Original Article

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Physiology Section

Response of First Year Medical Students of West Bengal about Compulsive Online Teaching during COVID-19 Pandemic: An Observational Study

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ABSTRACT

Introduction: Coronavirus Disease-19 (COVID-19) pandemic forced everyone to stay indoors for a long period. The institutional education system got a backseat. But Bachelor of Medicine and Bachelor of Surgery (MBBS) syllabus had to be covered within a stipulated time frame. As with every academic curriculum, online teaching had to be implemented in MBBS courses too without any scope for developing adequate logistics beforehand. Teachers, as well as students, tried their best to cope up with this 'new normal'. Every day student had to be online for few hours to attend their classes as per the modified roster during the pandemic.

Aim: To gather the data regarding perspective, satisfaction and problems of online classes from the 1st year MBBS students and also to recommend the modifications for future curriculum and upgrade the quality based on the students' feedback and suggestions.

Materials and Methods: This cross-sectional observational study was done in a single day across three Government Medical Colleges of West Bengal after eight months of continued online classes since lockdown. An online survey was conducted among the first-year students through google forms, which was mailed to every student's email ID at a stipulated time of the day with prior notification. Out of 700 google forms sent, 527 responses were received. Responses were automatically analysed by google and were represented graphically.

Results: Out of 527 responses received, 145 were from females (27.5%) and 382 were from males (72.5%). Students were ready to adapt to this new development and 54.6% were more or less satisfied with the teaching methodologies, though interruption with the internet hampered their classes very often. Some could not afford the online class due to logistic or financial constraints. A 67.9% of students learnt to acquire in-depth knowledge by themselves though a good number of students (56.7%) disliked online classes and lost interest in the topic.

Conclusion: Online teaching cannot replace classroom teaching but can complement it as compulsive prolonged online teaching made the learning self-directed. A thoughtful blending of online and offline classes can be implemented to make an Indian Medical Graduate (IMG) a lifelong learner.

Keywords: Academic curriculum, Coronavirus disease-2019, Google forms, Pandemic

INTRODUCTION

Ever since the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) made its advent in late 2019 and the COVID-19 pandemic began, life has never been the same again. Then came the lockdown and we have been adjusting to the 'new normal'. Working from home was inevitable and the students also had to adjust to remote teaching.

The medical students in present study had been attending online classes continuously for about eight months. So the authors thought it was essential to take individual feedback to know their degree of satisfaction and concurring problems associated with this compulsive prolonged online teaching. This feedback would help the authors to understand the flip side of remote learning and try to modify the present methods of teaching and examination to make the topics easier for students to understand.

The COVID-19 pandemic is an unprecedented situation, so there is little existing information regarding similar studies. The only other Indian study found was done by Jayara S published in 2020 who concluded that 'E-blending' was the more optimum mode of teaching where the online teaching gave flexibility as well as innovation and offline teaching gave the opportunity of direct communication [1].

The present study aimed to recommend the modification to the future curriculum and teaching methodology for online teaching. Objectives were to obtain statistical data regarding the satisfaction and problems of online classes and also to get students' perspectives about online teaching and online evaluation system.

MATERIALS AND METHODS

This cross-sectional observational study was conducted for a single day in December, 2020. An online survey through google forms was conducted at Bankura Sammilani Medical College, Bankura, Medical College, Kolkata, India and Nil Ratan Sircar Medical College, Kolkata, India. Ethical approval and informed consent were not sought as the study did not require any intervention or physical involvement. Students responded to the questionnaire from their home.

Inclusion criteria: First year MBBS students from the selected medical colleges who were interested to participate were included in the study.

Exclusion criteria: Students who did not sent back the filled questionnaire were excluded.

Out of a total of 700 first-year MBBS students in three medical colleges, 527 students participated in the survey, including both males and females. Rest of the students who did not come online during the survey inspite of receiving the questionnaire were excluded.

Sample size calculation: The present sample size was larger than 400 as it was calculated using the formula:

$n=\{Z^2 P (1-P)\}/d^2$ {Pourhoseingholi MA et al.,} [2] where,

Z=Level of confidence=1.96 (from normal distribution table, this value of 1.96 was standard for a Confidence Interval (CI) of 95%).

