



CEMCA

Students' Learning Experience during Covid-19:

A Study of Open Universities in India



**Students'
Learning Experience
during Covid-19:**

**A Study of
Open Universities in India**

The Commonwealth Educational Media Centre for Asia (CEMCA) is an international organisation established by the Commonwealth of Learning (COL), Vancouver, Canada, to promote the meaningful, relevant and appropriate use of ICTs to serve the educational and training needs of Commonwealth member states of Asia. CEMCA receives diplomatic privileges and immunities in India under section 3 of the United Nations (privileges and immunities) Act, 1947.

Editor: Prof. B. Phalachandra

Copyright © CEMCA, May 2022.



Report entitled Students' Learning Experience during COVID 19 is made available under a Creative Commons Attribution-Share Alike 4.0 License (international): <http://creativecommons.org/licenses/by-sa/4.0/> by CEMCA with permission of the research team.

For the avoidance of doubt, by applying this licence, Commonwealth of Learning and Commonwealth Educational Media Centre for Asia (CEMCA) do not waive any privileges or immunities from claims that they may be entitled to assert, nor do COL/CEMCA submit themselves to the jurisdiction, courts, legal processes or laws of any jurisdiction.

ISBN: 978-81-88770-43-4

While all efforts have been made by the team to check accuracy of the content, the representation of facts, principles, descriptions and methods are that of the researcher. Views expressed in the report are that of the researchers, and do not necessarily reflect the views of CEMCA/COL. All products and services mentioned are owned by their respective copyright holders, and mere presentation in the publication does not mean endorsement by CEMCA/COL. Every effort has been made to acknowledge and attribute all sources of information used in preparation of this material.

Layout and Design: Colorcom, New Delhi

For further information, contact:
Commonwealth Educational Media Centre for Asia
7/8, Sarv Priya Vihar
New Delhi - 110016
<http://www.cemca.org>

Printed and published on behalf of Director, CEMCA by Mr T K Kaul, Head Administration and Finance, CEMCA, 7/8 Sarv Priya Vihar, New Delhi - 110016, India.

Content Page

Acknowledgements	04
Research Team	05
List of Tables	08
List of Figures	09
Acronyms	10
Executive Summary	11
Chapter I: Background	14
Chapter II: Literature Review	16
Chapter III: Current Study	18
Objectives	18
Methodology and Research Tools	18
Sample	19
Procedures	20
Chapter IV: Issues and Concerns that affected ODL students during Pandemic?	21
Institution Profile	21
Participants Profile	23
Access to devices and internet connectivity	24
Students' ICT proficiency levels	25
Students' concerns during the pandemic	28
Participation in online classes	30
Students' preferred learning activities	31
Challenges faced by students	32
Opportunities created by the technology-enabled learning	33
Preferred modes of learning	34
Chapter V: Issues and concerns that affected Open Universities during Pandemic	37
Chapter VI: Improving Learning Experiences: Students Suggestions	41
Chapter VII: Improving Students' Learning Experiences: Suggestive Action Points	42
References	44

Acknowledgements

The COVID-19 pandemic impacted the delivery of online programmes of Higher Education institutions in general and Open Universities in particular. The impact has been felt not only by the institutions but also by students. The covid effect also created new learning opportunities for distance learners and challenges for institutions to explore innovative ways of handling those challenges.

The purpose of this research study is aimed to understand the experiences of distance learners during Covid-19 and how learners from Open Universities perceived the impact of Covid-19 on their learning. The other purpose of the study is to understand the experiences and the lessons learnt by the distance learning universities during the educational disruption in delivering their educational programmes.

The report is based on the students' responses from four Open Universities to an online survey conducted on issues such as accessibility of devices and internet connectivity, ICT proficiency, engagement in technology-enabled online learning activities, challenges encountered in learning during the pandemic, preferences of activities in online learning and learning and opportunities emerged during the pandemic. The report also includes the top management feedback on issues like impact of the pandemic on students learning in the Open Universities and initiatives undertaken to overcome the effects of the pandemic.

The four open universities participated in the survey are Dr. B R Ambedkar Open University Hyderabad, Andhra Pradesh, Netaji Subhas Open University Kolkata, West Bengal, Uttarakhand Open University Haldwani, Uttarakhand and Krishna Kanta Handiqui State Open University Guwahati, Assam.

We hope this report will assist informed educational leaders, stake holders of Open Universities and other higher education institutions to design and deliver effective online programmes.

