E- Learning Tools for Distance Education in COVID – 19: An Effective Delivering of Online Classes during Lockdown Using various ICT Tools

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ABSTRACT

The world as we know it has changed over a short period of time, with the rise and spread of the deadly novel Corona virus known as COVID-19, the world will never be the same again. This study explores the devastating effects of the novel virus pandemic, thus the need to transform the offline classroom into an online classroom. It explores and describes the numerous online teaching platforms, study materials, techniques, and technologies' being used to ensure that educating the students does not stop. Furthermore, it identifies the platforms, technologies which can be used to conduct online examination in a safe environment devoid of cheating. Additionally, it explores the challenges facing the deployment of online teaching methods. The results indicate that students prefer the multimedia means of studies. As a result of binary logistic regression, poor internet connection, awareness on COVID19, enough sources of materials, recommends massive open online course, favorites online methods, and satisfaction with online study are significant in the model or attitudes towards delivering of online classes during lockdown COVID-19 pandemic at 5% level of significance. Yet, they perceived many challenges during online learning like lack of face-to-face interactions, lack of socialization, distraction by social media, technology related issues etc. Students also opted for a combined approach of learning in the post pandemic period.

KEYWORDS: - COVID-19, E-learning tools,Online learning, Classroom learning, Binary logistic regression.

I. INTRODUCTION

COVID 19 made a serious impact on many aspects of everyday life. World Health Organization (WHO) announced COVID19 as a global public health emergency of international concern on 30th January 2020 [1] and declared it a pandemic on 11th March 2020 [2]. The education system is one of the most impacted aspects of routine learning and daily life. This sudden and rapid transformation from an environment of conventional learning to virtual learning has made a great impact on the attitude of the students towards learning [3].

In view of the forgoing, all institutions of learning across the globe are subjected to an imminent and unavoidable indefinite break. This is an attempt to stop the virus from affecting the students or the teachers. This however has brought about lackadaisical attitudes among the students at home because they are idle and

thus thinking nothing but evil. Consequently, all hands are now on desk, reviewing academic online platforms and updating it to meet up with the peculiarities of our day-to-day challenges while making it easy for studies and evaluations of student's academic performance.

Hence, the need for a platform that will substitute the obsolete means of teaching in an effective and efficient method with the capability of evaluating students' academic performance is imminent. Research gap: there are no academic researches on this topic; researches are yet to study online classes platforms, etc.

Objectives: The study explores and describes the present state of online classes, opportunities, and challenges. It is a novel research on the techniques and method adopted by teachers to bring the offline classroom online [4].

II. LITERATURE REVIEW

Videoconferencing is just one of the technological systems that can be used in online learning. The value of online learning is being recognized by more organizations, since it is a cost effective way to deliver a large number of people. It can produce significant results by not only decreasing costs, but also by improving performance .It can produce significant results by not only decreasing costs, but also by improving performance. Online Learning is encouraged due to following reasons during lockdown period for Covid-19.

• One can acquire knowledge staying at home and can maintain social distancing.
• Outbreak of Covid-19can be minimised due to social distancing.
• It offers highly effective learning environments.
• It offers complementary interactive support that allows students to study 24/7 and work at their own pace.
• It offers flexible scheduling.
• It is available in any location, with an internet connection and students can attend using their devices (mobile, computers, tablets, etc.).
• Deals with real-time student monitoring as well as reporting.
• Improves the image of institution by offering technological solutions that solve real problems.

Teachers and scientists can foresee that new advances will in any case be presented, which can require transformation by the two understudies and educators, upheld by examination by analysts on their viability. It is essential to appear for "hints on how e-learning advances can turn out to be ground-breaking impetuses for change additionally as devices for updating our education and instructional frameworks" [5].

These resources include general e-learning tools for educators, subject-based tools for students, and extensions to assist students with learning differences. Almost all of these resources are free, with the exception of a few inexpensive tools/available free trials [6].