P=Expected prevalence- It was kept at 50% as there was no precedence to this study.

d=5% (Deviation allowed)

Study Procedure

The present study was conducted as questionnaire based survey among the first-year undergraduate students across three government medical colleges of West Bengal of which two were situated in the metro city of Kolkata and one was situated in a peripheral district. Students to all these colleges came from all parts of this state as well as other states of India and every possible economic strata and religion. The authors tried to sum up student's responses and analyse them in terms of relevance, feasibility, and prospect of partial incorporation of online classes in the curriculum.

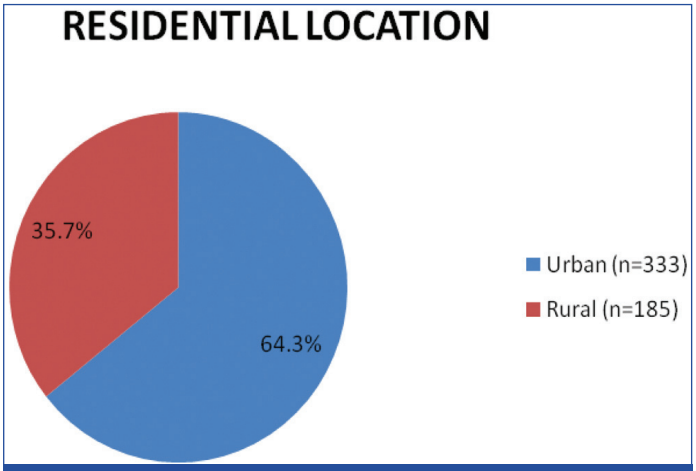
The survey link was mailed to each student through their registered e-mail ID after about eight months (April 2020 to November 2020) of online classes had taken place for the respondents, at a stipulated time and was asked to submit their response within 15 minutes. A self-designed questionnaire was administered to the students. Questionnaire was given to the panel of specialist to check the validity and reliability. Further modifications were made according to their suggestions. There were 25 questions in total, out of which the last one was brief answer type, to be written within 100 words. The rest were mostly single-choice answer types. The questionnaire was prepared by the authors and there was no scoring system as the questions were open-ended (the questionnaire is attached as an appendix).

STATISTICAL ANALYSIS

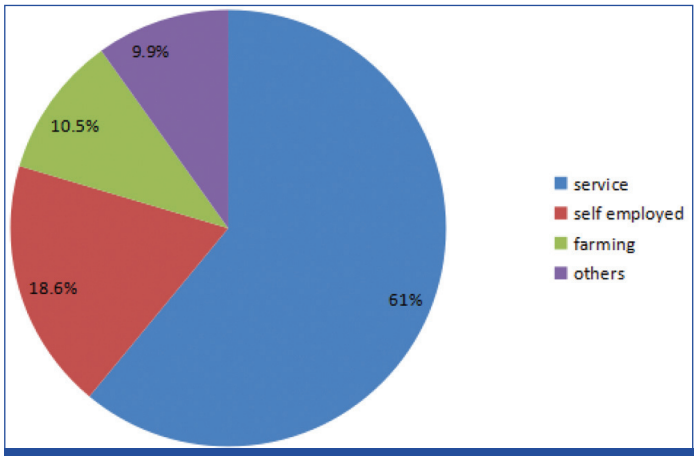
The data was automatically analysed by google forms and figures were created using Microsoft Excel which are presented below. Categorical data were presented as mean and percentage.

RESULTS

Out of total 527 participants, there were 145 females (27.5%) and 382 males (72.5%). 518 people responded to the question about residential location; of which 333 (64.3%) were located in the urban region and 185 (35.7%) were located in the rural region [Table/Fig-1]. 526 people responded about their parental profession of which 321 (61%) told that their parents were engaged in service. Parents of 98 students (18.6%) were self-employed while 55 (10.5%) students came from farmers' families. A 52 (9.9%) ticked 'others' without specifying any of the given suggestions [Table/Fig-2]. When asked about attending online classes 509 students out of 527 i.e., 96.6% replied positively that they were attending online classes but 18 students i.e., 3.4% students could not attend online classes though they participated in the survey to give the feedback. Students attended online classes for a mean of two hours a day and 4.94 months on an average. Regarding the type of online classes attended, the students were allowed to tick more than one option. The responses were collated like this: 95.8% attended the lecture classes, 52.4% attended the online practical classes, 53.7% attended the online assessments, and 27.9% attended the tutorial classes.

