



## Real Versus Virtual Classes: A Perspective from Medical Undergraduate Student's Point of View with Their Effectiveness in Learning

Gerçek ve Sanal Sınıflar: Tıp Lisans Öğrencisinin Öğrenmedeki Etkinliği ile Bakış Açısından Bir Bakış

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### ABSTRACT

**Objective:** In March 2020, a nationwide lockdown due to the spread of Coronavirus Disease of 2019 infection in India was declared. To continue the learning process, the Medical Universities of India adopted online learning. This article aims to compare online live classes and traditional face-to-face classes based on the opinions of Bachelor of Medicine, Bachelor of Surgery (MBBS) undergraduates of South India and determine the acceptability of each of the methods.

**Methods:** Online survey of 364 MBBS undergraduates (UGs) of medical colleges of South India was conducted using a questionnaire. A validated questionnaire produced on Google Form, which contains 16 questions, was mailed to all the participants. Their replies were noted, and statistical evaluation was done on drawbacks, benefits, and preferences, based on their valuable opinions.

**Results:** A total of 364 UG students participated in the online survey willingly. 87.16% of the students used Microsoft Teams for online classes. 35.71% of participants had a good experience with online classes. The main advantage of the online classes was comfort (28.41%). The main disadvantage of online classes was Internet issues (26.49%). Out of 364 UG students, 71.43% felt physical classes were better than online classes. The main advantage of physical classes was attentiveness (23.42%). The main disadvantage was compromised social distancing, with 19.84%. A total of 37% UGs preferred online classes, while 63% preferred physical classes.

### ÖZ

**Amaç:** Mart 2020'de Hindistan'da COVID-19 enfeksiyonunun yayılması nedeniyle ülke çapında bir kilitlenme ilan edildi. Öğrenme sürecine devam etmek için Hindistan Tıp Üniversiteleri çevrimiçi öğrenmeyi benimsedi. Bu makale, Güney Hindistan Tıp Fakültesi, Cerrahi Lisansı (MBBS) lisans öğrencilerinin görüşlerine dayalı olarak çevrimiçi canlı sınıfları ve geleneksel yüz yüze dersleri karşılaştırmayı ve yöntemlerin her birinin kabul edilebilirliğini belirlemeyi amaçlamaktadır.

**Yöntemler:** Güney Hindistan Tıp Fakülteleri'nde okuyan 364 MBBS lisans öğrencisi (LÖ) ile çevrimiçi anket bir anket kullanılarak gerçekleştirildi. Google Form üzerinden oluşturulan ve 16 sorudan oluşan doğrulanmış bir anket tüm katılımcılara postalandı. Cevapları not edildi ve değerli görüşlerine dayanarak dezavantajlar, faydalar ve tercihler üzerinde istatistiksel değerlendirme yapıldı.

**Bulgular:** Toplam 364 LÖ öğrencisi çevrimiçi ankete gönüllü olarak katılmıştır. Öğrencilerin %87,16'sı çevrimiçi dersler için Microsoft Teams kullandı. Katılımcıların %35,71'i çevrimiçi derslerle ilgili iyi bir deneyim yaşamıştır. Çevrimiçi derslerin en büyük avantajı konfor (%28,41) oldu. Çevrimiçi derslerin en büyük dezavantajı İnternet sorunlarıydı (%26,49). Üç yüz altmış dört LÖ öğrencisinden % 71,43'ü fiziksel derslerin çevrimiçi derslerden daha iyi olduğunu düşünüyordu. Fiziksel sınıfların en büyük avantajı dikkat (%23,42) idi. En büyük dezavantaj ise %19,84 ile sosyal mesafenin bozulmasıydı. Toplamda %37'si LÖ'ler çevrimiçi dersleri tercih ederken, % 63'ü fiziksel dersleri tercih etti.

**Cite this article as:** Lochab A, Gupta C, Palimar V. Real versus virtual classes: a perspective from medical undergraduate student's point of view with their effectiveness in learning. Gazi Med J. 2025;36(2):131-135

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**Received/Geliş Tarihi:** 21.04.2023

**Accepted/Kabul Tarihi:** 02.12.2024

**Publication Date/Yayınlanma Tarihi:** 15.04.2025



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## ABSTRACT

**Conclusion:** Our study identifies both pros and cons for physical and online modes of teaching. However, UG students preferred physical classes more than online mode.

