# ATTITUDES AND EXPERIENCES OF UNDERGRADUATE COLLEGE STUDENTS IN INDIA REGARDING ONLINE LEARNING- A CROSS- SECTIONAL STUDY

CT Sudhir Kumar
Honorary Consultant, Alzheimer's and Related Disorders Society of India, Kottayam, Kerala
drsudhirkumarct@gmail.com
Orcid number: https://orcid.org/0000-0002-5116-510X

Anish KR
Assistant Professor, Department of Social Work, Rajagiri College of Social Sciences, Kochi, Mahatma Gandhi University, Kerala
Email: anish@rajagiri.edu

Mathew Kanamala
Head, Department of Social Work, St. Joseph's College, Moolamattom, Mahatma Gandhi University, Kerala
Email: mathewkanamala@gmail.com

**ABSTRACT**
Educational sector has suffered massive setbacks following the onset of Covid-19 pandemic. Educational institutions have been closed for varying periods of time and switched to online mode of learning. This study aimed at exploring the current practices, experiences, attitudes and perceptions of online learning and teaching among college students using a comprehensive online survey.
Of the 617 students who participated in the survey 84% were females. Most (69.7%) of them belonged to the age category 20 to 30. 69.7% were from a rural background. 65.8% were aware of online teaching methods before the pandemic but only 30.8% had used it before. 62.7% had experience of using smartphones for a period of 1 to 5 years. The online platform used by around half the participants was Google meet. 561 (90.9%) used smartphones to attend classes. Majority (259, 42%) of participants are able to concentrate only for about 30 minutes at a stretch while attending online classes. 57.3% students reported online learning methods easy or very easy to use and 97.4% students found the sessions useful in general. Majority of the participants (450, 73%) are happy with the overall experience of online learning. Most of the students are in agreement that internet-based meetings are useful, easy to use and provide effective learning environment. Majority also reported that when compared to face-to-face meetings, online meetings are less effective and there is less interaction in online teaching. 129 (33.3%) are definite they would use internet based learning and related facilities regularly in the future.
To the best of our knowledge this is one of the first comprehensive studies which closely looked at the experience of college students in attending online classes. Having known the benefits of online learning, it is highly likely this approach continues to play a significant role in the future and a hybrid learning method may be the way forward. These findings assume great importance on the back of how prepared and ready are learners to accept this new form of education.
**Keywords:** online education, Covid 19, pandemic, India

## INTRODUCTION

Covid- 19 pandemic had negatively impacted all aspects of our life including physical health, mental health and financial status. Educational sector is an area which has suffered massive setbacks. Educational institutions all over the world have been largely closed for varying periods of time since March 2020 owing to the spread of Covid-19 infections. It was reported that 186 countries have initiated countrywide closures which affected more than seventy percent of the enrolled learners towards the end of April 2020 (UNESCO, 2020). Traditional class room-based face to face interactive teaching by teachers were put on hold to reduce the risk of infections and related complications. Educational systems have quickly moved to virtual teaching methods with teachers mostly conducting classes on online platforms and students attending them from the comforts of their own homes. Though virtual learning methods are not new in India, the pandemic has brought it widespread and common. It replaced the traditional classrooms and was predicted to continue in some form in the future too. Hence it is important to understand the experiences and attitudes of all stakeholders involved in online learning and teaching. This is essential to incorporate changes and refine methods, processes and experiences of online pedagogy to make it more effective.

  

The need for flexible learning to be embedded in institutional structures and procedures has been proposed for many years now (Casey &Wilson, 2005). Educational institutions all over the world have been investing manpower and resources to address the unprecedented disruption in education and address the related challenges amongst the massive chaos. Flexible learning has been proposed as the way forward from various quarters. Flexible learning can be defined as a "set of educational approaches and systems concerned with providing learners with increased choice, convenience, and personalization to suit their needs. In particular, flexible learning provides learners with choices about where, when, and how learning occurs, by using a range of technologies to support the teaching and learning process." (Lee & McLoughlin, 2010). Advancements in Information and Communication Technology (ICT) in the recent decades have prepared us to take on this challenge and find effective solutions to a large extent. Social media, audio and videos based educational content, videoconferencing platforms, online testing facilities etc have replaced traditional classroom activities to some degree. In India, there have been several supportive measures from the Ministry of Human Resource Development (MHRD) and University Grants Commission (UGC). Innovative interventions based on digital technology have been the main focus of alternatives to teacher led class room-based education.