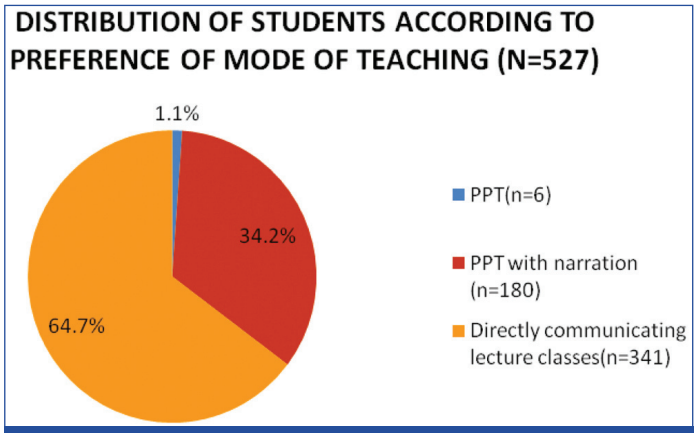


[Table/Fig-1]: Residential location (518 responses): Urban- 64.3% (n=333) and Rural- 35.7% (n=185).



[Table/Fig-2]: Parental profession (526 responses) Service 61% (n=321), Self-employed 18.6% (n=98), Farming 10.5% (n=55), Others 9.9% (n=52).

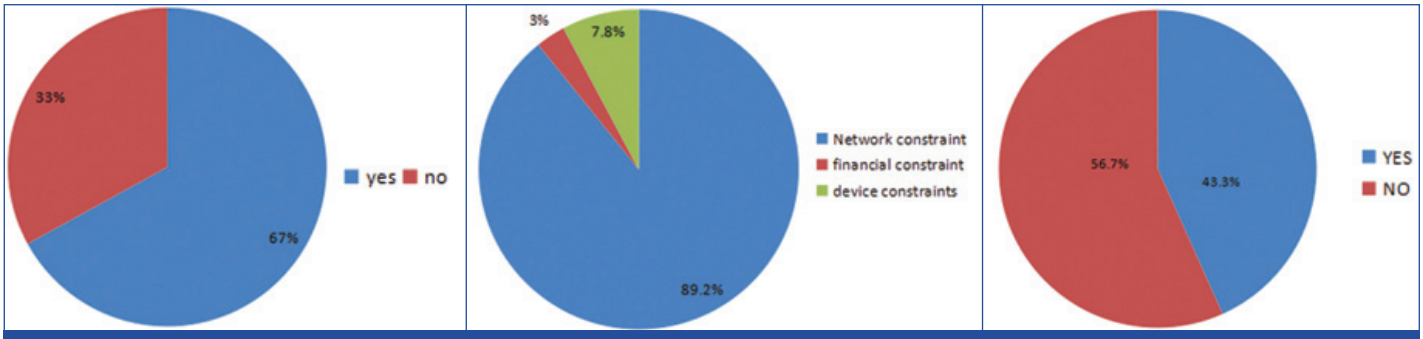
The most common mode of teaching was Power Point Presentation (PPT) with narration, as stated by 63% of the students (n=332), followed by live lecture as stated by 24.3% (n=128) and 12.7% (n=67) said it was simple PPT. The variation in response was due to the difference in mode of teaching in the three concerned colleges. Amongst the aforesaid modes, 64.7% of students (n=341) preferred real-time directly communicating live lectures while 34.2% students (n=180) preferred narrated PPTs. Only 1.1% (n=6) of the students liked simple PPTs [Table/Fig-3].



[Table/Fig-3]: Distribution of students according to preference of mode of teaching. PPT: Power Point presentation

Regarding perception about fellow students, there was a striking response. Though 3.4% of students could not attend online classes, peers had no idea about their friends. A 312 (59.2%) students rightly felt that everyone of their friends could not attend online classes while 215 (40.8%) felt all of their friends could attend regular online classes.

A 67% of students (n=353) complained of headache or eye strain after one hour of online class [Table/Fig-4]. A 79.9% of students (n=421) complained that they faced logistic problems during online classes. Out of the three suggested problems (526 responded to this question) 469 (89.2%) faced network problems. But the intriguing fact is that 3% of students (n=16) complained of financial problems attending online classes. A 41 students (7.8%) faced device constraints [Table/Fig-5]. A 71.9% of students (n=379) complained of occasional disconnection while 22.4% (n=118) faced too frequent interruption in network which is a major roadblock in online teaching. An 82.9% (n=437) actually used limited mobile data connection while only 17.1% (n=90) could afford unlimited data connection.



