

University students' perceptions of shifting between online and offline learning: lessons from Kerala, India

Shifting
between online
and offline
learning

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Abstract

Purpose – The study explores the perspectives of college students on the pedagogical shift as well as frequent transitions between online and offline learning modes during the COVID-19 pandemic in Kerala, the most literate state in India.

Design/methodology/approach – A descriptive cross-sectional study was conducted among 1,366 college students in Kerala during December 2021. A pre-tested questionnaire was sent using Google Forms to students of arts and science colleges. The authors analyzed quantitative data using descriptive statistics and qualitative data using thematic content analysis.

Findings – The reported advantages of online learning were increased technical skill, flexibility in study time, effectiveness in bridging the gap of the missed academic period and provision of attending more educational webinars. Students expressed concerns of increased workload, difficulty in concentration due to family circumstances, academic incompetency, unclear doubts and addiction to mobile phones and social media during the online classes. The main advantages reported for switching to an offline learning mode were enhanced social interaction, effective learning, better concentration and reduced stress. The reported challenges of offline classes were fear of getting the disease, concern of maintaining social distancing and difficulty in wearing masks during the classes. The shift in offline to online learning and vice versa was perceived as a difficult process for the students as it took a considerable time for them to adjust to the switching process of learning.

Originality/value – Students' concerns regarding transition between different learning modes provide important information to educators to better understand and support the needs of students during the pandemic situations.

Keywords COVID, University students, Online learning, Offline learning, India

Paper type Research paper

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic turned into a challenging global health emergency, creating unprecedented difficulties in all aspects of people's lives (WHO, 2020). Certainly, the pandemic affected educational systems worldwide, impacting more than 94% of the world's student population (UNESCO, 2020; Pokhrel and Chhetri, 2021). The lockdowns and government restrictions to curb the virus transmission led to the total closure of educational institutions all around the globe, affecting nearly 1.6 billion learners in more than 196 countries (UNESCO, 2020; UN, 2020). This definitely created a setback to the tremendous growth of national education systems achieved in the past 50 years (UNESCO, 2020; Pokhrel and Chhetri, 2021; Roy and Brown, 2022). The outbreak of COVID-19 impacted more than 220 million tertiary education students across the globe (UNESCO, 2020). Inevitably, schools and other learning spaces worldwide were forced to embrace online learning as an interim remote teaching strategy (UNESCO, 2020; Mishra *et al.*, 2020; Rafi *et al.*, 2020). Comparably in India, more than 320 million students were affected by the various restrictions and the nationwide lockdown for COVID-19 (UNESCO, 2020). The Indian education system had to resort to various emergency remote learning platforms even without a pre-planned course structure or proper training for adapting to the change (Selvaraj *et al.*, 2021).

In the southern state of Kerala, which has the highest literacy rate of 94% in India, there were about 332 thousand students enrolled for higher-education programs in the arts, science and commerce streams (Kerala State Higher Education Council, 2020). Kerala is also the first digital state in India that successfully linked its villages with broadband connectivity under the National Optical Fibre Network Programme (ICEA, 2020; India Today, 2016). As part of nationwide lockdown and restricted mobility owing to the COVID-19 pandemic, online classes were initiated in all educational institutions of Kerala (Government of Kerala, Higher education department, 2020). Almost after a gap of nearly nine months, face-to-face classes were started in February 2021 for college students in batches, with due priority to the final-year students. With the advent of the second wave of the pandemic, classes had to be switched back to the online mode by March 2021. Offline classes started again in October 2021, which continued until January 2022, and then switched back to the online learning mode due to the rising cases of COVID-19 in the state.

Students' general perceptions and attitudes to shift in learning environments

As a matter of course, learning requirements and preferences of each learner tend to be different (Arthur-Nyarko and Kariuki, 2019). Nearly 60% of college students in Kerala were not familiar with online learning platforms before lockdown (Muhamed Faizudheen and Abdul Azeez, 2021). However, few studies reported the impact of online classes in the pandemic situation among college students of Kerala (Rafi *et al.*, 2020; Muhamed Faizudheen and Abdul Azeez, 2021; Viswambharan *et al.*, 2021). It was reported that around 90% of college students in Kerala were not satisfied with the online classroom system (Muhamed Faizudheen and Abdul Azeez, 2021). They faced digital infrastructure challenges such as poor internet connectivity, lack of good digital devices, power failure, etc. (Rafi *et al.*, 2020; Muhamed Faizudheen and Abdul Azeez, 2021). Moreover, the psychological well-being of students declined considerably as they were denied the experiences of social relationships from face-to-face learning (Muhamed Faizudheen and Abdul Azeez, 2021; Mishra *et al.*, 2020). Moreover, digital divide was well evident in many vulnerable sections of the Kerala society (Praveen, 2021). In general, the classroom sessions conducted on web-conferencing platforms did not instil confidence among large sections of the student community (The Times of India, 2021). Consequently, the students hoped to return to the conventional classroom learning at the earliest (Anilkumar, 2021).

