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Original Article

Do Phase 1 MBBS students embrace E-learning intensely? A comparative study between rural and city based medical colleges of West Bengal, India

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Abstract

Introduction: This study investigated medical students' perception of E-learning and online assessment during Covid-19 and their suggestion to overcome the problems. **Method:** A total of 300 1st year medical students of Calcutta National Medical College and Rampurhat Govt. Medical College were surveyed by a pre-validated semi-structured questionnaire that was provided to the 2021-22 batch. **Result:** Among 242 respondents (169 at CNMC and 73 at RPHGMC)159 were males (mean age 20.14 ±2.22yrs.) and 83 were females (mean age 19.65±.1.1yrs.). 68.8% of students of both the colleges revealed that offline traditional teaching is more preferrable than e-leaning. They reported that e-learning is not much effective in practical physiology teaching. Poor network, Technical glitches and lack of communication with teachers are outlined as major barriers in online teaching. **Conclusion:** Students did not prefer e-teaching over face-to-face teaching during the lock down situation.

Key Words: Students' perception, E-learning vs Face-to-face learning

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Introduction:

The enormous influence of information technology on today's education cannot be refuted. This role in the academic arena has gained importance furthermore considering the ongoing Covid-19 pandemic causing all educational institutions the world over to close down and thus giving rise to multiple challenges at all stages and levels of education in particular for students.[1] The flourishing innovative technologies and learning management systems both for teaching and assessment have taken a headway providing a utilizable solution for educators and giving policy makers an opportunity to implement the use of

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information technology during the quarantine days for covering the course work.[2] Stakeholders involved including institutional administrators, teachers, students, etc. are making considerable efforts to optimally utilize the available technology for continuing the process of education and minimizing the gaps that are going to result as a consequence of the current circumstances.[1-3] This gives a clear message that higher education is one of our most precious resources. In this time of uncertainty and fear, learning and research are more important than ever. Hence a new global 'education network' has been born. Online learning has grown beyond smart acronyms and joined the mainstream education.

Despite the wide-based adoption of e-learning the world over, it was never considered as a part of formal education in India by majority of the institutions until the spread of Covid-19 recently.[4,5] Due to the lockdown situation however, now a lot of schools, colleges, medical and dental institutes across the country are moving towards e-learning. Medical and Dental Colleges' administrators and teachers are taking appropriate measures to conduct effective e-learning via e-lectures, e-tutorials, e-case based learning, etc. so that continued education can be provided without getting much affected during the quarantine period.[6,7,8] Also various e-teaching software's are being explored by teachers to bring maximum possible ease for their students.

Considering the relatively recent advent of this teaching methodology in India, both teachers and students are still in the process of getting acquainted with the new system. At this point of time, it is important to find out students' opinion and viewpoint regarding this virtual approach to teaching and learning. Whether the learners are attuned to the new methodology, would prefer any modifications, or rather would want to go back to conventional learning altogether, would be an interesting point to explore.[9] Therefore, the purpose of this study was to determine the perceptions of students towards e-learning and online assessment during the lock down due to covid-19.

Objectives of the Study:

1. To identify the perception of the students towards e-learning during Covid-19 lockdown phase
2. To assess the effectiveness and satisfaction level of e-learning/online sessions during Covid-19 lockdown phase
3. To check the perception of the students towards online assessment during Covid-19 lockdown phase
4. Challenges faced by them in Online learning and submitting online assessments.
5. Students' suggestion to overcome this problem.

Methodology:

The present study was carried out in the Department of Physiology, Calcutta National Medical College, Kolkata and Rampurhat Govt. Medical College at Rampurhat, West Bengal. Both are medical teaching institutes which are affiliated to the West Bengal University of Health sciences. After taking approval from Institutional Ethical Committee from both the colleges this cross-sectional descriptive study was conducted in July 2021. This study was a descriptive cross-sectional study. The study population was entire batch of 1st Prof MBBS students of the session 2021-22, just after they had appeared their first internal assessment examination. A total of 300 students were surveyed by a pre-validated semi-structured

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questionnaire that was provided to the students of 2021-22 batch. Before administration of the questionnaire, validation by two medical educationists was done. The internal reliability of the questionnaire was assessed by a test-retest method. A total 20 participants were given the questionnaire twice, with two weeks interval. The test-retest reliability was high with Pearson's co-efficient of 0.80. The questionnaire had four parts.