Learning methods which use a computer connected to a network, which allows to study without any restriction of time, place or rhythm with any means (Cojocariu et al, 2014) are described variously as eLearning, online learning, open learning, web-based learning, computer assisted learning, blended learning, internet-based learning etc. This approach can be broadly divided into synchronous learning which is generally structured where the students attend live lectures and have real-time interactions with instructors; in asynchronous learning the educational material is not available in the form of live lectures or classes. Several benefits of online learning have been proposed which include easy accessibility even from rural and remote areas, flexibility where the learner can plan the schedule to their convenience less expensive owing to lower cost of transportation, accommodation, and cost of institution-based learning (Dhawan, 2020). Using various devices (e.g., mobile phones, laptops, etc.) for online learning is viable in synchronous or asynchronous environments. Students can learn and also interact with instructors and other students wherever they are (Singh and Thurman, 2019). Readiness for online learning (Warner et al, 1998) is an important determinant of effectiveness of online learning which consists of the students' preference of medium of delivery, their confidence, competence, self-reliance and trust in the application of newer technologies.

Seven factors have been proposed for an effective online education system which are reliable communication infrastructure, appropriate digital learning resources, friendly learning tools, effective learning methods, instructional organizations, effective support services for teachers and learners, and, close cooperation between governments, organisations and institutions (Huang et al, 2020). Effective online instruction is dependent upon well-designed course content, motivated interaction between the instructor and learners, instructors who are well-prepared and supported; perception of being an online learning community; and rapid technological advancements (Sun & Chen, 2016). Jena (2020) summarises the reasons for encouraging online learning during the pandemic. It allows learning at home by helping to maintain social distancing, provides effective learning environments, tenders complementary interactive support, permits learners study at their own pace, flexible scheduling, accessible from any location, with an internet connection and students can attend using their devices, provides real-time student monitoring and reporting, improving the image of institution by offering technological solutions that solve real problems. But there is little relevant information about the preparedness of the students to embrace new mediums of education and the effectiveness of these mediums. Flexibility and convenience are often cited as advantages of online learning platforms while internet connectivity issues and non-accessibility to suitable devices are the barriers. The curriculum has to be restructured to make it suitable for digital platforms but equally important is how the content would be delivered by the tutors and received by the learners which emphasises the importance of the processes involved in online learning, the perception, attitudes and preferences of the participants. In this background this study was undertaken aiming at exploring the current practices and experiences of online learning and teaching among college students who participated in a comprehensive online survey. Assessing their attitudes and perceptions regarding online learning also formed part of this study.

## MATERIAL AND METHODS

An online survey was conducted using a comprehensive questionnaire which was prepared after review of relevant literature with feedback from students, teachers and educational experts. The questionnaire consisted of various sections and questions covered the following areas demographic information of participants, background knowledge, experience and skills to use online class facilities, current experiences of using online classes, technical problems encountered and security concerns in relation to online classes, level of engagement during classes,

  

interaction with presenter and feedback, attitudes and beliefs in relation to online classes The survey link for the specially designed google form posted in closed social media groups was open for those who consent to respond. Statistical analysis was done using SPSS statistical package version

## RESULTS

### *Demographic Information of Participants*

There were 617 students who participated in the survey. Majority (84%) were females. Most (69.7%) of them belonged to the age category 20 to 30. Around 94% participants were single and from middle socioeconomic background. 69.7% were from a rural background. 31.1% students were pursuing a course in social work, 27.7% were dong other degree courses and 18.8% were nursing students. *(Table 1)*