[Table/Fig-4]: Eye-Strain after continuous online classes 67% (n=353) said Yes and 33% (n=174) said No; **[Table/Fig-5]:** Type of constraints: 89.2% (n=469) faced Network constraint, 7.8% (n=41) faced Device constraint and 3% (n=16) faced Financial. constraint; **[Table/Fig-6]:** Satisfaction with online classes 56.7% (n=299) said No and 43.3% (n=228) said they were satisfied. (Images from left to right)

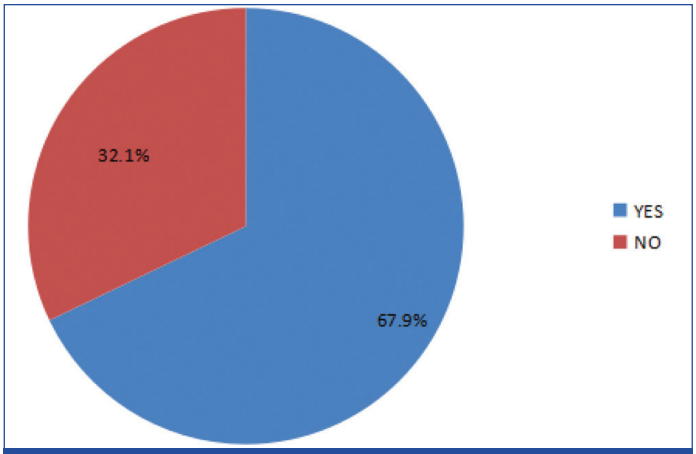
A 100% of students (n=527) sat for any of the types of exams. 37.8% (n=199) gave theory exam, 34% (n=179) gave MCQ, and 28.2% (149) gave viva-voce. 56.2% (n=296) stated that viva-voce was the most challenging form of online exam, 33.2% (n=175) said theory and 10.6% (n=56) said the MCQ was the most challenging.

A 56.7% of students (n=299) unambiguously said that they did not like online classes, while 43.3% (n=228) were satisfied with this 'new normal' [Table/Fig-6]. On the satisfaction scale, 54.6% (n=288) were moderately satisfied whereas 3.2% (n=17) were very much satisfied. The remaining 42.2% (n=222) didn't quantify but stated to be satisfied with the online teaching. So, on the whole, it was seen that the students were ready to compromise in an unprecedented situation like this COVID-19 pandemic.

A 58.8% (n=310) stated that online lecture classes demanded more attention than the regular didactic lecture classes while 41.2% (n=217) denied that. Regarding the understanding of the topic in online teaching the response was almost equal on either side. A 51% of students (n=269) could muster a good understanding of the topic whereas, 49% (n=258) contradicted the fact.

When asked about the degree of motivation towards learning the taught subject, 56.5% (n=298) clearly told that their motivation decreased while, 29% (n=153) told that their motivation actually increased towards the subject. The rest 14.5% (n=76) could not perceive any change as such. A 73.6% (n=388) overwhelmingly declared that online classes were not good for individual interaction with the teachers, whereas 26.4% (n=139) opposed.

A 67.9% of students (n=358) said that online teaching pushed them towards more self-study whereas, 32.1% (n=169) did not develop any inclination towards self-study [Table/Fig-7]. A 61.3% of students (n=323) said that online examinations helped them build their own style of preparation, but 38.7% (n=204) denied that.



[Table/Fig-7]: Increase in inclination towards self-study: 67.9% (n=358) said Yes and 32.1% (n=169) said No.

There was 60:40 divide in the response towards the incorporation of online classes in the routine teaching methodology. A 60% students (n=316) said an emphatic 'NO' whereas 40% (n=211) demanded it.

Suggestions about compulsive online classes were varied. Students preferred interactive small group teaching and asked for only the most important topics to be covered online. They felt if the classes were of less duration, it would help them remain attentive. As a good network was the key to a successful online class, students expected that it should be taken care by the institution, and lastly, there was a unanimous revelation that there was no alternative to the offline classes.

DISCUSSION

In 2010, the US Department of Education defined online learning as 'learning that takes place partially or entirely over the internet' [1]. Healthcare information and technology are getting flooded with new innovations and information every now and then. As the focus of the medical curriculum in India has now shifted to build an IMG a 'lifetime learner', every medical student should be well versed with the latest information available on the internet. Accordingly, teachers also have to evolve from the idea of a 'sage on the stage' to the 'guide by side' for a student to facilitate the evolution [3]. Efforts were already on towards the gradual shifting of teaching methodology, but the COVID-19 pandemic enhanced the pace and forced upon the implementation of online teaching without giving enough time to the institutions as well as to the faculties and students to get adequately prepared logistically.