- The first section contained general information of the subjects like age, gender, previous experience of E-learning, knowledge of basic computer skill etc.
- In the second section students are presented with the 6 closed ended questions (yes/no or agree/disagree) on their perceptions of E-learning as compared to traditional face-to-face learning. The items were based on the results of the discussion with many groups of medical students from different classes carried out by the author.
- The third part was divided into questions specifically enquiring about the difficulties faced in the online Lecture class, Practical class, online assessments, their opinion about live class vs recorded class, experience of google classroom and overall satisfaction level.
- The fourth part contained questions about their suggestions to make e-learning sessions more student centric.
- All questions were in English.

The students were directed to fill up the Google form within a stipulated time (3 days), independently and in unbiased manner, without mentioning their names or roll numbers. The completed sheets were collected, and the data was analyzed by SPSS software version 17.

Results:

Among 242 respondents (169 at CNMC and 73 at RPHGMC)159 were males (mean age 20.14 ±2.22yrs.) and 83 were females (mean age 19.65±.1.1yrs.). The Demographic pattern of the participants, choices of gadgets and computer knowledge background are shown in Table-1.Eighty one percent (81.4%) (n=140) students of CNMC and 75.3% (n=55) students of RPHGMC used their own mobile phone for attending online classes. Rest used tablet, laptop, parent's phone, I pad etc. Majority of students at both the colleges [84.3% (n=145) of CNMC and 82.19% (n=60)] have no previous e-learning experience. Eighty three percent (83.7%) students of CNMC (n=144) and Sixty percent (60.3%) students of RPHGMC (n=44) had basic knowledge on computer skills.

Sixty-eight percent (68.6%) of participants disagreed that e-learning is better than face-to-face traditional teaching (Figure 1). There is no difference of opinion between the students of two colleges as p value of χ^2test is non-significant. (p=0.66)

Fifty-five (55.3%) of students admitted that they do more self-directed learning like reading reference books or other resource material more after e-learning session as compared to traditional lecture classes (Figure 2). In this case too there is no difference of opinion between the students of two colleges as p value of χ^2test is non-significant. (p=0.99)

Majority of students of both the colleges (67.7%) reported that traditional lecture classes should not be totally replaced by online teaching (Figure 3).

Figure 4 shows 47.1% students think there is less retention of knowledge after attending online classes as compared to conventional lectures.

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Fifty six percent (56.1%) students of CNMC reports that Student-teacher interaction is less in online mode of teaching whereas 31.5% students of RPHGMC agree to this (Figure 5). Forty nine percent (49.3%) students of RPHGMC gave neutral opinion i.e., there is no difference in student-teacher interaction in both the mode and the difference of opinion among two colleges is significant here as p value of χ^2test is less than 0.05% (0.000139*).

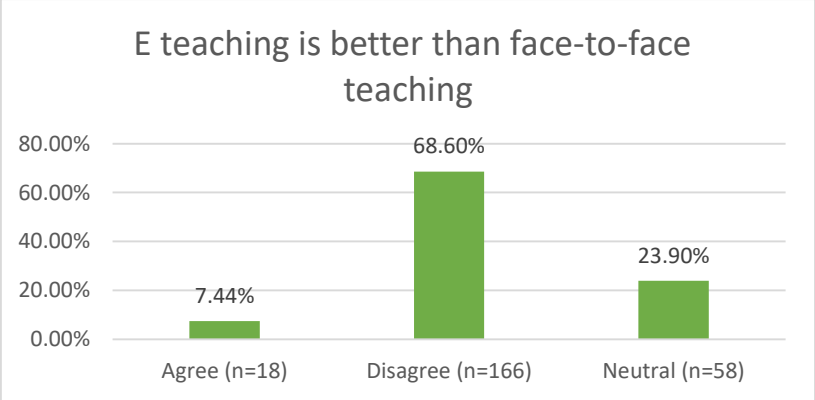
Figure 6 shows a very positive response about Google classroom as 92.89% students of CNMC and 91.89% students of RPHGMC opined that Google classroom supported their learning process.