### *Background knowledge, experience and skills to use online classes*

Vast majority of students (97.4%) reported their knowledge of English to be average or better. 99% students reported their confidence to use smartphones as average or better. A slightly fewer students (89.7%) reported their confidence to use computers as average or better. 65.8% were aware of online teaching methods before the pandemic but only 30.8% had used it before. 62.7% had experience of using smartphones for a period of 1 to 5 years. 33.2% had experience of using computers for a period of 1 to 5 years. 26.1% students reported that they have attended around 6 to 20 online sessions in the previous three months. *(Table 2)*

### Current experiences of online classes

The online platform used by around half the participants was Google meet (309, 50.1%) followed by Zoom (206, 33.4%). 48 (7.8%) used Microsoft Teams, 11 (1.8%) students each used Webex or Whatsapp. 8 (1.3%) used Go to meeting. Regarding the devices participants used to access online classes, 131 (21.2%) used multiple devices and the proportions are as follows: smartphone 561 (90.9%), laptop 170 (27.6%), desktop 20 (3.25%) and only two use Tablet. *(Table 3)*

### *Technical problems encountered and security concerns in relation to online classes*

495 (80.2%) encountered technical problems in relation to online classes at least 'sometimes'. When the participants encountered any technical problems, most of them (464, 75.2%) managed the problem themselves. 44 (7.1%) got help from the organisers, and 72 (11.7%) got help from people who were with them. 17 (2.8%) could not solve the problems at all. 324 (83.8%) feel they are either good or moderate in their own abilities to solve these technical problems. 424 (68.8%) worry about the safety of data and security while using internet-based platforms and 93 (15.1%) have a history of avoiding attending such meetings for fear of threat to security. *(Table 4)*

### *Level of engagement during online classes*

Majority (259, 42%) of participants are able to concentrate only for about 30 minutes at a stretch while attending online classes. 222 (36%) are able to concentrate for 30 to 45 minutes and 83 (13.5%) for 45 minutes to 1 hour. Only 37 (6%) can concentrate at a stretch for 1 to 2 hours and very few (7, 1.1%) can do it for more than two hours. *(Table 5)*

The average duration of sessions attended by most (49.5%) of students was 30 minutes to one hour. 57.3% students reported online learning methods easy or very easy to use and 97.4% students found the sessions useful in general. 74.2% were engaged or very engaged during the classes while 23.8% were distracted or very distracted. 73% get up and do other things during classes, 32.7% eat during classes and 62.7% get disturbed sometimes by others during classes. 13% always get distracted.

83.5% got opportunities to interact with the presenter while 9.9% did not get an opportunity to do so even when they wanted. 90.6% got opportunities to give feedback. 89.3% liked to give feedback. *(Table 6)*

### *Attitudes and Beliefs in relation to online classes*

Majority of the participants (450, 73%) are happy with the overall experience of online learning while 151 (24.5%) are not. Most of the students are in agreement that Internet based meetings are useful, easy to use, provide effective learning environment, offer real advantages over traditional face to face methods, increase access to people, are easy to learn, provide rich resources to participants than face to face meetings and are viable alternatives to face

  

to face meetings and teaching. However majority also report that when compared to face to face meetings, online meetings are less effective and there is less interaction in online teaching. *(Table 7)*

129 (33.3%) are definite they would use internet based learning and related facilities regularly in the future while 17 (4.4%) would not. Majority (212, 54.8%) report they may use it and 16 (4.1%) have marked 'don't know'. When asked what would the participants prefer if online teaching and direct face to face teaching by the same teacher presenter are offered, majority 339 (54.9%) reported that they prefer 'Direct face to face' teaching. 83 (13.5%) will choose online teaching over face to face teaching. 166 (26.9%) prefer both teaching mediums equally. 14 (2.3%) marked 'don't know' as their response.

## DISCUSSION

To the best of our knowledge this is one of the first comprehensive studies which closely looked at the experience of college students in attending online classes, their attitudes, perceptions and future plans. 617 students participated in the survey and the sample predominantly (84%) consisted of women. Most (69.7%) belonged to the age group 20 to 30 years. Majority (94%) of the participants were single, from middle socioeconomic background and from a rural background. Most of the sociodemographic characteristics of the participants in this study are similar to the large nationwide survey of 10,000 students across 400 cities conducted by Vidyasaarathi in 2020 (promoted by NSDL e-Governance) published in 'India Lockdown Learning' report, except for a male predominance of 62% in their study.