**Keywords:** Online classes, physical classes, universities, physical distancing, questionnaires

## INTRODUCTION

Coronavirus Disease of 2019 was announced as a pandemic in March 2020 by the World Health Organization. In the same month, the Hon'ble Prime Minister of India declared a nationwide lockdown to limit the spread of the infection by preventing crowding and following social distancing. All the schools and universities were shut down until further notice.

To continue the learning process, the universities took up the method of online teaching (virtual classes). It was a considerable challenge for a practical-based course like MBBS and bachelor of dental surgery (BDS) to be taught online (virtually) in a developing country like India, with limited resources in terms of electricity and internet connectivity.

Platforms like MS Teams, Impartus, Zoom, Cisco Webex, G-Meet, etc., were used to conduct online lectures. This marked a new approach in teaching methods for Bachelor of Medicine, Bachelor of Surgery (MBBS) and BDS. However, this revolution had advantages and disadvantages from the perspective of undergraduates (UGs) as well as teachers.

Online learning is admired by all categories of students due to its asynchronous nature. Because of its asynchronicity, students can join the course when it is convenient for them. An additional benefit of online education is that it is cost effective (1). On the contrary, there may be a greater danger of compartmentalization and fragmentation than may be evidenced by classroom studies, and studies show that online teaching requires more work on the part of both students and teachers (2,3).

This transition opens ways for new teaching and learning processes, but at the same time, it requires adaptation to the new teaching process which might seem difficult for many people (4,5).

Online teaching also helps reduce the maintenance cost of institutions, decrease the time required for teaching, and decrease the cost of education; therefore, increasing enrollment (6). It may help the students never miss any classes due to health problems, weather problems, distance problems, or any other valid reason. It will help in the technological development of students and also keep them updated with global advancements (7). At the same time, the teachers, as well as UGs, were used to the traditional in-person one-to-one method of teaching, and it may be difficult for both to adapt.

The aim of this study was to find out the UG spoint of view regarding these methods of teaching. If the online (virtual) method is widely accepted, institutions can further integrate it into their routine teaching. This study will help the institutions decide what is better for students in terms of health and knowledge, and further help them choose either or both of the teaching methods.

## ÖZ

**Sonuç:** Çalışmamız, fiziksel ve çevrimiçi öğretim biçimlerinin hem artılarını hem de eksilerini tanımlamaktadır. Ancak, LÖ öğrencileri çevrimiçi moddan çok fiziksel dersleri tercih etti.

**Anahtar Sözcükler:** Çevrim içi dersler, yüz yüze dersler, üniversiteler, fiziksel mesafe, anketler

## MATERIALS AND METHODS

### Study Type

Cross-sectional study.

### Sample Size

Out of 2500 UGs, 364 MBBS and BDS UGs of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> year from 21 Medical Colleges of South India participated in the study.

Sample size was calculated using effect size 0.6, power 80%, alpha error 0.05, and a 5% significance level.

Using the formula:  $n = z^2 \times \sigma^2 / d^2$

Where,

n=Sample needed

### ***z=Value of normal standard distribution***

$\sigma$ =Standard deviation

d=Absolute precision

### Inclusion Criteria

1. Students who have attended online classes.

### Exclusion Criteria

1. Postgraduates or UGs who were not attending the online classes were eliminated from the study.

### Tools Used

This study was conducted through an electronic questionnaire using Google Forms.

### Detailed Description of the Procedure

Institutional Ethics Committee approval was obtained before conducting this study (approval number: IEC: 385/2020, date: 10.07.2020). Consent from all participants was obtained electronically, and they were informed that their data would remain confidential. The study was carried out from the 20 August 2020 (4 months after initiation of online classes) to the 7 December 2020. All the students were given the link to an online questionnaire using Google Forms. The questionnaire consisted of many questions mainly to assess the opinions of UGs on the disadvantages and advantages of online and physical classes, as well as their suggestions.