We take this opportunity to appreciate the efforts made by the coordinators of the four Open Universities for facilitating data collection and developing the individual institutional reports.

We are thankful to Professor Madhu Parhar, Director and Team CEMCA for their continuous support, motivation and valuable suggestions to improve and complete this research report. We look forward to receiving your comments and suggestions for improving our work so that similar study can be done in other Open Universities.

Dr. Phalachandra Bhandigadi
Dr. Shiffon Chatterjee

Research Team

Phalachandra Bhandigadi, PhD, served as Professor of Education at Wawasan Open University (WOU), Penang, Malaysia from 2011 to 2020. Before joining Wawasan he was the Professor and Head, Department of Education, Dean of Instruction, and Director of International Diploma in Guidance and Counselling (IDGC) at the Regional Institute of National Council of Educational Research and Training (NCERT) in Mysore, India. He served at the Indira Gandhi National Open University (IGNOU), New Delhi for five years as a Senior Programme Officer. The major thrust of activities during the 40 years of his association with WOU, NCERT (New Delhi), and IGNOU included developing curriculum, teaching, and research and capacity building of personnel in developing instructional materials (print and non-print), delivery of materials/ instructions to target groups through face-to-face and distance mode (radio, television, and video conferencing) and training in conducting video conferences. He also designed and developed both macro and micro programmes/ projects and coordinated and monitored their implementation. He provided consultancy to major national and international agencies such as the Indian Space Research Organization, Intel, USAID, HP Lab, British Council of India, National Institute of Open Schooling, Centre for Environmental Education, Educational Development Centre (USA), Academy of Educational Development (USA), Commonwealth of Learning (Canada), Asian Development Bank/ Accenture, and the World Bank (India). He participated and presented papers related to distance education, ICT, and teacher education in various national and international conferences. He was a Fulbright Scholar (post-doctoral research) and was affiliated to Ohio State University, USA and did his research on Teacher Education - Distance Mode (bphala@gmail.com)

Sruti Sruba Bharali, PhD, is serving as an Assistant Professor in the Discipline of Computer Science in Krishna Kanta Handiqui State Open University, Guwahati, Assam since January, 2015. She started her career as an Assistant Professor in the Department of Computer Science and Engineering at Royal Global University from July 2012 to January 2015. She was awarded the Doctor of Philosophy (PhD) degree by Gauhati University in 2020 for her thesis 'Speech Recognition and Speaker Identification with reference to Assamese Language.' She qualified for the UGC-NET in Computer Application in March 2013. She has completed her MTech (Information Technology) from IIIT-Allahabad and her B Tech (Computer Science and Engineering) degree from Tezpur University. She specializes in the area of speech processing and her research areas include image processing and e-learning (srutisbharali@kkhsou.in)

Shiffon Chatterjee, PhD, was working as Senior Programme Officer (Online and Blended Learning) at the Commonwealth Educational Media Centre for Asia, New Delhi. She had conceptualized, facilitated, and monitored programmes to enable teachers and academic leaders in educational institutions in India and other countries of Commonwealth Asia to

leverage technology for open, online, and blended learning opportunities. In her role as faculty member at the E-Learning Research Lab, Amrita Vishwa Vidyapeetham, she contributed to learning design for e-learning technologies, curriculum design, teaching, and assessment in the virtual and in-person modes. She served as Institute Joint Coordinator for the MHRD-sponsored 'National Pedagogy Project' and led Train the Trainer workshops on effective teaching-learning strategies for the faculty of AICTE approved colleges. As Associate Faculty with IIT Bombay, she served as Mentor for faculty development programmes on ICT for Education; Pedagogy for Online and Blended Teaching-Learning. Prior to pursuing her PhD in Educational Technology from the Indian Institute of Technology Kharagpur, Chatterjee was a researcher with Hole-in-the-Wall Education Ltd., New Delhi (a joint-venture between NIIT Ltd. and the International Finance Corporation) where she designed and conducted research pertaining to technological and pedagogical innovations to facilitate learning among socioeconomically disadvantaged children in remote villages and urban slums across India and countries such as Cambodia, Botswana, and Mozambique. Chatterjee has participated as panel member and an invited speaker at different forums related to ICT for education, learner-centred approaches, pedagogy, and virtual interactive e-learning (schatterjee@col.org)

Anirban Ghosh, PhD, Professor of Commerce has been teaching post-graduate students for more than 15 years at the Netaji Subhas Open University. Ghosh is currently the Director of the Centre for Internal Quality Assurance (CIQA) in addition to two schools -- School of Professional Studies and School of Vocational Studies in the university. His areas of interest are taxation and finance. He has been instrumental in NAAC's Assessment and Accreditation process. Ghosh has published three textbooks on taxation and cost accounting. He has published six edited volumes as the Editor. He has published a number of research papers in international and national level peer reviewed journals.