WhatsApp and Zoom Calls were the most preferred medium of 59 percent students for online classes; followed by 30 percent of students using their school's or college's online platform to attend online classes in the survey by Vidyaasarathi. In this study, the online platform used by around half the participants was Google meet (50.1%) followed by Zoom (33.4%). 7.8%) used Microsoft Teams, and 1.8% students each used Webex or Whatsapp. Most (34.2%) of those who responded among college students (34.2%) in a sample from West Bengal used the Zoom app for online learning, followed by Google classroom (33.4%) and YouTube live (14.7%). Sharing study materials than attending online lectures was done by many students due to poor internet connectivity. Whatsapp group was used by 39.4% of students, for getting study the materials from teachers and friends and 31.8% of students used Google Classroom for this purpose (Kapasia et al, 2020). In the study by Muthuprasad et al. (2021) majority of the respondents (62%) said that WhatsApp was the best way to communicate class updates. These findings demonstrate the wide variety of video conferencing platforms accessible for online learning, many of them providing free to use features. Skills to effectively use these platforms have become essential for successful participation in online learning and course organisers should be sensitive to the needs of the participants to provide adequate training to use all the useful features of these platforms.

Regarding the devices participants used to access online classes, 131 (21.2%) used multiple devices and the proportions are as follows: smartphone 561 (90.9%), laptop 170 (27.6%), desktop 20 (3.25%) and only two use Tablet. The findings from our study compare with that of Muthuprasad (2021) who reported the devices used by the students included smartphone (57.98%), laptop (35.83%), tablet (4.89%) and desktop (0.65%). In the nationwide survey, majority of students (79 percent) used smartphones to study online while 17 percent of students used laptops and computers and rest 4 percent students attend it through mediums like tablets. Though the figures are largely comparable between the two surveys, it is quite striking that 21.2% use multiple devices in this study sample which may be indicative of non-possession of a personal device which had to be shared between personal members. Kapasia et al (2020) highlighted in their study, 5.3% of students had to get devices from family members to attend classes at the time of their learning while 0.9% students hired them from neighbours. It would be appropriate to provide subsidised or free gadgets to selected students to ensure their learning; and the college, university and government should make necessary provisions for this. Preferential use of smartphones by students to attend online classes necessitate the learning platforms should be compatible for used in smartphone interface with full functionality.

### *Background experience, technical skills and data breach concerns*

English has often been considered the universal language of the internet though the situation has been changing with internet content in several regional languages becoming more easily available. However knowledge of English language is one of the determinants of effective internet use (Al-Hammadany & Heshmati, 2011). In this study vast majority of students (97.4%) reported their knowledge of English to be average or better. Technology is no longer innately innovative or new (Gordon, 2014). Technical skills form an integral part of internet use

  

competency (Mota & Cilento, 2020) which is essential for effective digital learning. 99% students reported their confidence to use smartphones as average or better. A slightly fewer students (89.7%) reported their confidence to use computers as average or better. 62.7% had experience of using smartphones for a period of 1 to 5 years. 33.2% had experience of using computers for a period of 1 to 5 years.

Technical problems arising while using online platforms are very common. 80.2% encountered technical problems in relation to online classes at least 'sometimes'. Most (75.2%) of the participants are able to manage these issues themselves. The teachers should be mindful there are students who have difficulties in solving these problems themselves and do not have the necessary skills to do so. There should be a clear plan as to what needs to be done in such situations including technical help which is easily accessible. It is encouraging to note that vast majority (83.8%) of students are confident in their abilities to solve any technical glitches associated with online classes. This reflects the tech-savvy nature of younger generation which should hold them in good stead in their future career related goals. Ideally we would want all students to be fairly confident and skilled in solving commonly occurring technical difficulties so that they do not miss on the classes sometimes due to easily solvable issues. Educational institutions should provide the students and teachers necessary training to address them and easy to use resource materials. Availability of easily accessible technical help should also be considered if the above measures fail. Familiarity with online teaching is an important factor which determines the readiness of the students. 65.8% of the students were aware of online teaching methods before the pandemic. 30.8% had used these facilities before which is in comparison with the findings of a study from West Bengal (Kapasia et al, 2020).