### Statistics Analysis

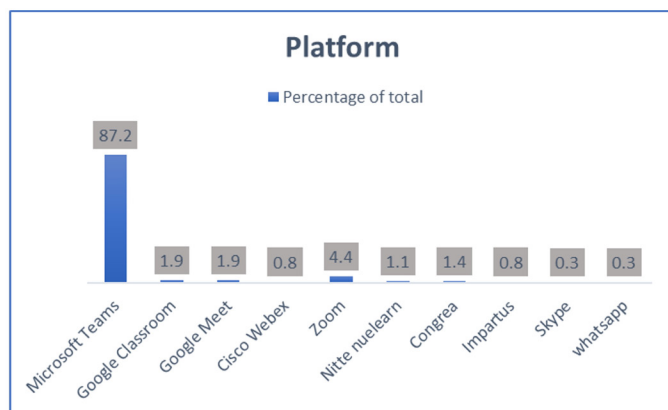
The data obtained were analyzed using Microsoft Excel as percentages.

## RESULTS

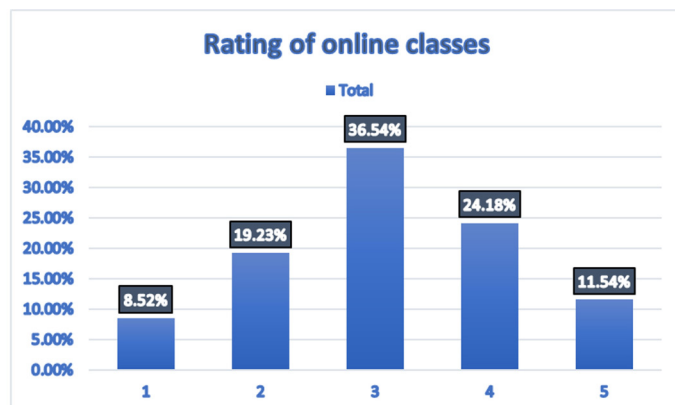
A total of 364 UG students took part in the online survey willingly. Out of them, 60.71% were in 1st year, 23.08% in 2nd year, 13.19% in 3rd and 3.02% in 4th year of their respective courses.

The highest (87.16%) proportion of students used Microsoft Teams for online classes as shown in Figure 1.

Out of 364 UG students, 35.71% had a good experience with online classes, as shown in Figure 2. Advantages of online classes according to UGs were comfort (28.41%), followed by easy accessibility (17.90%), accessing all pages of slides (14.27%), looking up meanings of difficult words during class (12.52%), and fewer distractions (7.38%). Some also replied that having the opportunity is better than nothing: they are able to attend class on time, go back to the recordings and understand everything at their own pace, have better interaction, rewatch missed parts, have no hesitation in asking doubts, and have more time to study. Disadvantages of Online classes according to UGs were internet issues (26.49%), eye strain (22.46%), less attentiveness (17.66%), and less interaction with students/teachers (16.31%). Some also replied that there was no will to study; ineffective learning; no reduction in fees; the pace of the classes makes it difficult to write notes; a lack of the learning environment that exists in a classroom; that online classes are not the best option for professional courses like MBBS.



**Figure 1.** Showing proportion of students used which platform for their Online classes.



**Figure 2.** Showing rating of online classes by students.

Out of 364 UG students, 71.43% felt physical classes were better than online classes, as shown in Table 1. Advantages of physical classes according to UGs were attentiveness (23.42%), active learning (22.51%), more interaction (18.76%), and competitive spirit (15.74%). Some also replied that they were geared up for studying and discussions with friends. Disadvantages of physical classes according to UGs were compromised social distancing (19.84%), missing points during lecture (17.42%), difficulty due to extreme weather conditions (13.73%), delay due to travel (10.84%), and more distraction (8.88%). Some also replied that the recorded lecture was not available for revision.

For theory, 37% of undergraduate students preferred online classes, and 63% preferred physical classes.

62.09% of students felt that they were not attentive in online classes compared to physical classes, as shown in Table 2. 51.37% of UGs felt that their doubts were solved in online classes, 20.88% were unsure, and 27.75% felt otherwise. 48.90% of UGs agreed to attend classes from their hostel rooms, 20.88% were unsure, and 30.22% didn't agree.

52.47% of UGs accepted taking practicals simultaneously with theory classes, while 36.54% agreed to practicals being taken in a group at the end of a fixed period (e.g., blocks or semesters), and 9.07% agreed to attend practicals online.

Out of the total, 77.47% of UGs agreed that their teachers encourage them to use other forms of information like videos, books, research papers, etc., as shown in Figure 3.