The final part of the questionnaire was **open ended** questions about their perception, challenges, and suggestion on e-learning.

Table 1: Demographic pattern and computer knowledge background of students

	Calcutta National Medical College (n=169)		**Rampurhat Govt. Medical College** (n=73)	
Male	64.49% (n=109)		68.49% (n=50)	
Female	35.5% (n=60)		31.5% (n=23)	
Attend online class by	Own Phone 81.4% (n=140)	Others 18.6% (n=29)	Own Phone 75.3% (n=55)	Others 24.7% (n=18)
E-learning experience for the 1st time	Yes 84.3% (n=145)	No (n=27) 15.7%	Yes 82.19% (n=60)	No (n=13) 17.8%
Have basic knowledge on computer skill	Yes (n=144) 83.7%	No (n=28) 16.3%	Yes (n=44) 60.3%	No (n=29) 39.7%

Figure 1: E-teaching is better than traditional face-to-face teaching:



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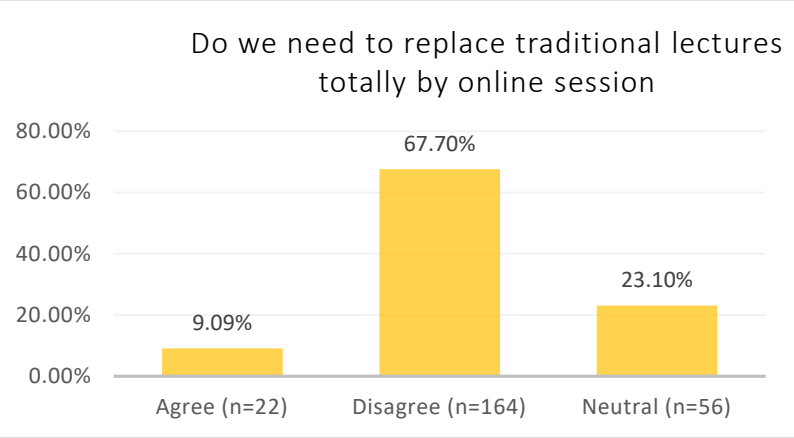
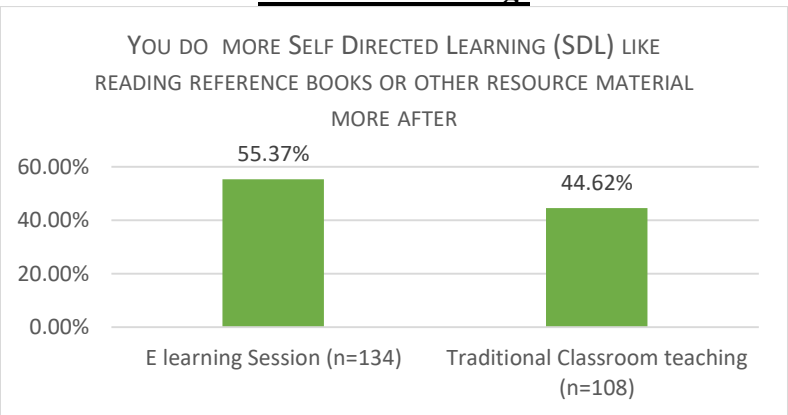
Calcutta National Medical College (n=169)			Rampurhat Govt. Medical College (n=73)			P value χ^2test
Agree (n=18)	Disagree (n=116)	Neutral (n=35)	Agree (n=8)	Disagree (n=50)	Neutral (n=15)	0.66
10.65%	68.6%	20.71%	10.95%	68.49%	20.54%	