Ever since educational technology has embraced electronic learning (e-learning) soon after the outbreak of COVID-19, many investigators have assessed the effectiveness, issues and challenges associated with it (Peng *et al.*, 2022; Kumar *et al.*, 2021; Lobos *et al.*, 2022;

Hassan *et al.*, 2022). The sudden migration to a new learning space created several major challenges relating to policy, pedagogy, logistics, socioeconomic factors, technology and psychosocial domains (Barrot *et al.*, 2021). In general, factors such as social interaction, academic and technical skills, learner motivation, time and support for studies, cost and access to the internet and technical glitches have been identified as the key barriers to online learning (Barrot *et al.*, 2021; Muilenburg and Berge, 2005). Existing evidence suggests that online learning delivery during the COVID-19 pandemic often lacks interactivity and collaborative experiences (Yan *et al.*, 2021; Baczek *et al.*, 2021; Yates *et al.*, 2021).

Studies done in the global north perceived online programs as appropriate ways of teaching during the COVID-19 pandemic, while the global south reported a negative attitude towards online education (Arthur-Nyarko and Kariuki, 2019; Cheng *et al.*, 2021; Zafar *et al.*, 2020; Kaurani *et al.*, 2021; Kabir *et al.*, 2021; Yan *et al.*, 2021). More than two-thirds of the university students perceived moderate to high levels of e-learning stress in Bangladesh (Kabir *et al.*, 2021). In Indonesia, more than three-fourth of the students often struggled to join the classes as their gadgets were not compatible with online learning (Agung and Surtikanti, 2020). Students from Europe and North America showed a more positive attitude and higher satisfaction towards online learning than their Asian and African counterparts (Aristovnik *et al.*, 2020). Students from low-digital-readiness countries experienced additional technology-related problems (Naresh and Shree Reddy, 2015).

There are many positive impacts of the pedagogical shift on the education system in India like the opportunity for technological transformation, development of e-learning materials, evolution of new forms of collaborative teaching and learning, rise in virtual meetings, educational webinars and e-conferencing opportunities (Pokhrel and Chhetri, 2021; Roy and Brown, 2022; WHO, 2020; Mukesh, 2021). On the contrary, negative impacts reported were hampered educational activity, postponement of exams, unpreparedness of teachers and students to the sudden transition from face-to-face learning to online learning and inequity in digital gadgets and internet access leading to digital divide. In fact, the online teaching-learning method created a big gap between the rich and the poor and urban and rural students in many parts of the country (Pokhrel and Chhetri, 2021; Roy and Brown, 2022; WHO, 2020; Mukesh, 2021). The digital divide in fact deepened existing inequalities, exposing the lack of resilient education systems in India (UNESCO, 2020; Mukesh, 2021). Non-availability of technical infrastructure and interrupted internet connectivity and power supply were the biggest challenges in front of the students and teachers all across India (WHO, 2020; Mukesh, 2021).

Hitherto, many studies have investigated this area with a focus on students' mental health and coping mechanisms (Copeland *et al.*, 2021; Fawaz *et al.*, 2021), challenges and coping strategies in a pandemic-induced online learning space (Barrot *et al.*, 2021), home learning during the pandemic (Suryaman *et al.*, 2020), self-regulation strategies (Carter *et al.*, 2020), efficacy of online teaching modes and virtual learning environment (Hew *et al.*, 2020; Tang *et al.*, 2020), students' overall learning experience (Singh *et al.*, 2020) and students' attitude towards online classes (Muthuprasad *et al.*, 2020). Moreover, the University Grants Commission, the statutory body responsible for maintaining the standards of higher education in India, has already proposed a blended learning methodology for increased academic effectiveness (UGC, 2021). While there are a few studies addressing the impact of online classes on college students of Kerala, to the best of our knowledge, no study has yet reported on how these students reoriented themselves back to normal offline classes. Understanding the needs of the students by listening to their voices will definitely pave the way for creating appropriate educational policies in managing crisis situations. However, there is a lacuna of information on students' perceptions of blended learning during the pandemic in India. The present study therefore aimed at understanding the perspectives of the student community on the pedagogical shift as well as frequent transitions between online and offline learning modes during the pandemic. We also examined the perceived