III. METHODOLOGY

Study Design
An observational, descriptive study based on designed questionnaire was conducted through Google forms which was circulated among the undergraduate students of various institute. Online classes are being conducted.

Study Population: - A total of 170 third MBBS undergraduate students participated in the students.

Study Conduct

The designed questionnaire consisted of set of questions to know the attitude of undergraduate students regarding online v/s classroom learning and to know what are the reasons for their likes and dislikes about online and class room learning. Initial questions included socio demographic data and the Gadget being used for online classes. Table 1 of the questionnaire was based on the opinion of students towards classroom and online classes. Table 2 consisted of statements for which their opinion was obtained by Yes/ No/ May be responses and end questions on what kind of approach they would prefer during the pandemic either online or classroom and after this pandemic with the options of Online classes, Classroom classes and a combined approach were given.

Results

My study included 170 students of which 78 were males and 92 were females within the age group of 18–24 years. The average attendance for online class was found to be 96%. 52% of the students opted for using mobile, 36% laptops and 12% of them used tablets as devices foronline classes (Fig.1)

Gadgets used by the students

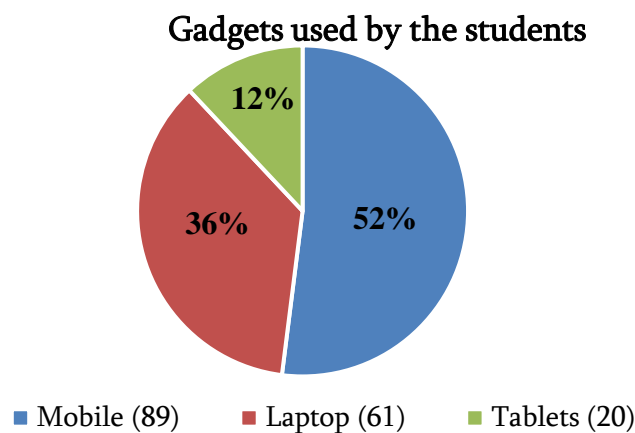■ Mobile (89)   ■ Laptop (61)   ■ Tablets (20)

Fig. 1 Distribution of Gadgets used by the students

Table 1 of the questionnaire suggested a comparable result in terms of content covered in both online (37%) and classroom learning (41%). 58% of the students felt understanding concepts is better in classroom learning while 52% students felt retention of the topic was better through classroom learning.

Table 1 for the questionnaire

Sr. No	Question	Online Learning (%)	Offline Learning (%)	Both (%)
1	Understanding concepts of ENT is easier in	41	53	06
2	Coverage of content of particular topic is more in	37	41	22
3	Retention rate of content of the topic is better in	42	48	10
4	We can get access to good amount of study material in	59	27	14
5	Interaction among student and teacher is better in	41	54	05
6	Punctuality and self-discipline are acquired better in	16	77	07
7	Acquiring practical knowledge of ENT is more effective in	06	90	04
8	Clarification of doubts is easier in	55	33	12
9	Appearing for internal assessments is easier in	41	43	16

Majority of the students (59%) felt that they had better access to online study materials. Students favored classroom learning in terms of student teacher interaction (54%), punctuality & discipline (77%), acquiring practical skills (90%). Students predominantly favored online classes for doubt clarification (57%). Apprehension of exams were nearly equal in both.

Table 2 revealed students preferred online classes in terms of ease of participation, attending classes (91%) and time investment (67%). Students felt that the outdoor activities, group projects and development of communication skills were better in classroom learning (82%). 78% of the students sensed that poor internet connections, social isolation and eye strain as the commonest problems faced during online learning.