Figure 2: Traditional lectures should be totally replaced by online teaching:



Calcutta National Medical College (n=169)			Rampurhat Govt. Medical College (n=73)			P value χ^2 test
Agree (n=13)	Disagree (n=111)	Neutral (n=45)	Agree (n=9)	Disagree (n=53)	Neutral (n=11)	0.10
7.69%	65.68%	26.62%	12.3%	72.6%	15.1%	

Figure 3: Self Directed learning is more after E-learning sessions or Traditional classroom teaching:



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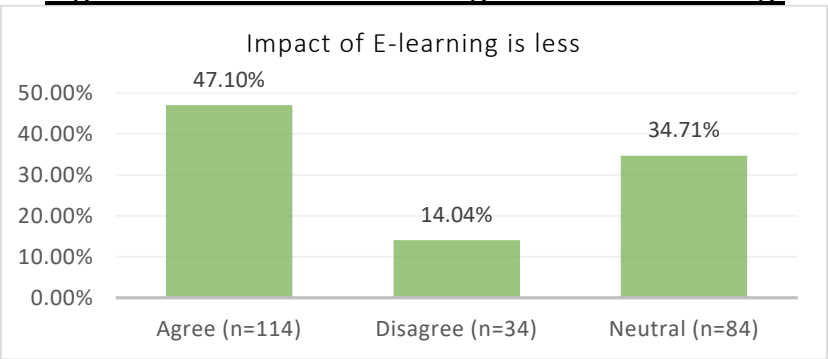
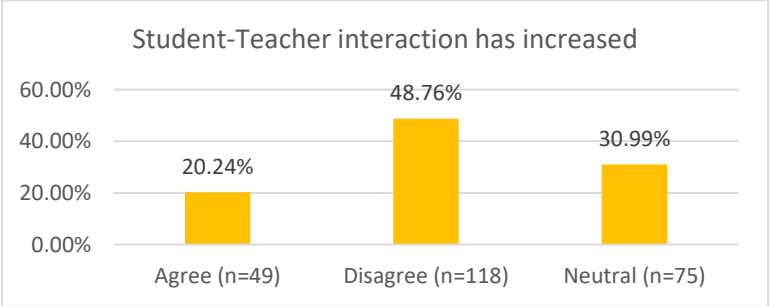
Calcutta National Medical College (n=169)		**Rampurhat Govt. Medical College** (n=73)		P value χ^2 test
E-learning Session (n=92)	Traditional classroom teaching (n=77)	E-learning Session (n=42)	Traditional classroom teaching (n=31)	
54.43%	45.56%	57.5%	42.7%	0.99

Figure 4: Retention of knowledge is less in E-learning:



Calcutta National Medical College (n=169)			**Rampurhat Govt. Medical College** (n=73)			P value χ^2 test
Agree (n=84)	Disagree (n=31)	Neutral (n=54)	Agree (n=30)	Disagree (n=13)	Neutral (n=30)	0.361
49.7%	18.34%	31.95%	41.1%	17.8%	41.1%	

Figure 5: Student -teacher interaction has been increased by E-Learning:



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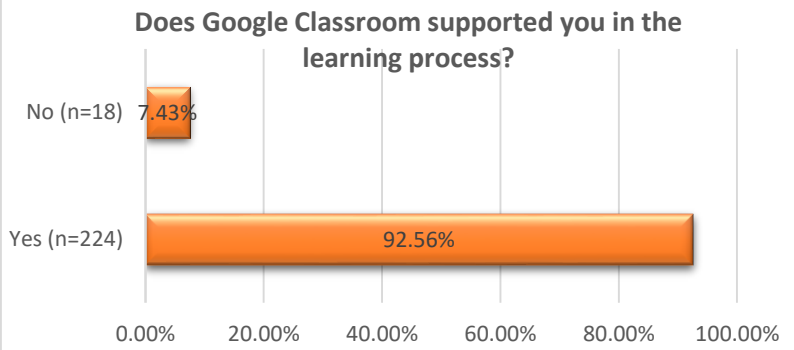
Calcutta National Medical College (n=169)			**Rampurhat Govt. Medical College** (n=73)			P value χ^2 test
Agree (n=35)	Disagree (n=95)	Neutral (n=39)	Agree (n=14)	Disagree (n=23)	Neutral (n=36)	**0.000139***
20.7%	56.1%	23%	19.2%	31.5%	49.3%	