challenges and issues that arose with the shift in learning aiming to provide relevant information to the administrators, faculty members and the governing systems to better support the learning needs of students. This will prove beneficial in highly unpredictable circumstances where frequent switching from offline to online and vice versa may need to be opted. The sudden transitions between different learning modes can impact students differently in many aspects of their life. Given today's uncertainties, this information would also be critical in revisiting the established strategies in different learning environments. Perceiving students' needs by duly acknowledging their voices will definitely pave way for creating sensible educational policies in crisis management as well as preparing for similar future challenges if any. Hence, our study aimed to fill in this critical gap in research by exploring the perceptions of the student community towards their preferences and views of their frequent shifts in the learning process during the COVID-19 pandemic in Kerala, the most literate state in India.

Methodology

We conducted a web-based quantitative cross-sectional study among college students in the Kerala state of India. The participants were students who were pursuing their undergraduate or postgraduate course in the arts and science colleges in Kerala. We prepared a questionnaire after reviewing the literature, discussing it with college students and teachers. The questionnaire was presented in English, pre-tested and scrutinized by researchers, college students and teachers. Pre-test was performed to get direct evidence for the validity of the questionnaire for the survey. We identified 15 students for the pre-test. We tried to include a range of different students of our target group. We requested them to complete the online survey same as the way it was completed in the actual survey. We analyzed each response and noted the areas where the participants had not answered or made mistakes. We also asked some general questions like whether the questionnaire was comprehensive and adequately covered the topic. We also enquired whether the questions are too sensitive, too long or too short. Details on the way they received the questionnaire and procedure of completing the questionnaire were also collected. Based on this, we modified the questionnaire with more clarity. Content validity was also done by experts before the survey.

The questionnaire was divided into four sections: (1) the participant's personal information section, (2) perceptions and attitudes of students towards shift from traditional face-to-face to online learning, (3) perceptions and attitudes of students towards the shift from online to offline learning and (4) open-ended section which explored the advantages and disadvantages of the shift from offline to online learning and vice versa. Details on background characteristics like age, sex, place of residence and course studied were collected in order to set a broad understanding of the different characteristics of the study population. This also gave details of participants in this survey, which was used to ensure whether we reached our targeted audience. Since this was an online-based survey, we could not ensure the representativeness of the participants in terms of sociodemographic backgrounds. Therefore, we have not used the background characteristics for further analysis. We collected details of their preference on the mode of learning, perceptions and opinions regarding shift from offline to online and then online to offline and advantages and disadvantages of different modes of learning.

The survey was done through the online mode using Google Forms during the month of December 2021. Online survey was used due to travel restrictions in the state due to COVID-19 regulations. There was no pre-determinant sample size calculation for the study. We targeted college students for the study. The link of the survey was sent to college students' groups all over the state through WhatsApp, and the students were requested to circulate it to their peer groups. Since we fixed the mandatory questions in the Google Forms,

only those who had completed the mandatory questions could submit the final filled questionnaire. Consent to participate in the survey was obtained at the beginning of the study through online consent. We received a total of 1,366 responses during the study period, and all these data were used for analysis in this study.

We presented frequencies (percentages)/means and standard deviations to summarize the background characteristics, perceptions and opinion of the participants related to online and offline learning. Analysis of quantitative data was done using SPSS (SPSS Inc., Chicago, IL, USA, version 23.0 for Windows). Based on the responses of the open-ended questions on the advantages and disadvantages of online and offline learning modes, we did thematic coding which was confirmed by all the authors independently for consistency. Considering the flexibility of the use of thematic coding in open-ended questions (Braun and Clarke, 2006), the responses were coded and analyzed thematically. First, we read and familiarized the responses of the participants, then identified the significant themes and categorized the responses relevant to the objectives of the study. To ensure the reliability of the analysis, two coders independently analyzed the qualitative data obtained from open-ended responses. The percent of agreement between the two coders was 88%, and the disagreements were discussed by the coders until an agreement was achieved.

