaching group; however, the authors did not find any significant results in the objective structured clinical examination.

Dimitrios *et al.* (2013) have tried to find the different views and research findings on the important issue of education in accounting internationally. According to the authors, students mainly desire personalized teacher-centered methods along with the contemporary teaching approaches which integrate ICT on the idea that the latter would be much more effective for the students.

Belias *et al.* (2013) have proposed an alternative web-based method for the coaching of accounting in place of traditional teaching. According to the authors, the online teaching method along with the traditional method of teaching in accounting will help pupils.

Ni (2013) has provided the proof that student performance as measured by grade is not dependent on the method of teaching namely online or offline. The author opines that the online education system is much more challenging in practical classes than that in other theoretical classes.

Moro *et al.* (2017) have compared the performance of examination between two virtual reality headsets and also examined perceptions of pupils in this respect. The study concludes that the mobile-based VR is more appropriate for education than the desktop-based VR. According to the authors, the use of mobile-based virtual reality devices is very effective in medical education.

Habibzadeh *et al.* (2019) have compared offline and online instruction methods for nursing students. The findings of this quasi-experimental study indicate that both offline and online instruction methods have augmented students' knowledge but the offline education method had a larger influence on them. However, according to the authors, the study shows that both groups have no significant difference in the level of knowledge in the pre-intervention stage.

Spencer *et al.* (2019) have conducted a study comparing role-play with mixed-reality simulation in preservice courses. The findings of the study show that respondents find mixed-reality sessions significantly more realistic when it is compared with role-play participants. The study also indicates that respondents realize the better value of coteaching associates in the simulated atmosphere.

Soltanimehret. *al.* (2019) have compared the effect of online and offline modes of education for dental students. The study concludes that the online mode of teaching is superior to an offline lecture-based method for the improvement of their knowledge in the radiographic interpretation of bony lesions of the jaw.

Banafshiet.*al.* (2020) have examined the two different styles of education namely, offline and online. The authors have used the Shapiro-Wilk test, Q-Q plot, Wilcoxon test, and Mann-Whitney U test in order to examine the research problem. The study demonstrates that the participants' interaction during the offline teaching-learning method is more than in the online mode.

Demitriadou *et. al.* (2020) have investigated the impact of online teaching on primary school children. The authors divide the school students into one control group and two experimental groups. The first and second experimental groups use the online mode while students from the control group use the traditional offline mode as part of the learning process. The results indicate that the implementation of a new online mode of teaching increases interest in mathematics education as compared to traditional teaching methods.

Moriceet. *al.*(2020) have compared online and offline modes of teaching with respect to students' knowledge and satisfaction. According to the authors, there is no difference between the online and offline modes of teaching, and online teaching may be applied along with offline teaching.

Boscolo-Bertoet. *al.* (2021) have examined whether the online mode of dissection can add value to the offline teaching method. According to the CONSORT guidelines, second-year medical students are chosen randomly by the authors to study anatomical structures with the help of online dissection (intervention) or textbooks (controls). The study concludes that the combination of the online and offline modes of teaching results in a significant enhancement of second-year medical pupils' learning results.

Lynchet. *al.*. (2021) have examined the perceptions of the usefulness of online and offline observation in physical education for teachers. The study concludes that offline comments are favored over online and online opinion is a feasible alternative when technological challenges are properly considered .

Bączeket. *al.* (2021) have undertaken a study to examine the perception of offline learning and online learning among medical scholars. The study shows that there is no statistical difference between offline and online learning and the authors opine that online teaching method is considered less effective than offline learning.

Usman *et. al.* (2021) have reviewed the effectiveness between online lab and offline lab as a medium of distance learning. The findings of the study show that the use of online lab media has the same or even better effectiveness than traditional offline labs.

Objective

The objective of the present study is to identify whether the variation in the perception level of virtual and traditional modes of teaching exists among students of urban and rural areas during the pandemic period.

Database and Methodology

Data have been collected by circulating questionnaires in Google form among 200 students from both PG and UG levels of the University of Burdwan. Keeping in view the problem of the study, the convenience sampling method of choosing students has been adopted to select respondents during the pandemic period. However, we have considered only those students in our sample who have either desktop or laptop or smart phone and used to attend their classes physically regularly. To examine whether the variation in the perception level of virtual and traditional modes of teaching exists among students of urban and rural areas during the post-covid period, Kruskal Wallis Test has been applied in the present study.