From the 527 responses that the authors have received, it is evident that students have attended online classes for 4.94 months on an average out of eight months till the survey was done. But the range was wide. Some students could join from the beginning, while some could join only 15 days before the survey. There are 3000 seats in the government medical colleges of West Bengal. Going by the present findings of 3.4%, about 102 students could not attend classes at all either due to unavailability of good internet at their hometown or non-affordability due to financial reasons (3%).

Those who could attend mostly faced internet glitches (71.9%) or some logistic problem (7.8%). Besides the lack of uninterrupted internet connection, the other problems noted were the following: in a family with two siblings attending online classes at the same time, when one was using a high-end device to access the internet, the other had no option but to wait, which again points to the financial constraint.

It has been observed that students were ready to adapt to the 'new normal' as there was no other option and they expressed their satisfaction, though to a varying degree. They appreciated the efforts given by the teachers but at the same time, they suggested a few modifications in the mode of teaching such as the incorporation of more animations, videos, less teaching period for one topic, and more small group discussions. Instead of simple PPTs, they preferred slowly narrated versions of PPTs. But most of the students (64.7%) preferred directly communicating lecture classes supplemented with PPTs, chalkboard, etc., which was synchronous with real-time. Asynchronous modes of teaching (PPTs, PDFs) might be flexible and convenient as these could be seen as many times as they wished but posed problems in communicating and hindered establishing

relationship [4]. Dhir SK et al., also observed that medical students and faculties were mostly in favour of adapting Electronic(E)-learning and said that the success of online teaching depended on three primary characteristics of E-learning which were synchronicity of participation and presence or absence of face-to-face interaction [3].

The most interesting development during these prolonged online-only classes was the greater involvement of the students towards the subject. A 67.9% felt that online teaching demanded more self-involvement towards the understanding of the topic and 61.3% said that they could learn to develop their own style of preparation. These findings indicated that compulsive online teaching led to Self-Directed-Learning (SDL) [5], whereas traditional teaching encouraged passive learning. This progress towards andragogy (learner-centric) from pedagogy (teacher-centric) helps mature the students and make them 'lifelong learners', thereby fulfilling the curricular vision. A 56.5% of students felt that their interest in the subject decreased as there was no direct interaction with their peers or the teachers for a long period, though 29% said their interest in the subject actually increased; probably they found more time to explore the topic because of ample time at hand in the absence of outdoor life during the pandemic. A similar study in Kerala during COVID-19 pandemic observed a pedagogical shift where the students were able to have a good idea on didactic part which was also reiterated by a study from China that prior learning experiences were positively associated with students' evaluation and satisfaction [6, 7].

A 99.8% of the respondents did sit for any of the types of online examinations like written theory exam, viva-voce, MCQs, etc., and 56.2% of the students clearly said that the online viva-voce was the toughest mode of examination followed by written examination and the MCQ was the most comfortable mode. But only MCQ-based examinations are not sufficient to test the depth of knowledge of the students. At the same time, authors feel that online theory examination, if not taken under camera surveillance, is a farce that has been reinforced by Algahtani AF too [8].

On average the students had to attend online classes for two hours per day and 67% of students complained of eye strain or headache after one hour of online class. A 56.7% of students said that they did not like the online classes at all and some students confessed that they tended to bunk just by switching off the audio and video. Both the responses are thought-provoking indeed. The reason behind this apathy might be either the feeling of 'e-solation', due to lack of non-verbal cues by the teacher [9], or due to the inability of the teacher to hold their interest in the topic. Tyler-Smith K (2006) discussed several factors leading to high online dropouts like lack of motivation, level of academic and technical skills, cost and access to the internet, etc. [10]. However, Thurmond (2003) has unequivocally stated that students' satisfaction depends more on the quality of teaching than on technology [11]. Petillion RJ and McNeil WS observed that emergency remote learning imposed during COVID-19 pandemic had a negative impact on the student learning, engagement and mental well-being [12]. Students had issues with motivation and they suffered from increased stress and anxiety.

Rose S of Perelman School of Medicine, Pennsylvania concluded that, medical student education in the time of Covid-19 could contribute to the setting of an innovative medical curriculum with the advancement of tele-health, adaptive research protocol and flexible clinical trials [13]. So, a thoughtful blending of offline and online teaching as suggested by George PP et al., will help build a competent IMG as visioned by the National Medical Council of India [14, 15].