Results

This study investigated students' preference on the mode of learning, perceptions, attitudes regarding learning shift from offline to online and then online to offline and advantages and disadvantages of different modes of learning. A total of 1,366 individuals, aged 17–30 years, with a mean age of 20 years ($SD \pm 1.4$), participated in this study. Eighty-four percent of the total participants were females. More than half of the participants (55%) were from the rural sector. In corroboration with the state figure (Government of Kerala, 2022), the majority (91%) of participants were undergraduate students, while the others were postgraduate students. About 67% were science students, whereas 33% belonged to the arts stream. The majority (91%) of the participants reported using smartphones, followed by laptops (7%) and personal computers (1%), and four participants used tablets for online learning. The main source of internet availed was mobile data (84%), followed by wireless (3%) and landline internet (3%). The most preferred mode of learning was offline mode (61%), followed by blended mode (31%), and the remaining (8%) preferred online mode of learning. Table 1 represents the background characteristics of the study population.

Shift from traditional face-to-face learning (offline) to online learning

Overall, 89% of the participants reported facing problems with the internet connection during the online classes (occasionally: 63%, often: 20% and always: 6%). Forty-two percent of the participants were concerned about their physical appearance during the online classes. Regarding different perceptions related to online learning, 38% were satisfied with the quality, 51% were satisfied with the marks obtained in the online exams and 38% were satisfied with the content of the topics covered in the online classes. The main reported advantages of online learning were economic benefit (44%), the effectiveness of online class in bridging the gap of the missed academic period (30%) and an improved learning process (21%). The main failures reported were more workload than in offline classes (38%), difficulty in concentration because of the family circumstances (37%), concerns about their academic competency (33%) and stress (27%) during the online classes. To the question on the impact of online class on their social life, 40% reported no change, 32% reported to have a negative impact and 28% reported positive impacts. Nearly 67% of the participants reported changes in their sleeping pattern during the online learning period, 23% reported that they were used

Variables	<i>n</i> (%)
<i>Age (in years)</i>	
17	23 (01.7)
18	255 (18.7)
19	499 (36.5)
20	325 (23.8)
>20	264 (19.3)
<i>Sex</i>	
Females	1149 (84.1)
Males	217 (15.9)
<i>Place of residence</i>	
Rural	754 (55.2)
Urban	612 (44.8)
<i>Course of study</i>	
Undergraduate	1248 (91.4)
Postgraduate	118 (08.6)
<i>Course</i>	
Science	910 (66.6)
Arts	456 (33.4)
<i>Device for online learning</i>	
Smartphones	1247 (91.3)
Laptop	100 (07.3)
Personal computer	15 (01.1)
Tablets	4 (0.3)
<i>Preferred mode of learning</i>	
Offline	836 (61.2)
Blended	425 (31.1)
Online	105 (07.7)

Table 1.
Background
characteristics of
students

to sleeping late and waking up late, 19% reported that some days they slept a lot and some days they could not sleep, 16% used to sleep a lot since there was a lot of free time and 9% reported disturbed sleep because of the increased workload. Nearly half of the participants (47%) reported inconsistent eating patterns, 35% reported increased eating including increased use of snacks, 12% reported decreased appetite and 7% reported emotional eating during the online learning phase. [Table 2](#) represents details of characteristics related to the shift from traditional face-to-face learning (offline) to online learning circumstances.

The main themes that emerged from the participants' reported advantages and disadvantages of online learning are presented in [Table 3](#).

Perceived advantages

Academics-learning and teaching. The main reported advantage of online learning was that it was the best available option in the pandemic scenario for undisrupted learning. Students identified that their digital skills did improve a lot with online study. They had access to a lot of soft copies of study materials when compared to hard copies of text available in offline learning. Recorded videos and Portable Document Format (PDF) notes made learning less hectic. One of the most advantageous aspect of online learning was the opportunity to listen missed classes as recordings of the online classes were available. The students admitted that they also got more opportunities to participate in free educational webinars and

Variables	n (%)
<i>Internet connection problems</i>	
Occasionally	854 (62.5)
Often	274 (20.1)
Always	83 (6.1)
Never	155 (11.3)
<i>Concerns about physical appearance during online classes</i>	
	574 (42.0)
<i>Satisfied with*</i>	
Quality of online class	519 (38.0)
Marks in online exams	697 (51.0)
Content of the topics covered	519 (38.0)
<i>Benefits in online learning*</i>	
Economic benefit	601 (44.0)
Bridge gap in learning	410 (30.0)
Improved learning process	287 (21.0)
<i>Issues in online learning*</i>	
More workload	519 (38.0)
Difficulty in concentration	505 (37.0)
Concerns about academic competency	450 (33.0)
Stress	369 (27.0)
<i>Impact on social life</i>	
No change	546 (40.0)
Negative impact	437 (32.0)
Positive impact	382 (28.0)
<i>Change in sleeping patterns</i>	
	915 (67.0)
<i>Change in eating patterns</i>	
Inconsistent eating	635 (46.5)
Increased snacking	475 (34.8)
Decreased appetite	166 (12.2)
Emotional eating	90 (6.6)
<i>Physical issues</i>	
Back pain	113 (8.3)
Headache	462 (33.8)
Eye problem	392 (28.7)
No problem at all	308 (22.5)
Other problems	91 (6.7)