Ghosh received the prestigious AAOU Staff Exchange Fellowship from Korea National Open University, South Korea (2010), Shanghai Open University, China (2014) and Universitas Terbuka, Indonesia (2017) to carry out his research.

Ghosh has a keen interest in technology-enabled learning to bring education to the doorstep of the thousands of higher education aspirants in remote corners. Currently, he is working as Course Coordinator (CC) of a 4-credit MOOC 'Corporate Tax Planning' (PG-Commerce) and 'Introduction to GST' for SWAYAM. Ghosh is the SWAYAM Coordinator of Netaji Subhas Open University. He has developed a number of MOOCs for NSOU (anirban1972@gmail.com)

Jeetendra Pande, PhD, is working as an Associate Professor in the Computer Science Department at the Uttarakhand Open University, Haldwani. He has to his credit more than 15 research papers in international journals, 12 papers in conference proceedings, three refereed books and one patent filed in Germany. His current area of interest include Cyber Security, Computer Forensics, Component Based Software Development, Education Technology, and Open Educational Resources.

Pande has also worked in the areas of Component Based Software Development and Cyber Security. He has been involved in developing

a pliability metric for optimal component selection for component-based software development. He has carried out many projects as the Principal Investigator sanctioned by national and international agencies. Pande is the Course Coordinator for two popular MOOCs on 'Introduction to Cyber Security' and 'Digital Forensics' offered through the SWAYAM portal.

Pande has been a reviewer for several archived journals at the international level including *International Journal Of Software Engineering & Knowledge Engineering* (World Scientific, Singapore), *Journal of Information Technology & Decision Making* (World Scientific, Singapore), and the *International Journal of Computer Systems Science and Engineering* (United Kingdom). He is a member of several academic and professional bodies in the area of computer science and distance education.

Pande was awarded a Gold Medal by the Indira Gandhi National Open University (IGNOU) for Innovation in Open and Distance Learning (ODL)-2018 by the Vice President of India Shri Venkaiah Naidu at IGNOU's 32nd Convocation held on April 3, 2019 at IGNOU headquarters, New Delhi. was also awarded fellowships by AAOU for 2018 and 2019 (jpande@uou.ac.in)

P. Madhusudhana Reddy, PhD, is the Director of the G. Ram Reddy Academy of Distance Education (GRADE) and Centre for Internal Quality Assurance Cell (CIQA). He joined Dr B. R. Ambedkar Open University in 1994 as Assistant Professor of Geology. He is Professor & Head, Department of Geology and Programme Coordinator for the MSc Environmental Sciences programme. Earlier he served as Director, Material Production Branch and Dean, Faculty of Sciences. He has published 32 research articles in different national and international journals/books. He has presented his research in different seminars and conferences nationally and internationally. He has visited the University of IOWA, USA 2000, and the University of Toronto, Toronto, Canada, 2005 and participated in the international conference (ICEST 2010) Bangkok, Thailand in 2010. He was a member on the editorial board for seven books on the environment published by B.S. Publications, Hyderabad. He is the recipient of the Best Teacher Award from the Government of Telangana, 2016 and the Acharya Devo Bhava Award by the Brainfeed Magazine, 2016. He received recognition as a research scientist by the National Geophysical Research Institute (N.G.R.I.-C.S.I.R), Hyderabad in 2016 and the Young Scientist award by DST, Government of India in 1996. He served as a CFE Committee member, State Pollution Control Board from 2008 to 2018 (pmsrap@rediffmail.com)