Hypotheses

1. Ho: There exists no significant variation between urban and rural pupils with regard to the effectiveness of the traditional mode of teaching
2. Ho: There exists no significant variation between urban and rural pupils with regard to the effectiveness of the virtual mode of teaching
3. Ho: There exists no significant variation between urban and rural pupils with regard to internet connectivity while learning through virtual mode.
4. Ho: There exists no significant variation between urban and rural pupils with regard to the infrastructure of gadgets while learning through virtual mode.

Analysis and Interpretation

From Table 1, it is observed that there exists no significant variation between urban and rural pupils with regard to the effectiveness of the traditional mode of teaching as the chi-square is insignificant. It implies that both groups of students opine about the effectiveness of the traditional mode of teaching in their teaching-learning process. The null hypothesis that there exists no significant variation between urban and rural pupils with regard to the effectiveness of the virtual mode of teaching is rejected as the value of the Kruskal Wallis Test is significant at 1% level (Chi-square = 13.654). There is significant variation between urban students and rural students in respect of internet connectivity while learning through virtual models the value of chi-square is 8.976 which is significant at a 5% level. There is also significant variation between urban students and rural students in respect of infrastructure of gadgets while learning through virtual mode as the value of chi-square is significant at 1% level.

Table 1: Results of Kruskal Wallis Test

	Type	Mean Score	Kruskal Wallis Test
Traditional mode of teaching	Urban students(90)	119.21	Chi-square = 1.765
	Rural students (110)	118.74	
Virtual mode of teaching	Urban students (90)	117.45	Chi-square = 13.654***
	Rural students (110)	83.67	
Internet connectivity	Urban students (90)	90.34	Chi-square = 8.976**
	Rural students (110)	115.54	
Infrastructure of gadgets	Urban students (90)	89.67	Chi-square = 26.403***
	Rural students (110)	125.12	

Notes: *** implies significant at 1% level, ** implies significant at 5% level.

Table 2 shows that there exists no significant difference among the urban PG students, rural PG students, urban UG students, and rural UG students so far as the effectiveness of the traditional mode of teaching is concerned as the estimated value of the Kruskal Wallis Test is insignificant. However, there is a significant difference among the urban PG students, rural PG students, urban UG students; rural UG students so far as the effectiveness of virtual mode of teaching, internet connectivity, and infrastructure of gadgets are concerned as the estimated values of the Kruskal-Wallis Test are significant either at 5% level or 10% level. From the mean scores of Table 2, it is evident that urban PG students and urban UG students are more aware of the virtual mode of teaching than the rural students but the rural PG and UG students face more problems with the access to internet connectivity and infrastructure of gadgets while learning through virtual mode than the urban counterparts.

Table 2: Results of the Kruskal Wallis Test

	Type	Mean Score	Kruskal Wallis Test
Traditional mode of teaching	Urban PG students	111.09	Chi-square = 1.432
	Rural PG students	110.08	
	Urban UG students	100.22	
	Rural UG students	99.98	
Virtual mode of teaching	Urban PG students	116.57	Chi-square = 6.841*
	Rural PG students	92.76	
	Urban UG students	93.36	
	Rural UG students	82.67	
Internet connectivity	Urban PG students	90.43	Chi-square = 6.414**
	Rural PG students	115.70	
	Urban UG students	92.10	
	Rural UG students	119.21	
Infrastructure of gadgets	Urban PG students	98.65	Chi-square = 5.851*
	Rural PG students	123.90	
	Urban UG students	92.74	
	Rural UG students	118.88	

Notes: ** implies significant at 5% level, * implies significant at 10% level.

Conclusion

It may be concluded from the findings of the study that the students prefer the traditional mode of teaching as compared to the virtual mode of teaching at least for our sample. It is also observed that urban students have a higher awareness of the virtual mode of teaching than rural students and students of the rural area come across more problems with the access to internet connectivity and infrastructure of gadgets while learning through virtual mode than their urban counterparts. However, we are aware of the limitations of our study. This study is limited to a very small group of pupils from Burdwan University and Rampurhat College, particularly from the department of commerce. For inferring a general conclusion in this regard, one should take a large sample size from the students of other universities as well.

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