A Study on the Usefulness, Difficulties and Recommendations for Online Teaching

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Abstract

The World Health Organisation declared the recent pandemic as a global emergency leading to the complete shutdown of all school and colleges for an unspecified period in order to avoid the spread of the disease. This lockdown enormously disrupted the traditional education system driving us to move to online education in order to avoid the delaying of the youth education. As a result, the education has transformed itself dramatically whereby teaching is conducted remotely and on digital platforms.

A questionnaire based survey was conducted for the students after they completed their first phase of online education of the just finished academic year. Based on the data collected, results are compiled and presented in order to draw meaningful solutions or suggestions. Statistics reveal that the sudden transition from traditional education to the online education came out to be fruitful and the experiences gained can be used to improve it further in future. The main intention of this paper is to identify the problems faced by e-learners and suggest possible remedies for the same.

Keywords: *Questionnaire based study, Digital learning, Virtual Teaching*

1. Introduction

The recent pandemic has affected all levels of traditional education system ranging from primary schools to the higher technical education all over the globe. More than 100 countries across the globe suffered complete shutdown of educational institutions, with UNESCO estimating around 900 million students affected by this closure [1]. Despite the fact that the purpose of these closings is the prevention of widespread community transmission of the novel corona virus disease, it has various educational implications. Moreover, the effect of long term shut-down is yet to be seen.

This emergency situation has enforced the academic institutions to shift from traditional classrooms to online learning platforms and this is essential as institutional enrolled students have a predetermined syllabus and the time to cover them. This necessitates the availability of good internet connection, smart phones or computers among the students [2].However, in India there persists huge gaps between people with higher income who can access technology easily while the people earning lower income don’t even have bread during lockdown.

Therefore, the academic institutions need to ensure that education continues digitally through distance learning by taking into account the financially weaker section of the society as well.

With time it has become clear that the pandemic will most likely force the academic institutions to continue online for the coming academic session. In almost all the institutions the management committees are looking for the finest platforms and operating procedures for online education to provide the best online experience to their learners. It is therefore essential to review our experience of conducting online classes so that we can then draw useful lessons for improved teaching in the future.

2. Survey and Discussions

In this paper, a questionnaire based survey was conducted by the authors of this paper. In this survey, the students were asked to give their feedback on online for the academic year 2019-20. The students were asked to rank their experience on a five point scale mostly ranging from ‘strongly agree’ to ‘strongly disagree’ on the following four questions:

1. There are no security issues while using the online platforms.
2. Remote conduct of online labs appropriately served the purpose of laboratories.
3. With online classes, you were able to save your money and time.
4. Online teaching is as effective and efficient as traditional class room teaching.

The students were requested to be fair in giving their opinion so that a clear conclusion can be drawn from their combined views. Based on the collected data, results are compiled and presented in statistic figures along with a tabular percentage rating. The feedback results are obtained and their detailed discussions have been given in the four separate subsections below:

2.1 Absence of security issues

As online learning takes place via Internet, all of the materials used in the online learning system can be a target for hacking or threats. This can lead to unauthorized alterations and / or destruction of learning materials. Online learning should take into account the security risks present on the Internet, such as identity theft, impersonation, and authentication [3]. Online learning programs have gained the attention of cybercriminals to intervene in these programs and the danger is immense. As the functionality and services of online learning programs become more complex, online learning is increasingly exposed to security threats.

In Table 1, it is illustrated that 38% students disagree with the fact that there are no security issues while using the online platform for learning, while 29% students opined for no security issues.

Table 1. No security issues while using online platform

S. No.	Rating scale	Respondents percentage
1.	Strongly disagree	14 %
2.	Disagree	24 %
3.	Neutral / Undecided	33%
4.	Agree	24%
5.	Strongly agree	5%
	Total	**100%**

Recommendations

During online classes it has been observed that all of a sudden few students have stopped attending classes and when reason has been asked they told "Parents are not allowing them to use laptops/phones because they are scared that some personal information related to their bank accounts, password etc. may be hacked.

It is therefore suggested that various digital platforms may critically be observed, thoroughly analysed and authenticated. After that students should be convinced regarding the security issues and they should not believe in word of mouth.
Academic institutions should also take some precautionary measures to solve the problem of security, such as:

1. The academic institutions can purchase a Moodle-LMS (Learning Management System), as it will run on its own dedicated server providing a secure platform for all its institutional users.
2. Updating Moodle-LMS regularly on each release. Published security holes draw hacker's attention after release. The older the version, the more vulnerabilities it is likely to contain.