Table 2. Characteristics related to shift from traditional face-to-face learning (offline) to online learning

Note(s): *The responses are not mutually exclusive

e-conferences. Previously all these chances were restricted due to travel and economic constraints. Another interesting finding was that students got more time for their studies. Previously they used to spend most of their time attending classes in their institutions, going for tuitions and travelling, barely left with time for self-study. With virtual education, learning became more self-paced and students could customize learning as per their needs.

Financial. Students reported that online learning saved money spent on texts and printed materials, transportation and accommodation. The students who previously utilized hostels and paying guest facilities could continue their studies back at home. In fact, many of the universities reduced their fee schedule on account of the pandemic. Moreover, relaxations were given for fee payment which made the students perceive online learning as a more economically feasible option for them.

Themes	Notes
<i>Advantages</i>	
Academics-learning and teaching	<ul style="list-style-type: none"> • Ideal option in pandemics for undisrupted teaching and learning • Increases technical skills • Better time management since more time for self-study • Provision of more study materials • Recorded videos and PDF notes make learning less hectic • Learning became more flexible in the comfort of home • Saves money spent on texts and printed materials • Saves money spent on transportation and accommodation
Financial	
<i>Disadvantages</i>	
Technical issues	<ul style="list-style-type: none"> • Poor net connectivity of students/faculty members • Interrupted power supply • Poor video and audio clarity • Lack of laptop and smart phones • Technical glitches • Heavy use of mobile data • Lack of knowledge about usage of online learning platforms and apps
Academics-learning and teaching	<ul style="list-style-type: none"> • Lack of proper doubt clearing and discussion sessions • Lack of equal attention to each and every student • Concepts not clear and fully explained • Loss of continuity in learning and teaching due to technical glitches • Loss of interest in grades and marks because of the mistrust in online exams
Psychological issues	<ul style="list-style-type: none"> • More mechanical way of student life • Lost systematic rhythm of academic life, created a lazy way of life • Felt sad because of the addiction to mobile phones and social media • Decreased concentration and attention • Tendency to use other recreational apps in background while in online learning platforms
Social issues	<ul style="list-style-type: none"> • Introversion • Mental trauma as many dear ones were lost to COVID-19 • Feeling of isolation • Minimal peer group help • Group work not as efficient as in offline classes • Communication gap with faculty • Lack of proper interaction with teachers and peers • Lost many memorable academic events • Forgot ways of life, found it difficult to talk and interact with people
Physical issues	<ul style="list-style-type: none"> • Eye problems due to long screen hours • Headaches, back pain and other health issues
Financial issues	<ul style="list-style-type: none"> • Needed money for mobile data recharging frequently which burdened parents

Table 3.
Perceived advantages
and disadvantages of
online learning

Perceived disadvantages

The main disadvantages of online learning, as identified in the present study, are explained below mainly in academic, technical, financial, physical, psychological and social areas.

Academic: Although students admitted an improvement in their digital literacy, they opined that there was a definite lack of proper doubt clearing and discussion sessions. Equal attention was not given to each and every student. Only students who responded and communicated well were recognized in online classes. Moreover, absenteeism was frequent in online classrooms. Few of the students thought that online learning created additional stress on them by frequent and lengthy assignments and presentations. Some of the students admitted that they lost interest in grades and marks as anyone could cheat in online exams.

Technical: Poor internet connectivity of both students and faculty members was a major challenge in online learning. Most often, power failure also contributed to loss of classes. Students missed many key portions of a session due to technical glitches. Majority of the students did not have a compatible device. Initially, students found difficulty in adapting to online learning platforms and apps.

Financial: As mobile data packs had to be purchased frequently due to heavy usage of data for online classes, it seemed a burden for many parents. Some parents got irritated as they thought their wards were using the internet unnecessarily for non-academic purposes. For some of them, it looked like an additional expense particularly due to job loss of parents in the pandemic time. Yet, many of the students believed that online learning did save a considerable amount of money on study materials, making it a more economical option than offline classes.

Physical: Long screen hours created physical strain on the students, leading to eye problems and other health issues. Back pain, headache and neck pain were the other physical issues reported. Many of the students felt exhausted after online sessions.