The authors recommend the adoption of a few changes for the successful implementation of online teaching, which are as follows:

i) There should be a learning management administration and a Learning Management Software (LMS) like MOODLE [3] which will be a single-window software application for the teachers as well as the students and the administrators so that everyone will be able to keep track of the progress, collect data and implement modifications through discussion if required.

ii) Teachers and students must undergo training to learn the know-how of the technology and tools.

iii) E-blending- Online teaching cannot replace classroom teaching in MBBS as the crux of this curriculum lies in hands-on training. But many teaching-learning videos, virtual skill labs, simulations are available online which can help students learn beyond classroom hours and preserve patient's privacy and reduce their psychological stress from repeated exposure in front of students.

Limitation(s)

The present study could not involve the private medical colleges of the state which would enrich the present data by giving insight about the positive and negative features of the private set up. Also, could not reach the students residing at the remote areas who could not participate in the survey due to poor internet or other logistic problems.

CONCLUSION(S)

The survey involved only about one-sixth of the first-year MBBS students of West Bengal and that too from government medical colleges. The situation may be different in the private medical colleges where the majority of the students come from well-off families. Yet, it helped to understand the real situation of this 'new normal'. Online teaching cannot be a wholesome alternative to offline classroom teaching. A 3.4% of students completely missed the opportunity. Many could not afford to join since the beginning. By the time they could join, the syllabus was almost over. Those who could attend regularly found it satisfactory but boring though it helped develop a sense of responsibility towards the subject. Teaching staff should welcome the student feedback with an open mind and put efforts to improve teaching methodology to garner students' satisfaction. From the constructive responses obtained through the survey, it can be said that partial online teaching can be incorporated into the curriculum in the future as 40% of students did welcome the idea.

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APPENDIX

QUESTIONNAIRE FOR ONLINE SURVEY OF FIRST-YEAR MBBS STUDENTS

- **Gender-**
- **College-**
- **Residential location-**
  - A. Rural
  - B. Urban
- **Parental profession-**
  - A. Service
  - B. Self employed
  - C. Farming
  - D. Others

1. Are you attending online classes?
A. Yes
B. No

2. For how long have you been attending online classes exclusively? .....(months)

3. For how many hours are you attending online classes daily? .....(hours)

4. What type of online classes have you attended? (can tick more than one choice)
A. Lecture
B. Practical
C. Tutorial
D. Assessment

5. What is the most commonly used method of teaching?
A. Simple PPT
B. PPT with narration
C. Live lecture

6. Which mode of teaching do you prefer the most?
A. Simple PPT
B. PPT with narration
C. Directly communicating lecture class.

7. Are all the students of your class are attending online classes?
A. Yes
B. No

8. Do you experience headaches or eye strain after attending online classes?
A. Yes
B. No

9. Do you face any logistic problems while attending online classes?
A. Yes
B. No

10. If yes, what type of logistic problem do you face while attending online classes?
A. Network constraint
B. Device constraint
C. Financial constraint

11. How often do you get disconnected during an online lecture?
A. Very often
B. Sometimes
C. Never

12. What kind of internet connection do you use?
A. Limited data connection like mobile data.
B. Unlimited data connection

13. Are you satisfied with online classes?
A. Yes
B. No

14. If 'yes' mark your level of satisfaction regarding online classes?

A. Satisfied

B. Moderately satisfied

C. Very much satisfied.

15. Have you given any examination online?

A. Yes

B. No

16. What type of examination have you given? (can tick more than one choice)

A. Viva

B. MCQ

C. Theory

17. Which format of online examination is technologically most challenging?

A. Viva

B. MCQ

C. Theory

18. Do you think online lecture classes demand more attention on your part than didactic lectures in a large class?

A. Yes

B. No

19. Do you acquire a better understanding of the topic in the small group online class?

A. Yes

B. No

20. Do online classes increase or decrease your motivation towards the subject?

A. Increase

B. Decrease

C. Other.....

21. Do you think online classes are better for individual interactions with teachers?

A. Yes

B. No

22. Are you more inclined towards self-study after attending online classes for months?

A. Yes

B. No

23. Can you build your own style of preparation based on your performances in online examinations?

A. Yes

B. No

24. Do you think online classes should be incorporated into routine teaching methodology?

A. Yes

B. No

25. Any general suggestions for the teachers on how the online learning experience may be improved?

(comment within 100 words).....