Table 2 for questionnaire

Sr. No	Statement	Yes (%)	No (%)	May Be (%)
1	Ease of participation and attending classes during lockdown is better online	91	07	02
2	Online learning requires less of a time investment	67	18	14
3	Multiple choice questions incorporation during online learning adds up to the interest among students	74	14	12
4	Classroom learning prevents social isolation of the individual	72	16	12
5	Poor internet connections during the class causes loss of interest in online learning	78	13	09
6	Online learning causes decreased out-door activity, group projects, communication skills	82	11	07
7	Increased screen time during online learning can cause eye related problems	75	05	20

When asked a specified question regarding preference of classes during the pandemic, majority of the students preferred online classes (89%) to sustain their academic interest and development during this pandemic (Fig. 2).
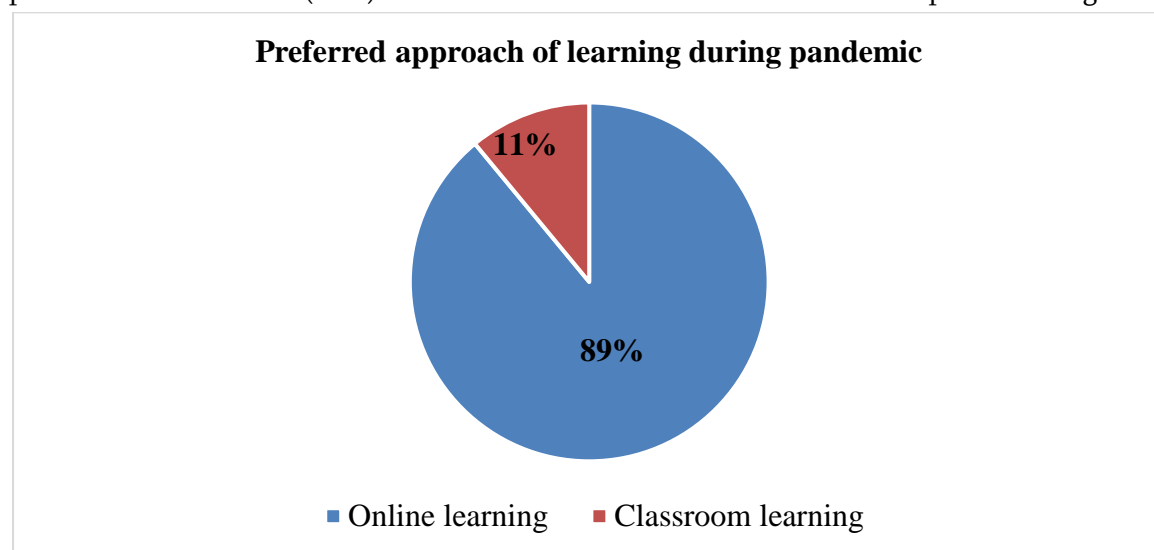
Preferred approach of learning during pandemic