Psychological: Some students reported that they lost the systematic rhythm of academic life. Life seemed a mechanical one, and many of them felt lazy more often. Majority checked mobile phones every now and then so as not to miss any notes uploaded or any information sent from teachers. This became a habit, and they felt being addicted to mobile phones. Many of the students admitted that they had the tendency to use other recreational apps in the background while attending online classes. Some students felt that they turned into introverts. Some of them were depressed and mentally stressed as they lost their dear ones to COVID-19. Lack of a proper social life also created many psychological issues.

Social: The social distancing norms which came up with the pandemic in turn created a sense of social isolation among the students. Many of them sadly commented on how the pandemic took away their joyous moments with their friends and the ambience in a college set up – sharing their worries and happiness, having lunch with friends, and so on. Many of the first-year students did not know who their classmates were as they never got a chance to see them face-to-face since the beginning of the program. They were only familiar with their names being displayed on the online learning platforms while attending the sessions. Lack of proper interaction with teachers and peers created a communication gap. Some students even remarked that they became hesitant to talk to people and lost interest in social interaction.

Switching back to offline learning from online learning

Nearly three-fourths of the participants (72%) were satisfied with the offline mode, and 21% felt that compared to online classes, offline classes are a burden. Nearly 62% reported difficulty in hearing the class since the teachers were wearing the mask. Table 4 shows the details on the perceived negative effect of shifting back to offline classes, as reported by the

Variables	Not at all n (%)	Quite a bit n (%)	Slightly n (%)	Moderately n (%)	Extremely n (%)
Felt negative effect when switching back to offline learning	372 (27.2)	278 (20.4)	495 (36.2)	0 (0.0)	221 (16.2)
Discomfort with the mask use	240 (17.6)	191 (14.0)	349 (25.5)	185 (13.5)	401 (29.4)
Difficulty in concentration	368 (26.9)	154 (11.3)	391 (28.6)	266 (19.5)	187 (13.7)
Stressed	453 (33.2)	168 (12.3)	335 (24.5)	200 (14.6)	210 (15.4)
Worried about getting exposed to COVID-19	417 (30.5)	163 (11.9)	388 (28.4)	190 (13.9)	208 (15.2)

Table 4.
Perceived negative
effect when switching
back to offline learning

study participants. The use of masks created discomfort for some participants, and some of them reported difficulty in concentrating during the offline classes. Nearly 30% felt moderately or extremely stressed at different levels during the switching back to offline classes. Fifteen percent of the participants were extremely worried about getting affected by the COVID-19 virus while returning to the offline mode.

The main themes based on the reports of the students on the benefits and issues regarding shifting back to offline learning are summarized in the following sections (Refer [Table 5](#)).

Perceived benefits

Academics: Students felt teaching and learning became more effective in conventional classrooms. They could concentrate more in classrooms as face-to-face learning created a need to be lively in class. The students could interact with their teachers in a productive manner to clear their doubts. Some students admitted that many of their lingering doubts from online sessions were cleared once they started the offline classes. Practical sessions became more productive and sensible.

Psychological: Many students felt relaxed while being with friends. Some students mentioned that even the sense of being at their college created a “new world” feeling in them. They felt that their stress and tension reduced while being with their peers.

Social: Many students reported that they became more socially interactive during the period. The students remarked that their many major concerns while attending online classes were resolved once offline classes started. They felt that their old college days were back.

Themes	Notes
<i>Advantages</i>	
Psychological	<ul style="list-style-type: none"> • Relaxed and happy to be with friends • Reduced stress and tension while being with peers
Social	<ul style="list-style-type: none"> • Better social interaction • Sense of pleasure of being in a college atmosphere with friends
Academics	<ul style="list-style-type: none"> • Teaching and learning more effective • Better interaction to clear doubts • Better concentration as learning is face-to-face • Ideal for practical sessions • Equal attention to all students
<i>Disadvantages</i>	
Financial	<ul style="list-style-type: none"> • More money to be spent for transportation and accommodation • Extra money to be spent for educational materials
Psychological	<ul style="list-style-type: none"> • Stress due to fear of getting the disease • Fear of spreading the virus to family members and grandparents who are back home • Confused due to self-created isolation from family members at home, when back from college to avoid the spread of the virus • Social distancing created a mental block • Fear of attendance and exams • Fear of questioning from teachers • Travelling in public transport created stress due to the fear of getting infected
Physical	<ul style="list-style-type: none"> • Exhausted due to wearing masks for long hours • Breathing difficulties due to double masking • Tired due to travelling to college and back home particularly in public transport
Academics	<ul style="list-style-type: none"> • Increased study burden • Reduced time for studying. Time lost in travelling and waiting for public transport • Teachers not audible as they wore masks • No continuity of lessons taken in online classes

Table 5. Perceived advantages and disadvantages of switching back to offline class

Perceived drawbacks

The following section gives details of the relevant issues pointed by the students while trying to return back to normal.