Figure 6: Usefulness of Google classroom



Calcutta National Medical College (n=169)		**Rampurhat Govt. Medical College** (n=73)		P value χ^2 test
Yes (n=157)	No (n=12)	Yes (n=67)	No (n=6)	
92.89%%	7.1%	91.8%	8.2%	0.760835

Question1: Need of traditional face-to-face classes vs online classes

Responses- we need traditional face-to-face classes	**Frequency**
No network issue	5
For practical classes online is inadequate	4
Distractions are more in online sessions	3
Long hour online classes are exhaustive	2
'Friends are stress buster'	1

Responses-no, we need only online classes	**Frequency**
Travelling time is less specially for day scholars	5
Can attend class at the comfort of home and at any situation	4

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One participant expressed his need for traditional lecture and practical classes in the following way "Traditional face to face learning gives a better chance of communication with teachers. In this type of learning students can share each other's knowledge and get a better way of exploring one self.In our professional front like medical, online classes can never replace and satiate the crevices which can be emerged by not doing face to face classes especially practical classes. . All I mean to say at the given scenario online classes can be considered but never be a better way of learning than traditional way of learning.

One participant who shared a 'neutral' view in respect to online vs traditional lecture expressed his opinion in the following way:

'E-teaching is definitely good because we get a lot of time to do self-study at home.And for day-scholars like me, always time management (going to college, undergoing long journey and then coming home to do self-study)had been difficult. But face-to-face teaching is also good because we are able to have an effective conversation with our teachers in case of any doubt and also we could ask our teachers for doubt in practical classes, which would be solved then and there.But,in E-teaching, these facilities are not available. So, I selected 'neutral'.'

- **Question2: SDL done more after online or traditional lecture classes**

Responses-I did more SDL after online session	Frequency
Get more interest on the topic	5
Get more time to do SDL as residing at home	4
Less understanding as compared to traditional lecture	3

Responses-I did more SDL after traditional lecture	Frequency
Get more ideas of book	5
Reference books are not available at home	4
Can access college library	3

Question3: Usefulness of Live online vs Recorded sessions

- Sixty-five (65%) (n=158) students reported that Live online sessions are most useful, and they cited the following reasons in favor of it

Responses-Live online is more useful	Frequency
Interactive	5
Doubt clearing is possible	4

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"Urge to concentrate on the topic rather than to throw it away for future reference"	3

- 32% (n=77) students reported that Recorded sessions are most useful, and they cited the following reasons in favor of it:

Responses-Recorded sessions are more useful	Frequency
No network issue	5
Repeatable at any time	4
'Peacefully, clearly seen at home, multiple times'	3

- 2% students urged for recorded videos plus live doubt clearing sessions.

Question 4: Major challenges faced in online learning

Responses	Frequency
Network and technical glitches	5
Staying attentive and concentrate	4
Distraction	3
Communication gap with teachers	2
Not tech savvy	1

Question5: Major challenges faced in online assessment

Responses	Frequency
Network and technical glitches	5
Fear that will not be able to submit due to network error	4
MCQ tests are taken but university exam is subjective	3
Very frequent assessments	2
Do not feel the vibes of exam	1

Question6: What is your suggestion to improve online learning?