Fig. 2 Preferred approach of learning during pandemic

For the opinion of preferred approach of learning after COVID 19 pandemic, 31% of students opted for the option of only classroom learning, 16% opted for only online learning where as 53% of the students opted for combined approach of classes (Fig. 3).
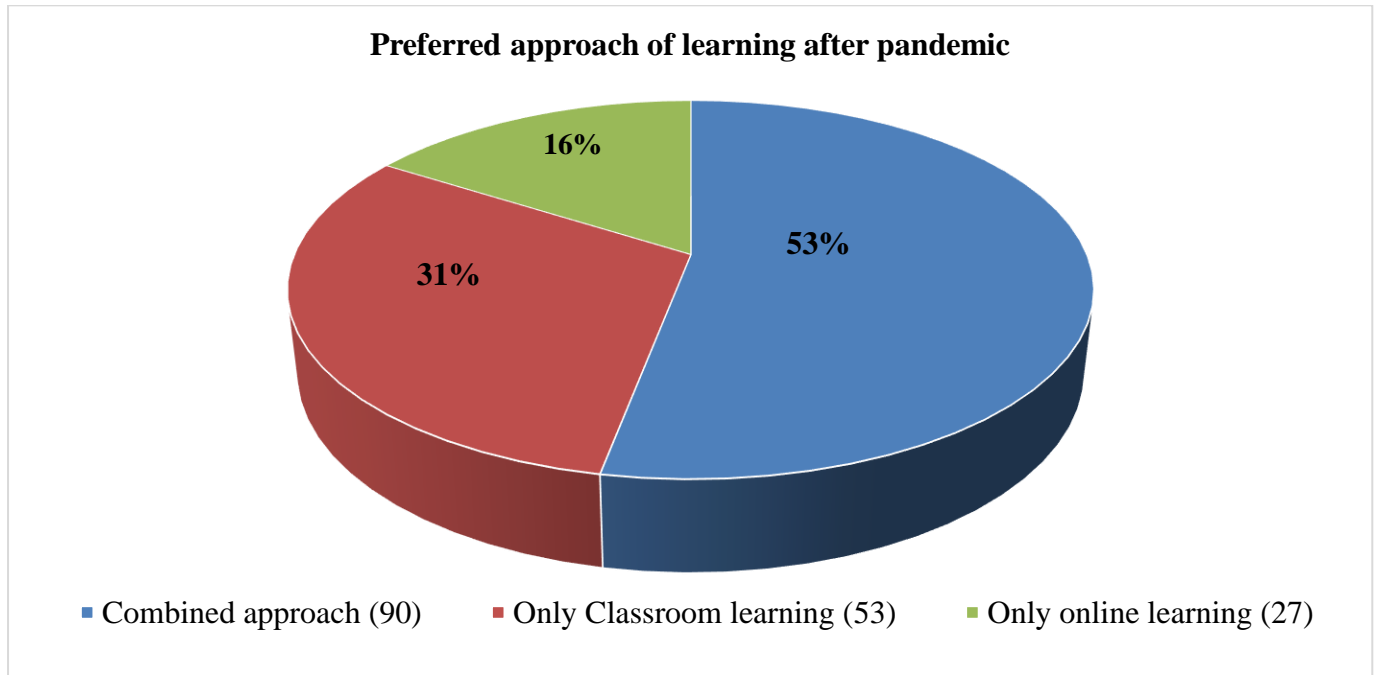

Fig. 3 Preferred approach of learning after pandemic

Table 1. [13] Characteristics of the sample and views about studying, two and 12 weeks after the national lockdown in Norway on 12 March 2020 due to the COVID-19 pandemic.

	2 weeks after lockdown n = 16	12 weeks after lockdown n = 21
	n (%)	n (%)
Age, years		
≤ 21	0 (0)	0 (0)
22–25	7 (44)	11 (52)
26	9 (56)	10 (48)
Study programme		
Bachelor	8 (50)	11 (52)
Master	8 (50)	10 (48)
Prior experience with digital learning	7 (44)	9 (43)
Expectations upon learning outcome from digital education		
Higher	3 (19)	0 (0)
Lower	8 (50)	15 (71)
No change	6 (38)	5 (24)
Do not know [a]	NA	2 (10)
Studying has become more challenging after COVID-19 lockdown	12 (75)	12 (57)

[a] Only after 12 weeks.

IV. E LEARNING TOOLS FOR DISTANCE EDUCATION

With the growing concerns over COVID-19, many school districts have moved classroom instruction online for the foreseeable future. We understand that this change can present challenges on many levels for educators, administrators, students, and families.

1. **Zoom:** This is another online live streaming tool but it is a mobile app. It is available on Android and iOS. While online, you can record sessions, collaborate on projects, and share or annotate one another's screen. It cost $14.99/month, and it allows meetings recording on the cloud. It has unlimited number of participants, but the meetings can only last for 40 min (https://zoom.us).

2. **Google Classroom:** This is an open source Web service provided by Google for education and training with the sole aspire of online evaluation of test and assignment in a paperless way. However, organizations must register their corporate account on G-Suit before they can use this service. The students only need a valid email account to get connected to the class. This is linked to Google Drive, Google Docs, and Gmail for efficient sharing of resources (https://classroom.google.com).

