

Research Article

Assessment and Evaluation of Online Learning among College Students in South Chennai

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A B S T R A C T

Introduction: When the world was encountering a pandemic caused by the novel coronavirus, the majority of the countries in the world were under lockdown. Schools and universities were closed and e-learning mode was opted for. Online classes were implemented for all age groups. This study aimed to understand the learning methodology, concentration and memory of the students, and the learning environment of the online and offline classes attended by the students, and to identify which mode of learning was better and more effective.

Methods: Four hundred students from various colleges in the southern part of Chennai were included in the study. Participants were asked to fill out a questionnaire which had three headings and contained 10 questions under each heading, sent to them as a Google Form. The results of the study were statistically analysed using the SPSS software version 25.0.

Results: It was statistically proven that 59.3% of the students felt more confident in presenting seminars online as compared to the offline mode and 54.1% of the students felt stressed about attending online classes, whereas only 20.8% of the students were stressed with offline classes.

Conclusion: The study revealed that a blended learning approach involving online and offline modes of education was effective and preferred by the students.

Keywords: Online Learning, Offline Learning, COVID-19, Dental Students, Medical Students, E-learning

Introduction

Due to the outbreak of the novel SARS-CoV-2 in late 2019, the whole world since then has faced various difficulties. The control of the spread of the coronavirus infection was of main concern, hence the World Health Organization (WHO) implemented a specific set of rules and regulations. To prevent the spread of the infection, one such implemented

practice was online learning.¹⁻³ A majority of the institutions in the world followed this online mode of education and even conducted examinations online. Online learning is a hypernym encompassing numerous concepts and learning-related aids like distance, digital, electronic, and gadget learning.⁴⁻⁶ Before the pandemic, more than one-fourth of the college students in the United States of America⁷ and one-fifth of the students in Canada used to opt for one

or more online classes.⁸ A good number of universities in the world follow a combined learning approach which has both traditional classroom learning and indirect teaching. It needs to be emphasised here that traditional classroom learning is not inferior to online learning and is necessary even though online learning has been effective in improving the learner's knowledge through a wide range of activities. It is also essential to make the whole process of learning more student-oriented and flexible.^{6,9,10} In order to achieve this goal, it is imperative to understand how the learning methodology and environment affect the concentration and memory of online learners.

Recent research by various authors reports a mixed outcome of online and offline learning. Abdous and Yoshimura¹¹ reported in their study that both online and offline modes of learning have yielded equivalent results whereas, McKinney et al.¹² reported electronic learning to be more beneficial, and Ferguson and Tryjankowski¹³ on the other hand, reported classroom-based learning to be better. Nonetheless, research has shown that about 30%–40% of wandering thoughts occur in classroom environments.^{14–16} Keeping all the parameters in mind, the present study was conducted in the form of a survey among the students attending colleges in South Chennai with the aim to understand the learning methodology, concentration and memory of the students, and learning environment of the online and offline classes which the students they attended, and also to identify which mode of learning was better and effective.

Methods

This cross-sectional study was conducted among 400 students selected using convenience sampling and enrolled in various professional courses such as engineering, arts, medical and dental in the southern part of Chennai for a period of 3 months, from November 2021 to January 2022. The students who were above 18 years of age and who had undergone both online and offline modes of learning were included in the study. The participants' identity was maintained confidential and informed consent was obtained from the participants before starting the study. After a thorough literature review, a questionnaire was formulated based on the expert's opinion and then a pilot study was conducted on 30 subjects to assess the reliability of the questions in the designed questionnaire. Based on the pilot study and consultation with the experts, the necessary modifications were made to the questionnaire to improve the effectiveness of the study.

The students were asked to fill out a Google Form which was set with participants' demographic data, year of study and educational qualification along with the following three major headings pertaining to the study: 1. Learning environment, 2. Concentration and memory, and 3. Learning methodology. Each heading had 10 questions assigned with

a 5-point Likert-type scale to choose the suitable answer. A 5-point Likert scale has options such as strongly agree, agree, neutral, disagree, and strongly disagree. This scale was opted for as it was much easier for the participants to choose the apt answers for the questions asked.