Responses	Frequency
More doubt clearing sessions	5
More communication with teachers	4
Use Zoom app instead of google meet	3
Arrange motivational classes so that we can focus	2
Brief the previous class in the next class, so who could not attend can understand better	1

One participant expresses her view in the following way 'The teachers thinking ppts and pdfs are enough for difficult topics and then taking tests to complete the syllabus, this is difficult for me to clear concept'.

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Question7: Overall satisfaction score for Traditional Lecture class

Total Respondent	Total Score between 1 to 10	Total Maximum score
242	1573	2420

Satisfaction score=65%
{Overall satisfaction score is calculated by the formula: SAT score (%) = Sum of all score/sum of Maximum score X 100
As total respondent 242. If everyone gave 10 out of 10, then maximum score 2420. Actual score by summing all responses comes 1573 (by adding the ratings of the individual students out of 10). 1573/2420 X100=65%}
https://delighted.com/what-is-customer-satisfaction-score#:~:text=To%20perform%20a%20CSAT%20score,your%20score%20would%20be%2062

Discussion:

In the present study it was found that Majority of the students preferred face to face teaching over e-teaching.Mobile is the most popular devices among our students for e-learning as compared to laptops and tablets. In one of the studies conducted on university students[14], it was found that 66% use mobile devices for e-learning, which is very similar to our study that shows 81.4% students prefer mobile devices. A research conducted in Spain revealed that students chose mobile for their learning because student-teacher interaction through mobile was much easier as compared to other devices[15]. Another very common reason for this was that learning can take place anytime and anywhere as discussed in the article by Angela Murphy and her co-authors[16]. The results of this study were slightly different from ours as mobile was the second choice for e-learning after laptop, whereas, in our case laptop's preference came at number two after mobile

The present study attempted to answer six research questions to draw a broad picture of online learning in medical education in the present situation of pandemic. The first question was whether participants felt the need of face-to-face traditional classes, and 68.6% students gave affirmative answers regardless of their background whether they read in a city based medical college (Calcutta National Medical College) or rural medical college (Rampur hat Govt. Medical College, Rampurhat) of West Bengal. This agrees with a study done by Abbasi S et al[17] which reported that despite gaining immense popularity today, digital technology is still not been embraced by the Medical Students for use in teaching. Although a study, done by Sachiko Matsunagaat an urban American University showed that students perceived the online courses are very effective[18]. In the open-ended questions of the Section 4 of questionnaire where students cited the reasons for their response, most of them pointed out Network glitches are the major barrier they faced in online courses which made them support the traditional face-to-face learning. This agrees with the students' behavior in many other countries like Malaysia, Singapore etc[19-21]. The students also pointed out thatfor practical Physiology classes, online platform is inadequate. Students reported that they face more distraction while doing online sessions and long hoursof online classes are exhaustive. Besides, few students reported that interaction with peers in the classroom is a stress buster, it also encourages them to study properly. A similar response was obtained in studies performed in Pakistan by Quereshi et al[22]and inIndonesia by S Bali[23]that report students preferring face to face learning over online teaching.

On the contrary, Singh A, Min AK did a study on the efficacy of conducting digital

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lectures on gross anatomy. The study investigated student's satisfaction level towards e-learning, and it was found that majority of the students accepted digital learning[24]. Raymond Selorm also revealed in his paper that in comparison to face to face learning students were satisfied with e-learning[25]. In our study 7.44 % students who agreed that e-learning is better than traditional face to face teaching cited that online teaching is helpful for day scholars as they get rid of long tiring daily journey to college and can attend classes at the comfort of their home.

The second question was whether participants do SDL (Self directed learning) more after online sessions or traditional lecture classes. Majority of the students responded that they do SDL more after online sessions in both the colleges. This is in agreement with a study done by Mubashra Khalid et al who showed that students at online distance learning university hold good SDL as compared to that of the students of conventional university[26]. While explaining the reasons behind this most of the students cited, they get more interest of the topic after online session. The second common response was they get more time to do SDL as they stay at home. Third common answer was the understanding is less in online session as compared to traditional lectures, as a result they need to take help of additional teaching materials by SDL.