3. **Microsoft Teams:** This is designed by Microsoft as an all-round collaborative platform offering: chats, voice, and calling features. It allows instant messaging with inbuilt office 365 for manipulating documents with live stream. All you need to do is to subscribe to the Microsoft 365 business essentials package; however, this package cost $5/month and per single user (https://support.ofce.com).

Internet learning content is available through various types (text, pictures, sounds, and curios) [7] and kinds of media (versatile, intelligent, account, profitable) [8].

V. DISCUSSION

Since the serious outbreak of this global pandemic Covid 19 majority of the countries practiced lockdown. Currently there are in excess of 26 million cases of Covid 19. Social distancing and restrictive movement policies are being implemented to curb this rising curve of cases [9].It also has markedly deranged conventional education practices as most of the schools and colleges are being temporarily shut down.

Due to the constrains of classroom learning in this indeterminate time course of pandemic, online learning has come to the forefront to partly resolve perplexity. Online classes are being conducted through the student portal since the outbreak of pandemic. The average attendance for the online classes was found to be 96% over a period of 5 months. Most of our students possess a mobile phone, making it the most accessible and feasible platform to attend online classes (52%). 36% and 12% students preferred using laptops and tablets respectively as they might feel more distracted while using mobile phones. Students themselves gave the feedback that accessing online classes on mobile was sometimes distracting them. They feel the urge to access social media, check messages, and answer calls while using mobile phones which leads to loss of interest and attentiveness during the class.

Conventional learning has face to face interactions, motivates one to learn, better interactions among student and teacher and most important a feel of togetherness in learning and sharing opinions. The author [10] some of these aspects lack in online learning. Our survey suggested that although both methods of teaching covered

almost equal content of a particular topic yet the students preferred classroom learning for understanding and retention of a topic. The students also preferred classroom learning as practical knowledge, punctuality and self-discipline is better acquired through a reciprocal interaction among teachers and student in a classroom.

Long duration of online classes can cause eye related problems, distraction by social media. [3] Decreased outdoor activity, group projects, communication skills causes social isolation in an individual. [10] Our students also reported that 79% of them lost interest during online classes due to issues with the internet connection when the class went on for more than an hour. Sedentary life with decreased outdoor activity and project works was a major disadvantage of online classes as pointed out by 80% of our students. 75% of the students complained eye related issues like eye strain, epiphora and headache while attending long online sessions.

VI. CHALLENGES OF ONLINE CLASSES

1. Technology related challenge and clinical skill training are the two paramount constraining factors. [11, 12] Other crucial constraining factors include student interest captivation and emotional wellbeing. These could be overcome by using simulation based training apps, establishing a fast and reliable internet connection, prior training of teachers in using this technology, flexibility in time and a shorter duration of classes.

2. Security: The major challenge of anything online is security. This is because of the fair of cyber-attacks by hackers. Such a proposed framework will be handling students' records and examination results. Any possible breach of access can result to serious information mismanagement. Hence, the need to put a serious security in place.

3. Lack of infrastructures like computers and ICT gadgets due to the level of poverty in some regions like India: for a successful online classroom, there must be resources to be sufficiently made available.

4. There cannot be technology without electricity and the issue of electricity is a regional challenge& this makes it impossible for the students to gain access online as expected because they may not have the means of power supply.

5. In some countries, there are strict policies on the use of ICT; this might be due to the prevailing cybercrimes over the cyberspace and the process of adhering to such policies; it poses a great challenge in the development of educational technologies and other ICT-related platforms.

6. Lack of ICT knowledge/awareness among students and lecturers: In some countries and institutions, the knowledge of ICT is very scarce. In fact, some are resisting to accept technology as a modern science. They view the concept of ICT as an attempt to scam and hence, posing a very big challenge in the implementation of any ICT framework to such categories of Institutions/people.