Financial burden: The students expressed their concerns about increased expenses on transportation and accommodation once offline classes started. More money was needed for purchasing books and other educational materials. They also found it difficult to access public transport conveniently as very often buses were crowded. Some students hired private transport facilities like autorickshaws frequently for the fear of viral exposure while using public transport.

Psychological burden: Students had many types of fears in offline classes. Majority remarked that their offline classes were ruined by the fear of getting infected with COVID-19. This created stress, particularly while using public transport. They admitted that they felt guilty that they might spread the disease to their family members. For some people, social distancing created mental blocks. The students even doubted the very purpose of an offline class and thought it would have been more comfortable and safer back at home. A few students were afraid of question sessions from the teachers and examinations as they were in a cosy mood for a long period of time with the online sessions.

Physical issues: The students reported that they felt suffocated while wearing double masks for long hours and many had breathing difficulties. They even got tired and exhausted due to travel from home to college and back particularly in the public transport after a long period of staying at home.

Academics: Many students reported that their study burden increased since travelling and waiting for public transport wasted a lot of their time. Some of them felt a lack in the continuity of lessons from online classes. Teachers were not clearly audible as they wore masks while taking classes. Some were not happy as they lost a self-paced study mode that was available during the online learning period.

Discussion

Our study addressed the perspectives of college students on the constant shift between offline and online modes of learning in Kerala because of the COVID-19 pandemic. Our findings revealed that students perceived several benefits and challenges in both online and offline modes of learning. However, their greatest challenge was adapting to the sudden shifts in learning process commensurate with the COVID-19 trajectory.

In previous studies, improved technical skills, flexible schedule and convenience were ranked as the major benefits of online learning (Muthuprasad *et al.*, 2020). However, in our study, the main reported advantages of online learning in the pandemic situation were economic benefit, effectiveness of online class in bridging the gap of the missed academic period and an improved learning process. Similar to our findings, previous studies reported many positive impacts of online learning like the opportunity for technological transformation, development of e-learning materials, evolution of new forms of collaborative teaching and learning, rise in virtual meetings, educational webinars and e-conferencing opportunities (Pokhrel and Chhetri, 2021; Roy and Brown, 2022; WHO, 2020; Mukesh, 2021). One of the most advantageous aspects of online learning as reported by the students in our study was their opportunity to hear missed classes through recordings, which proved highly useful during sickness or in case of missed classes due to technical glitches. Thus, learning became more flexible in the comfort of home. Another interesting finding was that students got more time for their studies as learning became more self-paced in online education. Moreover, students expressed their relief that they could sit at home safely and continue their studies in the pandemic period without the fear of contracting the disease. Furthermore, students reported that online learning saved money spent on texts, study

materials, transportation and hostel accommodation. Our findings thus support the fact that online education is a better option for undisrupted learning in a pandemic scenario.

The negative impacts reported from the previous studies were hampered educational activity, postponement of exams, unpreparedness of teachers and students to the sudden transition in learning and inequity in digital gadgets and internet access (Pokhrel and Chhetri, 2021; Roy and Brown, 2022; WHO, 2020; Mukesh, 2021). Non-availability of technical infrastructure and uninterrupted internet connectivity and power supply were the biggest challenges in front of the students and teachers all across India (WHO, 2020; Mukesh, 2021). Likewise, majority of our study participants reported lack of connectivity as the major hindrance in online learning as they faced problems with the internet connection during the online classes. Other constraints reported were internet data limit, data speed and lack of direct interaction in classrooms, similar to the findings of another study among medical students in the state (Rafi *et al.*, 2020). Some of the participants reported physical issues as well as inconsistent eating habits and change in their sleeping patterns during these times. Furthermore, one-third of the students felt a negative impact on their social life due to the online study mode.