It has become clear there are students who are worried about data breach and online security. 68.8% worry about the safety of data and security while using internet based platforms and 15.1% have a history of avoiding attending sessions for fear of threat to security. With the clear possibility online mode of learning will continue in the near future, it would be the responsibility of those who organise the classes to allay the fears of these students with authentic information and ways to be safe while accessing online platforms. Data breach is a real worry among students which is not unfounded going by the news reports of hacking, phishing etc. Youngsters should be made aware of safe online behaviours and protecting their personal information. Though informal attempts at educating on safe internet practices are plenty, we suggest there should be a formal module by the educational institutions periodically on various aspects of being safe and diligent with Information Technology and Communications focusing on practical aspects and possibly an evaluation of their understanding on these broad issues.

***Engagement in online classes***

26.1% students reported that they have attended around 6 to 20 online sessions in the previous three months. The average duration of sessions attended by most (49.5%) of students was 30 minutes to one hour. In the study by Muthuprasad et al. (2021) 46% respondents preferred 45 minutes duration for each class. In this survey, 78% of students reported they were not able to focus on their classes for more than 45 minutes at a stretch. This emphasises the importance of periodic short breaks and mixing up of learning activities instead of continuous lectures. The instructors should be innovative enough to incorporate various stimulating activities small group discussions, instant projects etc. An overwhelming majority of students are able to concentrate only for less than an hour at a stretch during online sessions. This has to be factored in by the organisers and teachers while scheduling sessions to ensure maximum attention by the students. This calls for regular breaks to improve the effectiveness of the sessions. .

In this study, 57.3% students reported online learning methods easy or very easy to use. 97.4% students found the sessions useful in general. The effectiveness of online teaching greatly depends on the level of engagement students have with the content of presentation. In this study 74.2% reported themselves to be engaged or very engaged during the classes while 23.8% were distracted or very distracted. 73% get up and do other things during classes, 32.7% eat during classes and 62.7% get disturbed sometimes by others during classes. 13% always get distracted. 83.5% got opportunities to interact with the presenter while 9.9% did not get an opportunity to do so even when they wanted. 90.6% got opportunities to give feedback. 89.3% liked to give feedback. Research has shown that receiving summaries at the end of the class, availability of online class recordings for future use and taking screenshots significantly affect the effectiveness of teaching. Allocating time for questions and answers during the online class, posting regular announcements, and emailing reminders are also important factors. Group chat for questions and answers, diversifying means of content provision eg. case studies, providing and receiving feedback from students are also proposed as effective engagement strategies. (Abou-Khalil et al, 2021). There is a close interrelationship between the perception of online learning of students and interaction with their instructors (Hay

  

et al, 2004; Kim et al, 2005). The opportunity to interact with the instructor and the intensity and quality of such interactions play an important role in the quality of online education.

***Attitudes and beliefs in relation to online classes and its future use***

Majority of the participants (73%) are happy with the overall experience of online learning. Most of the students are in agreement that internet-based meetings provide effective learning environment, offer real advantages over traditional face to face methods, increase access to people, are easy to learn, provide rich resources to participants than face to face meetings and are viable alternatives to face to face meetings and teaching. However, majority also report that when compared to face-to-face meetings, online meetings are less effective and there is less interaction in online teaching which is comparable to another study where 60% of respondents agreed that the effectiveness to interact with the instructor is less in online classes when compared with face-to-face teaching (Muthuprasad et al, 2021).