VII. ADVANTAGES & DISADVANTAGES OF ONLINE CLASSES

Sr. No	Advantages	Disadvantages
1	Easily accessible: you can log in anywhere you are, so long as you are online and you are registered on the platform. Unlike the traditional classroom where you to be at a scheduled venue, to receive lectures	Not all students have the necessary knowledge, skills and resources to keep themselves safe online. Spending more time on virtual platforms can leave students vulnerable

	physically.	to online sexual exploitation
2	Unlimited access to resources: Most online-learning platforms are connected to an unlimited number of e-libraries from various academic institutions. Once you have access, you will gain access to unlimited e-books, journals, etc.	When there is a problem with your internet system, online learning is impossible. There is nothing you can do. Slow connections are even worse.
3	Very portable and comfortable: Students can log in at their comfort zones. You can be in bed and still connect to the class and situation where you have travelled or lost your computer; all you need to do is to fine another one, connect to the internet, and log in to your classroom to continue your classes.	There are courses that require many practical sessions such as surgery, medicine, and the sciences. You will need a lab, which online programs cannot offer.
4	Academic collaborations are enhanced: With the use of online teaching platforms, students collaborate far more than physically been in class.	Online classes imply an initial learning curve and extra effort on the teacher's behalf to create a successful online course.
5	Online class/conference session can be saved in website for future reference e.g. class notes can be saved and distributed via network for references by students.	The classic disadvantages of online learning center on technical problems. Nothing disrupts an online lesson more than audio, video, or connection issues.

VIII.   POSSIBLE SOLUTIONS TO THE CHALLENGES OF ONLINE CLASSES

In the present situation of countrywide lock down schools, colleges and other educational institutions are leftover with only one option to continue teaching that is to provide online education to students. Online classes is a virtual alternative of live classes. It was a sudden shift for all students and educational institutions to educate students amidst lock down. This step was so sudden that there was no time for proper research about the pros and cons of online education in India.

The Pros of Online Education in India are:
- Students can learn from anywhere, at any time
- Saves time and is also pocket friendly
- Students get to know about things going around the world.
- Students is free to learn at their own pace
- Gives recognition of online degrees of students

The Cons of Online Education in India are:
- Chances of distraction of students are very high
- Unauthorized online courses are easy trap for students
- Students cannot do courses that require labs/workshops
- Long classes may adversely affect a student's health
- Students become technology and gadget bound for education

Effective online teaching uses professional lighting and high-quality input devices to create rich and engaging presentations, which will surely catch students' attention and make learning all the more effective. Two-way communication – Teachers should give their students opportunities for two-way communication.

Use the chat function for students to respond to questions. Use physical whiteboards for students to show their thinking. Allow students to share their screen to showcase their work and explain how they solved a problem. Use virtual whiteboards for increased engagement.

IX. CONCLUSION

One of the participants of our survey rightly said 'There is a difference to play football on ground and in mobile' but in this apprehensive socially distanced period of COVID, one must embrace the alternative to classroom learning to keep up with one's academic development. Though the replication of classroom learning is not completely attainable through online learning, yet it is a convenient method with ease of participation, sustaining the academics and maintaining the student teacher interaction amidst pandemic. A combined approach can be considered post pandemic for a finer learning with more innovative methods.

Online Learning is the most common method of distance learning today. During the lockdown period for Covid-19, online learning is the best platform to keep learners/educators engaged and safe by maintaining social distancing. Govt. of India has initiated different online learning platforms to continue educational activities during lockdown period.

Online Learning method utilizes various applications of the internet to distribute classroom materials and help learners and educators interact with one another. Using the various technologies available for Online Learning, educators can provide a more interactive distance learning experience by delivering real-time. Online Learning is the best method of learning at this time of lockdown due to the outbreak of Covid-19 and further in-depth statistical study may be undertaken on impact of online learning during lockdown period.

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