2.2 Remote conduct of online labs appropriately served the purpose

The COVID-19 is pushing colleges and universities round the globe to switch their laboratories online. But the foundation of students in science and engineering education has been a challenge: the laboratory class.

Now as far as conduct of lab classes are concerned, only 25% students have supported while a large percentage of 60% do not agree for remote conduct of online lab appropriately served the purpose of laboratories as depicted in Table 2.

Table 2. Remote conduct of online labs appropriately served the purpose of laboratories

S. No.	Rating scale	Respondents percentage
1.	Strongly disagree	33 %
2.	Disagree	27 %
3.	Neutral / Undecided	15 %
4.	Agree	24 %
5.	Strongly agree	1 %
	Total	**100%**

Recommendations

From the above analysis we can conclude that teachers must find out some better solutions for conducting online lab classes so that students can learn and understand the practical aspect of the course. It may also be supplemented by some simulations, live demos and online hands-on-training etc.

- Universities can launch pilot projects in an effort to provide students with a laboratory experience outside the campus. In one way, laboratory equipment can be assembled at the university and sent directly to students for tests in their homes. This method is expensive and might involve safety issues.
- The second way is to design experiments around what can be easily found at home. Large number of physics, chemistry and biology experiments can be investigated using everyday objects. For example, students can measure gravity with a simple pendulum, or find the final ice temperature by observing the temperature change when added to a glass of water.

2.3 Learners were able to save money and time

In the contemporary world, internet based communication and multimedia compression technologies have lessened the gap between online learning and traditional learning. In one perspective, virtual learning saves money and time, and is a good method for knowledge augmentation in learners while staying in their homes. The virtual classroom recordings, online-study material and class discussion comments can be accessed by the student's 24 hours a day and seven days a week. This is particularly appropriate for students who wish to reassess a tutorial or require more time to reflect on some material before moving on.
The core benefit of online learning is that it permits learners to take part in more advanced learning where distance and schedule make on-ground learning difficult-to-impossible. Students can join online classes from almost anywhere in the world as long as they have an electronic device and a reliable Internet connection.

Table 3 shows that, 42% students agreed to the fact that both time and money can be saved by conducting online classes, while 39% students do not agree with this fact of saving time and money.

Table 3: With online classes, learners are able to save money and time

S. No.	Rating scale	Respondents percentage
1.	Strongly disagree	15 %
2.	Disagree	24 %
3.	Neutral / Undecided	19 %
4.	Agree	29 %
5.	Strongly agree	13 %
	Total	**100%**

Recommendations

E-learning require an initial price to acquire access to an online course, i.e. the cost of the course registration, cost of electronic device, reliable data connection etc. Later, the students can access the course at their end, which eliminates the daily travel costs. As all the study material is present on the web and student assessments are done online, it saves a huge paper and printing costs. Additionally e-learning also saves a lot of time which student otherwise had to spend while travelling away from home to the desired institution.

Some recommendations in order to save more time and money while attending virtual education are:

- Although all resources are available online from digital readings to recorded YouTube lectures, the teacher should provide the appropriate URLs and website prior to the students, this would help them crawling fruitfully on the web and hence effectively optimise their time. Doing so they can also save money as instead of buying costly subscriptions, learners can go for low cost to free online resources. (Example, YouTube lectures in addition to power point presentations and assignments are available free of cost for numerous disciples by various prestigious world instructions like Stanford University).
- The institute should also reciprocate in the form of cost cut to the students, which would normally be spent on infrastructure maintenance if they were to attend classes physically, so as to relieve them of the financial burden.

2.4 Online teaching is effective and efficient

Traditional classroom learning emphasises primarily on classroom education which is restricted to a predetermined time and a specific location where the students are required to be present and join the lecture. They are supposed to join all the assigned group activities under the supervision of a teacher and give their input as well. As a result they are more attentive and proactive leading to higher learning and retention rate [4]. This type of classroom environment is more suitable for young students who are yet to join the workforce.

On the contrary, in online learning the range of teaching methods available for teachers are rather limited. They have to rely mainly on audio and visual methods and are not able to practice any kinaesthetic ways like physical games or role-plays.