List of Tables

Table 3.1	Issues included in the research tools	19
Table 4.1	Participating institutions' profiles	21
Table 4.2	Profiles of students who participated in the research survey	23
Table 4.3	Students' perceived proficiency in using ICT for learning (by gender)	26
Table 4.4	Students' perceived proficiency in using ICT for learning by their age	26
Table 4.5	Students' perceived proficiency in using ICT for learning by their location of residence	27
Table 4.6	Students' perceived proficiency in using ICT for learning by the programme enrolled	27
Table 4.7	Students concerns during the pandemic (by Gender)	28
Table 4.8	Students' concerns during pandemic (by age)	29
Table 4.9	Students' concerns during the pandemic (by Location of residence)	29
Table 4.10	Students' concerns during the pandemic (by programme enrolled)	30
Table 4.11	Students' Learning Experience before and during/post pandemic period	30
Table 4.12	Student's engagement in online classes (by programme enrolled)	31
Table 4.13	Students' perceptions about various aspects across institutions	36
Table 5.1	Institutions' initiatives for overcoming the pandemic's effects	39
Table 6.1	Major suggestions provided by students	41
Table 6.2	Students' suggestions for improving the online learning experience across institutions	41

List of Figures

Figure 1	Online classes before the pandemic	12
Figure 1.1	Students' Enrolment in Open Universities during 2015 – 20	15
Figure 4.1	Devices used for online learning	24
Figure 4.2	Devices used by students by location of residence	24
Figure 4.3	Data packages used by students by location of their residence	25
Figure 4.4	Status of internet connectivity by students' location of residence	25
Figure 4.5	Students' perceived levels of proficiency in using ICT for Learning	26
Figure 4.6	Students' concerns during the pandemic	28
Figure 4.7	Students' preferred learning activities during and in the post-pandemic period	32
Figure 4.8	Challenges faced by students in their learning in the pandemic period	33
Figure 4.9	Students' degree of agreement on the opportunities provided by technology-enabled learning during the pandemic	34
Figure 4.10	Students' preferences for modes of learning during the pandemic	35

List of Acronyms/ Abbreviations

AISHE	All-India Survey of Higher Education
BRAOU	Dr B R Ambedkar Open University
CEMCA	Commonwealth Educational Media Centre for Asia
DEB	Distance Education Bureau
GOI	Government of India
ICT	Information and Communication Technology
IGNOU	Indira Gandhi National Open University
KKHOU	Krishna Kanta Handiqui State Open University
MOE	Ministry of Education
MOOC	Massive Open Online Course
NSOU	Netaji Subhas Open University
SIM	Self-Instructional Material
SOU	State Open University
SWAYAM	Study Webs of Active Learning for Young Aspiring Minds
TEL	Technology Enabled Learning
UNESCO	United Nations Educational, Scientific and Cultural Organization
UOU	Uttarakhand Open University

Executive Summary

The Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi, in collaboration with four State Open Universities (Dr BRAOU, KKHOU, NSOU, and UOU) representing different geographical regions of the country undertook a research in 2021-22 to understand the students' learning experiences, including the challenges faced by them during Covid-19. The study also aimed at eliciting feedback from the senior management of the respective universities about the pandemic's effect on Open and Distance Educational institutions in general, the institutions, the efforts that they made to meet to challenges which arose due to the pandemic and probable future directions in Open and Distance Education, in particular. In all 1,227 students participated in the online survey.

Key Findings

- Two-third of the respondents were male, one-third were female.
- 65 per cent of the respondents were in the age group 30 years and below, while 34 per cent were between 31 and 50 years.
- 48 per cent were enrolled in post-graduate degree programmes, 41 per cent were enrolled in undergraduate degree/post-graduate diploma programmes.
- 73 per cent of the respondents used smartphones for online learning and 20 per cent used laptops. This means the students were largely dependent on smartphones for online learning as these were the most accessible, affordable, and convenient device for them.
- 94 per cent rural and 85 per cent semi-urban students used mobile data packages.
- About 55 per cent rural, 61 per cent semi-urban, and 64 per cent urban students reported that the connectivity was good/very good. Between 36 and 45 per cent of the students had some difficulties in online learning due to connectivity.
- 48 per cent of the students felt that they were competent/very proficient in using ICT for learning. The remaining 52 per cent seemed to experience difficulties in the effective use of ICT for learning; 44 per cent of the respondents in the age group 30 years and below and 51 per cent in the 31-50 years age group perceived that they were very competent/proficient in using ICT for learning. More male students, as compared to female students, reported that they were competent/very proficient in using ICT for learning. Online classes increased during the pandemic in comparison to the pre-pandemic period. When asked whether online classes were conducted before the pandemic, 60 per cent of the students said yes, while 82 per cent said the online classes were conducted during/post-pandemic period. The percentage of students not engaged in online classes decreased from 25 per cent in the pre-pandemic period to 13 per cent during the pandemic. Hence, during the pandemic, there was an increase in the number of students participating in online classes (Figure 1).