The answer to the third question whether retention of knowledge was better after online classes was negative.Similar results were reported by Heyman et al[23]and Herbert et al[27] who pointed out that one of the biggest concerns in online education emanates from the excessively high attrition rates in fully online programs compared with traditional classes. They reported that Social and Family Factors, Motivational Factors, Technological Constraints and the Digital Natives, Lack of Instructor Understanding of Online Learners, Faculty Limitations of Using Technology: The Digital Immigrant Issues and Institution Limitations to Training Faculty are some of the reasons for it[28].

The answer to the fourth question of whether overall student-teacher interaction was better in online classes showed a significant difference amongst two medical colleges in our study. While majority of students of a city based medical college having 200 students/year (Calcutta National Medical College) opined that student-teacher interaction is minimal in online learning sessions, maximum students of a rural medical college (Rampurhat Govt. Medical college, Rampurhat), gave a neutral response. RPHGMC students felt there is no remarkable difference in student-teacher interaction in between online and off-line sessions. This may be due to the fact that all the students of RPHGMC were residing in hostel (no day-scholar) and the student capacity of this college is 100students/year. As a result, the students may developed good interaction with the teachers prior onset of the lockdown phase. Hence online or offline their communication was unaffected. CNMC, which has more day scholars with a capacity of 200 students/year may lack this interaction.

Claudiu Coman[29] et al also reported lackofinteraction with teachers or poor communication between student and teacher at e-learning in higher education. They pointed out although the quality of interaction in e- learning education has been steadily increasing with the advancements of communication technologies, a certain segment of teachers still manifests resilience towards learning how to use new tools and they use, during

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the courses, only the basic functions of the E-learning platform. Still, only technical skills are not enough, teachers also must adapt their methods of teaching to the online environment.

The fifth question was which type of online session was perceived useful by the students live or recorded. 65% of students reported live online sessions are most useful as they can interact with teacher, can clear their doubts, and have 'urge to concentrate on the topic rather than to throw it away for future reference'. Participants who found recorded sessions more useful identified the repeatability and no network malfunction are the major reasons for it. 92.56% students have a positive opinion about Google Classroom and strongly supported that it helped them in the learning process. 100% of the study population agreed that it is easy to use. Similar findings were obtained byTodo F. B. Sibuea who showed that Classroom was a satisfying Learning Management System for blended learning in online course because of its features, user-friendliness, and appropriateness in higher education program[30].

In response to the sixth question regarding the challenges faced by the participants during their online classes and assessments nearly all the participantsrevealed network and technical pitfalls are the major barriers in online classes and assessments. The high bandwidth or strong internet connection needed for online courses were not accessible to many students and thus they fail to catch up with their virtual classes and assignments. Several recent studies have reported the same responses referring the difficulty of online learningin developing countries, where a huge majority of students are not able to access the good internet facility due to technical as well as financial issues[31-33]. The overall satisfaction score of online classes was found 65% in our study. Although the students suggested more communication with teachers, more doubt clearing sessions, recorded class and live doubt clearing sessions can be implemented to improve the comprehensive quality of the online learning.

Conclusion:

It is concluded that, despite gaining immense popularity today, digital technology has still not been embraced by the Medical and Dental students for use in teaching. Students are still more inclined towards face-to-face teaching rather than e-teaching. Administration and faculty members should take necessary measures for improving e-teaching quality to help with better learning of students during lock down.

Limitation:

One of the limitations of the study is that sample population has been drawn from two medical colleges of West Bengal. Further studies using multiple centers with a large sample size on the current topic are therefore recommended.

Recommendation:

- Concept of Flipped Classroom technique i.e., recorded lectures and live doubt clearing sessions may improve learning process of the students
- Regular feedback regarding efficacy of tools, technologies, and practices used by teachers are necessary to modulate the method of teaching and making it more student friendly

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