Results regarding effectiveness and efficiency of online teaching show that only 32% students are agreeable to effectiveness and efficiency of online teaching while comparatively very large percentage of 57% students said that online teaching is not effective and efficient. And 11% students were undecided to give their clear views on effective and efficient online teaching as shown in Table 4.

Table 4: Online learning is as effective as traditional classroom teaching

S. No.	Rating scale	Respondents percentage
1.	Strongly disagree	28 %
2.	Disagree	29 %
3.	Neutral / Undecided	11 %
4.	Agree	24 %
5.	Strongly agree	8 %
	Total	**100%**

Recommendations

Traditional Classroom learning assists both the students and teachers be acquainted with each other in a superior way. Students can openly share their grievances and clarify their doubts, thus receiving their queries solved in a right away. This benefits teachers to evaluate the strengths and weaknesses of students in a better way, and guide them accordingly in their career options.

The memory capability of each student is different. Some students may be fast learners, while some may take more time to understand [5]. In an online class the teacher explains concepts and solves queries, but there could be students whose doubts remain unanswered. Also students may feel that the teacher's pace of teaching is too fast for them.

Since 57% students, which is quite large percentage believe that online teaching is not effective and efficient as compared to traditional teaching so educators must figure out that how a particular course and topics should be modified in such way that students may find it interesting and understandable. Some recommendations to improve the effectiveness and efficiency in online teaching are:

- A teacher must understand that there is no unique and well defined method to teach online. A teacher must explore new and variant methods for online teaching. For example, to teach the Theorem of Pythagoras, the teacher must ask students before they come online, to explore websites that offer lucid and interesting accounts of how this theorem was first discovered in India, the history of the theorem and how Indian mathematicians discovered the theorem much before the time of Pythagoras [6].
- PowerPoint presentations become boring if they consist of only plain texts. The teacher may introduce multimedia content such as images related to context, gifs, memes or a short video clipping etc. Also when students are busy solving numerical problems, the teacher may put timers to set the countdown.

- For an online session to be more effective and interesting for students the teacher should encourage the active participation of all students by incorporating interactive activities such as poll quizzes, brainstorming sessions, icebreaker activities, student's presentations etc.

Conclusions

Based on the analysis of the survey conducted, we conclude that broadly speaking, the transition from the traditional classroom to the online education systems came out to be reasonably fruitful. However, online teaching has some limitations particularly for developing countries like India and these that need to be addressed thoroughly.

The educators in the academic institutions are new to the digital platform and hence unskilled in using the various tools available to them. It is therefore indispensable to conduct high quality online teachers training programs providing parallel hands-on-training experience simultaneously.

The teachers should perceive online education in new ways such as giving extra time after every online class to solve queries of students, taking feedback from students at regular intervals, sharing the topics or the lesson plan prior to the online session, recording the online session and uploading it on the virtual classroom. Additional time should be given to under privileged students or those having internet connectivity issues in order to increase the effectiveness of online education paradigm.

Students should come well aware about the topics to be covered in the online session. They should give extra time accessing the ever-increasing information available on the web; this would help them to be more independent in getting thesenew skills.

References

[1] *M Nicola, ZAlsafi, C Sohrabi, AKerwan, A Al-Jabir, CIosifidis, M Agha, and R Agha, "The socio-economic implications of the coronavirus pandemic (COVID-19): A review", Elsevier Public Health Emergency Collection, 2020 Jun; 78: 185–193, Published online 2020 April 17.*

[2] *GBasilaia and DKvavadze, "Transition to Online Education in Schools during a SARS-CoV-2 Coronavirus (COVID-19) Pandemic in Georgia", Business and Technology University, Tbilisi, GEORGIA, Pedagogical Research 2020, 5(4), em0060 e-ISSN: 2468-4929.*

[3] *C (Defta) Costinela-Luminita and C (Lacob)Nicoleta-Magdalena,"E-learning Security Vulnerabilities", Procedia - Social and Behavioral Sciences,Volume 46, 2012, Pages 2297-2301.*

[4] *M Herbert, "Staying the course: A study in online student satisfaction and retention", Online Journal of Distance Learning Administration, 9(4).*

[5] *N Cowan, "What are the differences between long-term, short-term, and working memory?", Progress in Brain Research. Volume 169, 2008, Pages 323-338.*

[6] D Singh, "In defence of Online Learning", MAIL TODAY, 5th Aug 2020. Available at: https://www.pressreader.com/india/mail-today/20200805/281702617057312.