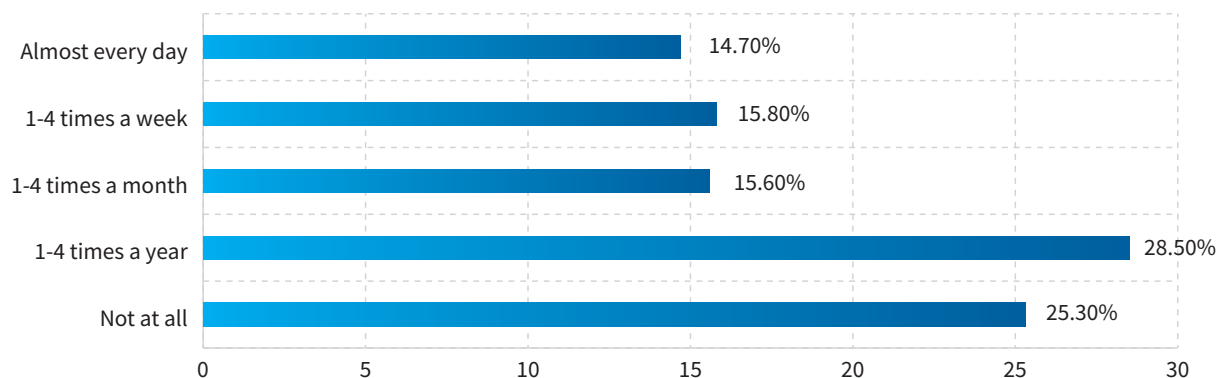


FIGURE 1: ONLINE CLASSES BEFORE PANDEMIC

- Physical health and mental and emotional well-being were a major concern for the students irrespective of their gender, age, residential location, and programme of study. Eighty-eight per cent of the male students and 91 per cent of the female students considered physical health the most/very important concern followed by mental and emotional well-being (87 per cent male and 88 per cent female students reported this as a major concern during the pandemic).
- Students' Engagement in Learning Activities during the pandemic were:
 1. Searching for academic information on the internet.
 2. Joining live online lectures/tutorial sessions.
 3. Using email for academic purposes.
 4. Learning from print-based learning materials.
 5. Completing and submitting assignments online.
- Challenges reported by the students
 1. Internet connectivity issues.
 2. Sense of isolation due to no in-person interaction with other students/tutors/counsellors.
 3. Lack of access to devices.
 4. Challenges in completing and submitting assignments.
 5. Inadequate ICT skills among students for learning online.
- Teaching-Learning Opportunities during the Pandemic
 1. Helped maintain continuity in learning.
 2. Offered flexible opportunities for learning.
 3. Provided multiple ways (audio, video, presentation, text) of learning the same material.
 4. Improved ICT skills.
 5. Enabled communication with peers and teachers.
- Students' preferred Mode of Learning
 1. Reading material only.
 2. Live lectures/tutorial sessions that could be recorded.
 3. Live interaction sessions for clarifying doubts and addressing queries.
 4. Live chats for communication with peers and instructors.

Variations were seen among students of the four institutions about their learning experiences during the pandemic. For example, for BRAOU and KKHOU students, the most preferred learning activity during the

pandemic was going through print materials. Live lectures/tutorial sessions were common preferred modes of learning during the pandemic among students of BRAOU, KKHOU, and NSOU and digital platforms/forums for posting queries and clarifying doubts among students of BRAOU, NSOU and UOU. However, there were also some commonalities in students' responses across the four institutions. For example, sense of isolation was a predominant challenge faced by the students. Similarly, learning opportunities provided by technology-enabled learning during the pandemic included maintaining continuity in learning and improving ICT skills.

- Students' suggestions for improving the learning experience
 1. Improving connectivity infrastructure.
 2. Technical support for technology-enabled learning.
 3. Guidelines on online/digital platforms, repositories, and educational resources, and mechanisms for monitoring online learning activities.

The top management of the four institutions felt that the day-to-day functions in the institutions were disrupted to some extent but could be managed in view of the measures taken. The impact on students was mainly that they felt a sense of isolation and faced issues concerning access to devices and connectivity. According to the universities' authorities, students also experienced some difficulty in coping with the soft copy of the materials. The pandemic did not have any impact on enrolment numbers. The institutions initiated various measures such as using the LMS extensively, the YouTube channel, using DTH to reach students, using WhatsApp for continuous communication, online enrolment and assessment, e-mentoring, online counselling, delivering online lectures, providing links to digital resources and repositories, and supplying recorded lectures to meet the challenges which arose due to the pandemic.