The psychological and social issues related to online learning reported in this study are in corroboration with the reports that around 60% of the college students in Kerala experienced mental depression in varying degrees during pandemic times (Muhamed Faizudheen and Abdul Azeez, 2021; Mishra *et al.*, 2020). Moreover, in previous studies, psychological well-being of students declined considerably as they missed the experiences of social relationships from face-to-face learning (Muhamed Faizudheen and Abdul Azeez, 2021; Mishra *et al.*, 2020). Earlier findings from Kerala reported that around 90% of students were not satisfied with the online classroom system. Apart from that, students missed their friends' circle, academic atmosphere and campus life (Muhamed Faizudheen and Abdul Azeez, 2021; Viswambharan *et al.*, 2021). In line with the above findings, our study also reflected many psychosocial issues among students during online learning like isolated feelings, minimal peer group help, lack of proper interaction with teachers and peers and difficulty in talking and socializing. Moreover, the students revealed that their concentration and attention weakened as many of them were undergoing a mental trauma from the demise of their dear ones. Students also disclosed that they felt self-absorption and tendency to use other recreational apps in background while in online learning platforms. This may be observed as a growing addiction to mobile phones and social media among the students.

When considering the subsequent shift from online to offline classes, the students reflected upon the benefits and challenges they faced while attending face-to-face classes during a pandemic. No studies have yet comprehensively focussed on the shift back to offline learning and its effects. The salient benefits reported were psychosocial in nature ranging from reduced stress and tension, better social interaction and perceptible relaxation when in a peer group.

Moreover, in academic perspectives, teaching and learning were found to be more effective providing unbiased attention to all students which led to better concentration and interaction.

In brief, the most preferred mode of learning for our study participants was the offline mode followed by blended mode. Similarly, a study among dental students in a rural tertiary care centre in Kerala also reported that the majority of students preferred regular offline classes (>70%) and a few suggested a blended mode (Viswambharan *et al.*, 2021). However, switching to an offline mode of learning created many unanticipated challenges like high transportation and accommodation charges. Students were stressed due to the fear of getting the disease and spreading it to their loved ones. Breathing difficulties due to double masking and exhaustion due to wearing masks for long hours were some physical issues faced. Students revealed their fear of attending exams and facing questions from teachers coupled with the mental block created by social distancing in classrooms. Some students found

lectures to be inaudible due to facemask used by teachers. They were also concerned about the increased study burden that they experienced in their shift to offline learning. Concisely, the shift in offline to online learning and vice versa was perceived as a difficult process for the students as it took a considerable time for them to adjust to the switching process of learning.

Conclusion

The findings of this study point to the need for readiness of higher-education institutions for emergency responses in times of crisis. Dedicated teams can be constituted in universities and colleges with collaboration among key stakeholders like parents, students, teachers, students' political groups, government education agencies and community to address the issues that emerge with different learning modes as seen in this study. These groups need to function in an approachable mode for students to discuss their learning needs and concerns. The findings have also reflected upon the challenges that students might face when we abruptly shift to online learning and back to offline learning. These may be considered as critical viewpoints necessary for policymaking, decision-making, and implementation of different learning modes in crisis situations that may arise. Rectifying technical glitches and maintaining uninterrupted network communications from the administration side as well as technical aptitude enhancement of the users can make online learning a lot easier and flexible. However, some areas need to be focussed which are critical but often neglected like providing psychosocial support and counselling sessions to students and teachers as well as measures to maintain physical well-being like physical activity sessions and diet counselling. Efforts to improve peer learning need to be motivated with support from teachers and parents. Students should also need to be motivated for self-belief and disciplined study with proper time management which can make their learning a more enjoyable process. The study thus points out to the need for addressing physical, mental and social well-being of students in such situations.

The findings of this study have to be seen in light of some limitations. The present study used a quantitative online survey for exploring students' perceptions on the shifts in their learning modes. However, this study would have yielded more results if in-depth interviews or focus group discussions would have been done. But due to the lock down and restrictions owing to the rising COVID-19 cases in the state during the study period, there were constraints in using such a methodology in this study. Furthermore, this study particularly focused on students' perspectives. Future studies may explore teachers' experiences and perspectives to have a complete view of the situation and how they could in turn influence students' approach to different modes of learning. Moreover, the social determinants of education like economic, food, physical environment, social environment and health may be examined in relation to the specific challenges students experience during their shifts in learning. Future studies may address these issues in terms of regional and geographical diversities.

Our study aimed at understanding the perspectives of the student community on the pedagogical shift as well as frequent transitions between online and offline learning modes during the pandemic. The sudden transitions between different learning modes impact the students in many aspects of their life. This study would be critical in revisiting the established strategies in online learning environment as well as for a smooth transition to face-to-face learning. This can help in adapting to changing learning environments as per the needs of the time.

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