The obtained data were transferred to an Excel sheet for statistical analysis. As it was a questionnaire-based study, institutional ethics committee approval was not obtained. The obtained data were statistically evaluated with the help of the SPSS software version 25.0 and the results were analysed. The Cronbach's alpha value was determined for the self-administered questionnaire of 30 questions and was found to be 0.805 which showed that the internal consistency of the questionnaire was good.

Results

A total of 400 students participated in the study, of which, 33.2% were male and 66.8% were female (Table 1). Among the participants, 3 (0.8%) were from arts/ science school, 50 (12.4%) were from engineering school, 346 (86.5%) went to medical/ dental schools, and 1 (0.3%) attended law school. Their year of education has been presented in Table 1. Descriptive statistical analysis was performed for all the questions in each heading and the variables showed statistical significance at $p < 0.05$. One question from each heading has been represented in the form of bar graphs. On that note, a question based on the easier mode of communication with the instructor revealed that students found offline communication better to ask questions and communicate with the instructors than the online mode (Figure 1). The statistical analysis signified that 54.1% of the students felt stressed about attending online classes, whereas only 20.8% of the students were stressed with offline classes (Figure 2). Figure 3 shows the attitude of students towards giving presentations in online and offline classes.

Table 1. Demographic Data of the Study Population

(N = 400)

Variables		Frequency	Percentage
Gender	Male	133	33.2
	Female	267	66.8
Year of study	First-year	96	24.0
	Second-year	38	9.5
	Third-year	102	25.5
	Fourth-year	149	37.2
	Intern/ postgraduate	15	3.8
Course of study	Arts/ science	3	0.8
	Engineering	50	12.4
	Medical/ dental	346	86.5
	Law	1	0.3

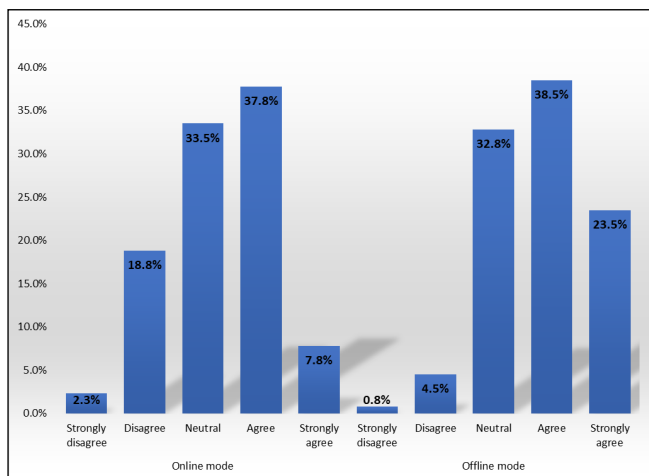


Figure 1. Analysis of Ease of Communication of Participants with the Instructor in Online and Offline Modes of Learning