Chapter 1: Background

The demand for higher education in India is growing steadily. As per the All-India Survey of Higher Education-2020 (AISHE, 2020) [www.aishe.gov.in] report, the country saw an increase of 30.5 per cent in the number of universities in the last 5 years which went up from 799 in 2015-16 to 1,043 in 2019-20. It is interesting to note that there are 396 privately managed universities while 420 universities are in rural areas. The universities in rural areas constitute almost 40 per cent of the universities in India. A total of 38.5 million students are pursuing higher education with GER as 27.1.

The Covid-19 pandemic disrupted education systems and delivery at all levels from elementary to higher education. More than 220 million higher education students across the world were impacted by the crisis as institutions were compelled to shut down in-person teaching and learning and rapidly shift to technology-enabled remote learning as the new normal (The World Bank, 2021). India was no exception to this disruption. Institutions in India, whether conventional or distance mode, made emergency efforts to overcome problems and challenges which arose due to Covid-19 by making quick modifications to their strategies to ensure continuity in imparting education. The initial efforts were not as effective as both the education providers and receivers had to adjust to the new requirements. In comparison to conventional institutions, the distance education institutions had less difficulty in meeting the challenges involved in going for fully online education as they were already offering programmes following a blended approach.

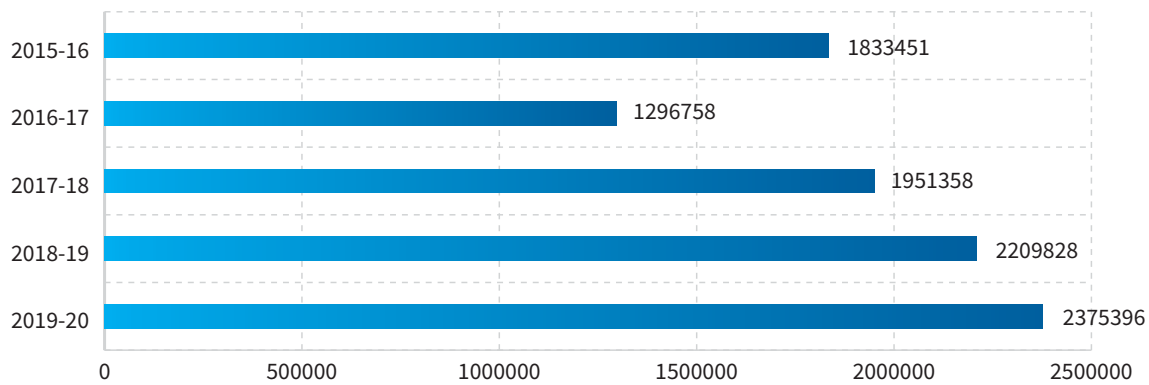
The Covid-19 pandemic created an opportunity for conventional institutions to look at online education as a viable strategy to overcome the problems which arose due to education disruptions during the pandemic.

Distance Education in India

Distance education has been playing an important role in imparting higher education as it has inherent advantages from the students' perspective in comparison to conventional universities. In India, Distance education started in 1962 with a pilot project on correspondence courses, which led to the establishment of the University of Delhi's School of Correspondence Courses and Continuing Education. This project's success led to the introduction of correspondence course institutes (later renamed as Directorates or Centres of Distance Education) in more universities.

Dr B.R. Ambedkar Open University, Hyderabad is the first open university of India. It was started in 1982 followed by the establishment of the Indira Gandhi National Open University in Delhi in 1985.

As of now there are 17 open universities which include one Central Open University (IGNOU) and 16 State Open Universities (SOUs). Distance education enrolment constitutes about 11.1 per cent of the total enrolment in higher education, of which 44.5 per cent are female students. Figure 1.1 gives the number of students enrolled in open universities in the last five years. The students' enrolment increased from 22.09 lakh to 23.75 lakh which is about a 7.5 per cent increase in enrolment during 2019-20 in comparison to enrolments in 2018-19 (AISHE, 2020).



Note: The enrolment numbers for private open universities are not included. The data reported in the figure refers to enrolments in 14 SOUs and one Central Open University.