## DISCUSSION

During the global pandemic, many colleges and universities have started online classes. Now, many institutions are using this as a hybrid mode of teaching. There are pros and cons of both physical and online teaching.

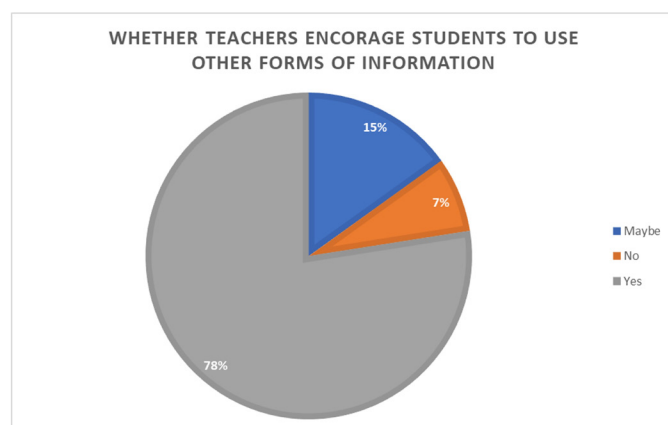
Cipriano et al. (8) introduced an online curriculum for their students in a university-based dermatology clerkship. He found that students' opinions were overwhelmingly positive regarding the curriculum's

**Table 1.** Showing percentage and no. of students rating of physical classes over online classes

Rating of physical classes over online classes	Number of undergraduates	Percentage
Worst	22	6.04
Worse	36	9.89
Moderate	46	12.64
Better	82	22.53
Best	178	48.90

**Table 2.** Showing percentage and no. of students attentive in online classes as compared to physical classes

Whether students feel more attentive in online classes than physical classes	Number of undergraduates	Percentage
Yes	88	24.18
No	226	62.09
Maybe	50	13.74



**Figure 3.** Showing whether teachers encourage students to use other forms of information like videos, books, research papers, etc.

usability and satisfaction. In our study, 71.43% of students felt that physical classes were better than online classes. This might be because Cipriano et al. (8) conducted the study in California, and we conducted our study in South India. The age of students could explain why, in India, students need more support, so they felt physical classes are much better than online classes.

Diaz and Cartnal (9) found that online learning courses often lead to social isolation and require better student reliance on independent learning skills. Students who need less support for learning are better suited to the online learning set-up. Jaggars (10) found that students stated that, in online courses, instructors are not always present and they need to teach themselves a lot. Hence, many students prefer taking easy subjects online and tackling complicated or principal subjects face-to-face (10). In our study, 16.31% of students reported less interaction with students/teachers. Some also replied that they had no will to study and experienced ineffective learning in online classes. Our study also shows that, most students do not like to attend online classes as it has more disadvantages than advantages.

Almahasees et al. (11) conducted a study in Jordan. They taught the students online for 4 months. They conducted two online surveys to explore students' experiences with the learning process that happened during those 4 months without any physical interactions. They randomly selected 280 students to investigate the efficiency, challenges, and benefits of online teaching. The analysis revealed that Zoom and Microsoft Teams were the common online platforms for online classes. In their study, students agreed that online education is beneficial during the pandemic. At the same time, students have mentioned that it is less effective compared to physical classes. Students mentioned that disadvantages of online learning are lack of interaction and motivation, technical issues, and Internet connectivity problems. They also mentioned some benefits of online teaching, such as self-learning, minimal expenses, convenience, and flexibility. They mentioned that online teaching could not substitute for physical learning. The authors recommend that amalgamated learning would be beneficial for providing a thorough learning ecosystem (11). In our study, tools used for online learning were Zoom, Microsoft Teams, Google Classroom, Google Meet, Cisco Webex, Impartus, etc. Disadvantages of online classes according to

our students were internet issues (26.49%), eye strain (22.46%), less attentiveness (17.66%), and less interaction with students/teachers (16.31%). Advantages of online classes, according to them, were comfort (28.41%), followed by easy accessibility (17.90%), accessing all pages of slides (14.27%). In our study, 71.43% of the students supported physical classes as compared to online classclasses.