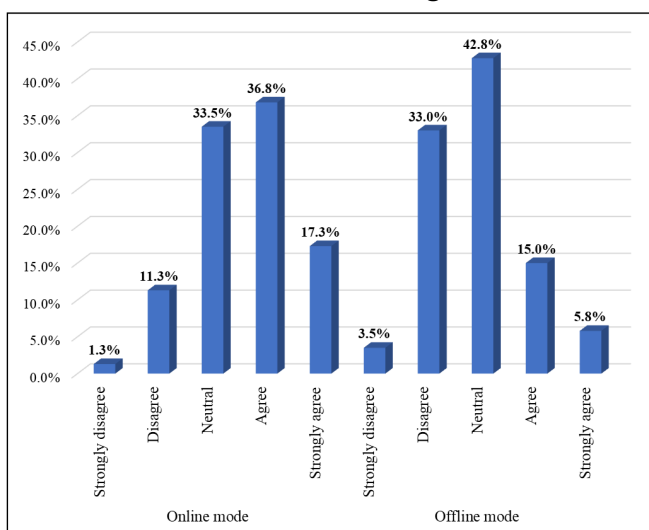


Figure 2. Mental Stress of Study Participants in Online and Offline Learning

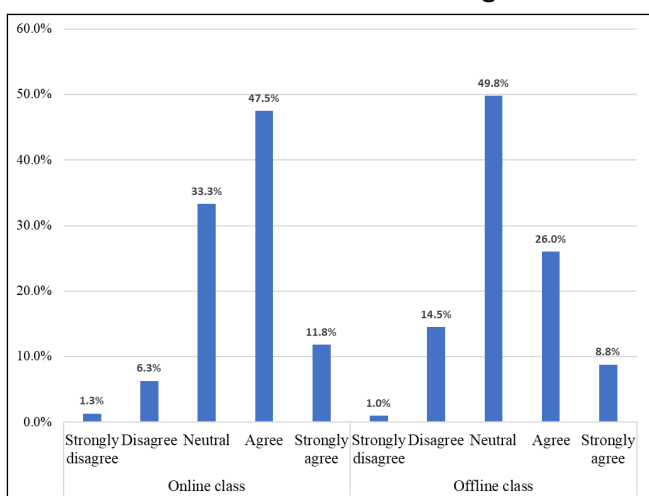


Figure 3. Attitude of Participants towards Giving Presentations in Online and Offline Classes

On assessing the confidence and attitude of the students towards seminars and presentations, it was found that the third-year and final-year students had more confidence in giving presentations in online classes rather than in offline classes.

Discussion

The sudden COVID-19 outbreak caused a change in offline learning activities to an online medium across the globe to continue education and prevent the spread of coronavirus infection. The United Nations Educational, Scientific and Cultural Organization (UNESCO) claims that at that time, more than 160 countries had instructed schools and universities to close and choose the online medium of education which accounted for about 87% of the student population across the world.¹⁷ The sudden change in the education paradigm made the students and teaching professionals face numerous difficulties at the beginning of the pandemic such as communication difficulties, longer screen time and lecture hours, focus and concentration inabilities, and visual disturbances like fatigue and distractions.^{18,19}

The current study reported how learning methodology and environment affected the concentration and memory of the students. On questioning the students based on their communication with their peers and instructors, it was noted that 62% of the students found offline or classroom communication to be much easier than the online mode of communication. It was also observed in the study that the students found it difficult to pay attention and listen (47.5%) to online lectures and felt the quality of discussion (25.3%) to be low. This contradicts studies conducted in the past which showed a higher incidence and a positive attitude towards e-learning over traditional classroom learning.^{2,20-22} 40.5% of the respondents reported that they had difficulty concentrating and got more easily distracted in offline classes than in online classes (5.8%). However, 67.3% of the respondents felt that the retaining capability of information was better with the traditional learning techniques, and 66.3% even reported to easily grasp and understand the concepts with offline learning than the online mode. It was also noticed that offline learning was considered to be more interactive (64.8%) than online learning by the subjects. A remarkable analysis was made in terms of economy which stated that 56.8% of the students found online learning to be more economical than traditional classroom learning (35.3%).

It has been postulated that the association between academic performance and the overall well-being of an individual during online learning has a relationship with mental health and it is believed to be influenced by various factors such as government-enforced restrictions which affected the day-to-day physical activities, sleep, diet and

even deleterious habits like alcohol consumption among the students.²³⁻²⁵ Savage et al. claimed in their studies that the restrictions imposed in the lockdown reportedly had a negative impact on the physical activities of students in the United Kingdom, having an association with time spent sedentarily and the perceived amount of stress during the lockdown.^{26,27}

In their study, Buckley et al. noted that although the amount of time spent studying did not alter during the lockdown, the participants in the online classes felt that there was a higher burden since they had to put in more effort to overcome obstacles pertaining to motivation and learning environment.²⁸ Previous research states that there was a positive association found between resilience and well-being of an individual. Hence if a student with higher resilience tends to adapt to an unfamiliar task, he or she undergoes mild to moderate stress which enhances the cognitive capacities. However, on the other hand, such a task is enfeebling and overwhelming for individuals with lower resilience.^{29,30}

Conclusion

In conclusion, the present study showed that a blended learning approach involving online and offline modes of education would be more effective. Through this blended learning, the students would be able to learn without any hurdles and stress, which would help them to stay motivated and be attentive in classes. This would also keep the physical activities of the students in check, thus preventing various health conditions.

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