FIGURE 1.1: STUDENTS' ENROLMENT IN OPEN UNIVERSITIES DURING 2015 – 20

In addition, there are 110 Dual Mode Universities which offer distance education programmes. From 2022-23, UGC is allowing 900 autonomous colleges in India to start offering online degrees. This will be a major reform in higher education for achieving 50 per cent GER by 2050. This is in alignment with the National Education Policy (NEP) 2020. Recently UGC also proposed that all HEIs should have 40 per cent online presentation of programmes compared to the present 20 per cent. It is important to note that as per the University Grants Commission's Guidelines (UGC) only non-technical courses can be offered through the online mode.

Hence, it can be inferred that the number of students benefitting from distance education/online programmes is likely to increase tremendously in the near future.

The impact of COVID-19 on elearning enrollments will be very significant. Fully online learning will grow and hybrid learning, integrated campus-based teaching will also grow further.

Chapter II: Literature Review

There is a growing body of literature on the impact of the Covid-19 pandemic on higher education. However, the effect on open universities, where, by definition, learning has been traditionally delivered at a distance, has not received as much attention (Aristeidou & Cross, 2021). Covid-19's impact on distance learning higher education students and learning activities was studied by Aristeidou and Cross (2021) with 555 undergraduate students of the Open University, UK. No significant differences in negative impacts were observed between students of different genders or disciplines but students reported that their study activities were highly impacted by mental health issues.

Aristeidou and Cross (2021) suggest several action points that suit students' needs during disruptions including developing more asynchronous learning activities that allow students to engage at a time of their choice, designing more accessible and handier technologies for student interaction, and creating assessment alternatives that promote revision and reflection like asynchronous timed exams or open-book assessments.

A study on trends in distance education during Covid-19 reported that institutions in South Africa used four strategies: 1) strengthening remote learning; 2) establishing discussion boards; 3) developing video conferencing, and 4) using social media innovatively to ensure smooth running of distance education during Covid-19 (Madiope & Mendy, 2021).

While studies on Covid-19 and distance learners are limited, there is an extensive body of literature on the use of ICT in online teaching and learning. Researchers have been showing a lot of interest in understanding the use of ICT in the context of learning, its impact on students, and making suggestions for effective use of ICT for learning. The main issues discussed include ICT competencies and skills required on the part of the students and teachers for engaging in online classes, the challenges faced, and students' engagement in online classes.

UNESCO has developed an ICT Competency Framework for Teachers (ICT-CFT) which seeks to help countries develop comprehensive national teacher ICT competency policies and standards and integrate these in overarching ICT in their education plans (UNESCO, 2011). The framework discusses three different approaches to teaching. The first is technology literacy, enabling students to use ICT to learn more efficiently. The second is knowledge deepening, enabling students to acquire in-depth knowledge of their school subjects and applying it to complex, real-world problems. The third is knowledge creation, enabling students, citizens, and the workforce they become, to create the new knowledge required for more harmonious, fulfilling, and prosperous societies.

Students of higher education have been using ICT to learn, create, interact with others, and for recreation. Naciri's (2016) study indicates that though there is no gender difference in terms of ICT access, male students are more confident in using technology for learning than female students.

Amini and Oluyide's (2020) study on ICT competencies among 186 distance learning students in selected study centres of the National Open

University of Nigeria reveals that only a few students could use technology and ICT to create knowledge even though many of the students showed high level of literacy in computers and technology. Students' qualifications were reported to influence their competency in ICT, but no gender-based differences in ICT competency were observed. The review and meta-analysis of research indicated no gender differences in ICT skills and use (Atika et al., 2021).

According to Albrahim (2020), faculty and instructors need to have certain online teaching skills and competencies for conducting online teaching effectively. These can be classified as:

- (a) pedagogical skills,
- (b) content skills,
- (c) design skills,
- (d) technological skills,
- (e) management and institutional skills, and
- (f) social and communication skills.

A study of Zimbabwe Open University's students revealed lack of sufficient time for study, difficulties in accessing and using ICT, ineffective feedback, and lack of study materials as challenges in open and distance learning (Musingafi et al., 2015).

Yeung and Yau's (2022) study on the perceptions of higher education students about online learning in Hong Kong under Covid-19 showed that students were emotionally distressed by online learning, particularly by the quality of feedback and clarity of course arrangements. Students developed self-regulated learning strategies for their learning. The use of time management apps and lecture videos highlights the increasing importance of technology for self-study.

Every country has different challenges in offering online education. In an edited handbook on online education (CEMCA, 2022) the following are listed as challenges in offering online education in India based on case reports in India and IGNOU:

- Infrastructure and connectivity for accessing online education.
- A robust online examination system with secure platforms, processes, and policies.
- Engaging in e-learning content and interactive platforms.
- Integrating SWAYAM with already existing popular platforms.
- A unified platform integrating several MOOCs offered by HEIs and pooling educational resources and subject experts.