33.3% of the participating students are definite they would use internet based learning and related facilities regularly in the future, 54.8% report they may use it while 4.4% would not. When asked what would the participants prefer if online teaching and direct face to face teaching by the same teacher presenter are offered, 54.9% reported that they prefer 'direct face to face' teaching. 13.5% will choose online teaching over face to face teaching. 26.9% prefer both teaching mediums equally similar to findings from another Indian study (Muthuprasad et al. 2021). In another study from India, 62.2% respondents preferred the blended form of learning, followed by 22.7% online and 15.1% off line learning (Bordoloi et al. 2021). The students surveyed were in favour of online education but they were uncertain if the quality of online education matches the traditional setup (Buzatu et al, 2020). Vidyasaarathi reported 75 percent of the students prefer attending real classrooms over online learning the reasons being, poor internet connection, difficult to focus and difficult to get doubts clarified while studying online. As discussed by several other researchers, the attitudes of students vary from study to study (Gaur et al, 2020). In this study most (88%) of the participating students report a favourable attitude in using online learning in the future. This brings in the need for educators to be sensitive and responsible in what they provide. However, as Camacho & Legare (2021) point out, for online teaching to be effective teachers ought to shift their approach from transmitting knowledge to sharing data and guiding learners. Transmitting knowledge to learners was considered to be the aim of traditional teaching methods while inspiring and guiding students need to be the hallmarks of current educational system.

It is encouraging the students and the instructors perceive online teaching methods as mostly positive but it has to be understood, along with several benefits there are several challenges too. Opportunities to access national and international experts on their respective subjects even in remote areas and availability of digital recordings for future use along with better use of time and pacing according to one's needs, cost effectiveness etc are some of the merits of online education Jena (2020). The demerits of online learning include; students from low-income families and disadvantaged groups suffer as they may not have high speed internet connection and devices, being at home may not be productive due to lack of self-discipline, inter personal relationship between students and teachers may be affected, lack of security of personal data (Jena 2020). It has been noted that there exists a digital divide and inequitable access to internet quality and data speed between urban and rural students and technological constraints are the biggest barriers to online learning (Muthuprasad et al, 2021)

Having experienced the benefits of online learning it is highly likely this approach continues to play a significant role in the future and a hybrid learning method may be the way forward. These findings assume great importance on the back of how prepared and ready are learners to accept this new form of education. For these flexible learning approaches to be effective and successful the learners need to be more responsible. Considerable efforts should be put in appropriate goal setting with self- monitoring.

## LIMITATIONS

This study has the natural limitations of a self-reported survey. The social desirability factor is self-reported surveys is an inherent challenge which we have tried to minimise by making it anonymous.

## CONCLUSIONS

The transformation has been sudden which happened in the midst of serious challenges occurring in all aspects of life. It is natural to assume this must have had a huge impact on their lives especially with no end date of the pandemic in sight. Instructors and students had to adapt to huge changes in the educational system in a short span

  

of time in the midst of uncertainties which is generally stressful which has to be borne in mind during planning processes. Any change introduced should take into consideration the digital divide between various groups of students; as it is well known that the poor and marginalised students would be further discriminated in this changed situations. There should be funding specifically for developing digital capabilities of educational institutions including training of instructors. Capacity building to take this initiative forward and effectively should be planned. There is scope for increased flexibility and convenience in online learning, but the teachers should mindful to incorporate the interactive nature of teaching and studying which would have happened in real classrooms.

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**REFERENCES**

Abou-Khalil, V., Helou, S., Khalifé, E., Chen, M.A., Majumdar, R., & Ogata, H. (2021). Emergency Online Learning in Low-Resource Settings: Effective Student Engagement Strategies. Education Sciences, 11(1), 24. https://doi.org/10.3390/educsci11010024

Al-Hammadany,F.H., & Heshmati, A. (2011). Determinants of Internet Use in Iraq. International Journal of Communication, (5), 1967-1989.

Buzatu, A.R., Cojoc, C., Cotovici, E., Spirache, M.C., Trandafir, R., & Paun, M. (2020) Students' perception of online education in the COVID-19 pandemic framework. Romanian Statistical Review (3) , 3-14.