Bast (12) conducted a survey on 1318 students to assess their insight into online teaching in contrast with traditional classroom teaching. They found that the benefits of online teaching, as mentioned by students, include flexibility, while the disadvantages include more distractions (12). Kulal and Nayak (13) conducted research on 203 students. Two separate structured questionnaires were given to students. Their study reveals that students are comfortable with online classes, but they do not consider that online classes will replace traditional classroom teaching. Technological issues were also noted as the key difficulty affecting the efficiency of the online classes. In our study, similar results were noticed. Students were not in favor of online classes due to numerous disadvantages.

Bali and Liu (14) conducted a study on 107 students about their views toward online teaching and face-to-face teaching from the perspective of social presence, social interaction, and satisfaction. They found that physical teaching experience was superior to online teaching with respect to social presence, social interaction, and satisfaction. They also found that few students were extremely comfortable in online teaching since it gave them the opportunity to be innovative by utilizing computer technology. In our study, 71.43% of students also felt physical classes were better than online classes. Students also mentioned more interaction in physical classes. They prefer physical classes over online classes.

Muthuprasad et al. (15) conducted a study on 307 students to understand their perception and preference towards online learning. They found that many of the respondents (70%) were eager to choose online classes. Their students mentioned that flexibility and accessibility of online classes make it more advantageous, however, internet problems in rural regions make it a challenge for students to access online education. The authors mentioned that the hybrid mode of teaching is beneficial. In our study, students also mentioned the flexibility of online classes as beneficial, but 26.49% of students mentioned internet issues as disadvantages of online classes, a finding similar to their results.

Mathera and Sarkans (16) conducted a survey on 313 students about online vs face-to-face learning. They found that flexibility, ease of access, the convenience of balancing personal, professional, and academic lives, and their desire to experience a new technique of education are the advantages of online learning. However, interaction with colleagues, teachers, and curriculum content was the key advantage of face-to-face learning. However, in their study, most participants (74%) mentioned that online education is their preferred modality. In our study, the advantages of both online and physical were the same as mentioned in their study, but 71.43% of the students preferred physical learning as compared to online learning.

Ridwan et al. (17) conducted a study on 35 students. They found that 80% of students mentioned internet network constraints due to uneven connections in each region. 94.3% of students mentioned that it is easier to learn in the classroom by interacting directly with



teachers. In our study, 26.49% of students mentioned internet issues as disadvantages of online classes, and 18.76% mentioned that it is easier to learn in the classroom by interacting directly with teachers. In addition, found that for theory classes 63% of students preferred physical classes; 9.07% agreed to attend practicals online both online and physical teaching have their pros and cons. Therefore, a blended or hybrid mode of learning is better for higher education institutions.

Strength and weakness the study has included 21 medical colleges from south India, so a wider population has been included. But in addition to students', faculty can also be included in the study to learn about their opinions on student learning during online and physical classes.

### Study Limitations

Only South Indian colleges were included North Indian colleges were not included.

### CONCLUSION

Üç yüz altmış dört undergraduate students participated in the online survey. A proportion of 87.16% of students used Microsoft Teams for online classes. 35.71% of students had a good experience with online classes. Advantages of Online classes according to UGs were Comfort, followed by easy accessibility and accessing all pages of slides disadvantages of online classes according to UGs were internet issues, eye strain, reduced attentiveness, and reduced interaction with students/teachers.

71.43% of students felt physical classes were better than online classes. UGs stated that the advantages of physical classes were attentiveness, active learning, and more interaction. Disadvantages of physical classes according to UGs were compromised social distancing, missing points during lecture, and distraction.

So, both online as well as physical teaching have their pros and cons so a blended or hybrid mode of learning is better for higher education in the institutions. Easy topics and revisions can be done online, while tough topics can be dealt with in physical classes. This will enhance student learning.

### Ethics

**Ethics Committee Approval:** Institutional Ethics Committee approval was obtained before conducting this study (approval number: IEC: 385/2020, date: 10.07.2020).

**Informed Consent:** Consent from all participants was obtained electronically, and they were informed that their data would remain confidential.

### Acknowledgement

The authors wish to acknowledge the Deans of Medical College, South India for granting permission to conduct this study.

### Author Contributions

Surgical and Medical Practices: A.L., Concept: C.G., Design: C.G., Data Collection or Processing: A.L., Analysis or Interpretation: A.L., V.P., Literature Search: A.L., C.G., V.P., Writing: A.L., C.G., V.P.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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