Bordoloi,R., Das, P., & Das, K. (2021) Perception towards online/blended learning at the time of Covid-19 pandemic: an academic analytics in the Indian context. Asian Association of Open Universities Journal 16 (1) 41-60.

Camacho, D.J.,& Legare, J.M. (2021). Pivoting to online learning— The future of learning and work. Competency-based Education,6:e01239. https://doi.org/10.1002/cbe2.1239

Casey, J., & Wilson, P. (2005). A practical guide to providing flexible learning in further and higher education. Retrieved from http://qmwww.enhancementthemes.ac.uk/docs/publications/a-practical-guide-to-providingflexible-learning-in-further-and-higher-education.pdf

Cojocariu, V.M., Lazar. I., Nedeff, V., &Lazar, G. (2014). SWOT analysis of e-learning educational services from the perspective of their beneficiaries. Procedia-Social and Behavioral Sciences, 116, 1999–2003.

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. Journal of Educational Technology Systems, 0047239520934018. https://doi.org/10.1177/0047239520934018

Gaur, R., Mudgal, S.K., Kaur, S., Sharma, R. (2020) Undergraduate nursing students' attitude towards online classes during lockdown period in India: imposed or interested? Int J Community Med Public Health, 7:3371-7.

Gordon, N. A. (2014). Flexible Pedagogies: technology-enhanced learning. In The Higher Education Academy. https://doi.org/10.13140/2.1.2052.5760

Hay, A., Hodgkinson, M., Peltier, J.W., &Drago, W.A. (2004). Interaction and virtual learning. Strategic Change: Briefings in Entrepreneurial Finance, 13 (4), 193-204.

Huang, R.H., Liu, D.J., Tlili, A., Yang, J.F., Wang, H,H., et al. (2020). Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak. Beijing: Smart Learning Institute of Beijing Normal University.

'India Lockdown Learning' a report by Vidyasaarathi (a scholarship portal developed by NSDL e-Governance Infrastructure Ltd). https://www.expresscomputer.in/news/79-students-use-smartphones-to-study-online-report/62765/ August 27, 2020

Jena, P.K. (2020) Online Learning during Lockdown Period for COVID-19 in India. International Journal of Multidisciplinary Educational Research, (9), 5(8), 82-92.

Kim, K.J., Liu, S., & Bonk, C.J. (2005) Online MBA students' perceptions of online learning: Benefits, challenges, and suggestions The Internet and Higher Education, 8 (4), 335-344.

Kapasia,N., Paul, P., Roy, A., Saha, J., Zaveri, A., Mallick, R., et al. (2020). Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India. Children and youth services review, 116, 105194. https://doi.org/10.1016/j.childyouth.2020.105194

Lee, M.J.W., & McLoughlin, C. (2010). Beyond distance and time constraints: Applying social networking tools and Web 2.0 approaches to distance learning. In G. Veletsianos (Ed.), Emerging technologies in distance education (pp. 61–87). Edmonton, AB: Athabasca University Press.

Let Covid 19 not stop you from learning- ICT initiatives of MHRD& UGC. 25/03/2020 https://www.ugc.ac.in/pdfnews/1573010_On-Line-Learning---ICT-initiatives-of-MHRD-and-UGC.pdf

Mota, F.B., & Cilento, I. (2020). Competence for internet use: Integrating knowledge, skills, and attitudes. Computers and Education Open, (1), p. 100015.

  

Muthuprasad, T., Aiswarya, S., Aditya, K.S., & Girish, K.J. (2021). Students' perception and preference for online education in India during COVID -19 pandemic, Social Sciences & Humanities Open, (1) 100101.

Singh,V., & Thurman, A. (2019). How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). American Journal of Distance Education 33.4: 289-306. https://doi.org/10.1080/08923647.2019.1663082.

Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. Journal of Information Technology Education: Research, 15, 157-190.

UNESCO. (2020). UNESCO COVID-19 Educational disruption and response https://en.unesco.org/themes/educationemergencies/coronavirus-school-closures (2020)

Warner, D., Choy, S. (1998). Readiness of VET clients for flexible delivery including on-line learning, Research Report. ANTA, Brisbane.

  