A book on Guidance for Students Online Education During the Covid-19 Pandemic has been developed to maximize the value of online education during the pandemic. The guide is meant to serve as a navigator for online educational practices during the post-pandemic period. A guide book for teachers is also available (Zhao et al., 2020).

Chapter III: Current Study

The current research study aims to understand distance learners' experience during Covid-19 and how learners in open universities perceived the impact of Covid-19 on their learning. Accordingly, this study analyses the impact of the Covid-19 pandemic on students' academic activities and experiences from four open universities representing different regions of India.

The study is focused on the experiences and lessons learnt for distance learning universities during the educational disruption due to the pandemic. At the same time, as traditional institutions are shifting to online and blended systems to create flexible and remote learning opportunities for students, the experience of distance learners during the pandemic will be relevant to higher education institutions in general. The findings of this study are likely to help all higher education institutions in planning and delivering effective learner-centric, flexible, online, and blended learning opportunities to a large group of students.

Objectives

The objectives of the study were to:

1. Identify the challenges faced by the students of open universities in their academic work during Covid-19.
2. Examine the perceptions of students of open universities about the effect of the pandemic on their learning activities and experiences.
3. Identify the aspects, challenges, and opportunities of transition to online learning in open universities due to Covid-19.
4. Share findings and recommendations of the study with the leadership of open universities to facilitate appropriate steps to mitigate the effects of disruptions in distance learning.

Methodology and Research Tools

A mixed method approach with qualitative and quantitative methods was adopted for the study. Two instruments were used for data collection: survey questionnaire and interview schedule.

An online survey questionnaire for students was created to elicit their responses on their experiences of learning during the pre, during/post-Covid - 19 periods. A Google Form was posted for a month beginning from 1 November on the respective websites of four open universities for students to respond.

A semi-structured interview schedule was designed to get responses from the top management of the four open universities on their experiences and challenges in delivering programmes to students and how the universities handled the challenges during Covid-19.

The research tools were developed keeping these objectives in mind (Table 3.1).

TABLE 3.1: ISSUES INCLUDED IN THE RESEARCH TOOLS

ISSUES INCLUDED IN THE STUDENTS' SURVEY QUESTIONNAIRE	ISSUES INCLUDED IN THE SEMI-STRUCTURED INTERVIEW SCHEDULE
<ul style="list-style-type: none"> • Students' demographic/identification information such as gender, age in years, place of residence, programme enrolled in, and area of study. • Accessibility of devices and internet connectivity. • Proficiency in using ICT for learning. • Concerns such as health and disruptions in education felt by students during the pandemic. • Learning experience and engagement in technology-enabled and online learning activities. • Challenges encountered in learning during the pandemic. • Opportunities for learning which emerged during the pandemic. • Preference for activities in online learning. • Suggestions for improving the students' learning experience. 	<ul style="list-style-type: none"> • Overall impact of the pandemic on distance learning in relation to open universities and distance learners. • Effect of the pandemic on the institutions in relation to the organization structure, academic activities, enrolments (new and continuing students), and completion rates. • Initiatives undertaken to overcome the effects of the pandemic. • Changes that happened during the post-pandemic period as the 'new normal.'

Sample

Four open universities of the existing 16 State Open Universities were selected for the study to ensure representation from different geographical regions in India:

1. Dr B. R. Ambedkar Open University Hyderabad, Andhra Pradesh
2. Netaji Subhas Open University Kolkata, West Bengal
3. Uttarakhand Open University Haldwani, Uttarakhand
4. Krishna Kanta Handiqui State Open University Guwahati, Assam

Students from these four State Open Universities constituted the sample for this survey.

One person representing the top management (Vice-Chancellor/Registrar) from each of the four universities constituted the sample for the qualitative study.

Procedures

After identifying the institutions for participation in the study, CEMCA requested the authorities to identify a faculty member to coordinate the work at the university level, facilitate data collection, analysis, and preparing the institutional level research report.

The draft research tools (survey questionnaire and semi-structured interview) were finalized in discussions with the university coordinators. Further, a set of guidelines and issues to be covered in the report were prepared and circulated among the coordinators, followed by a discussion so as to have a common understanding among the coordinators and the CEMCA team about the tools and processes to be adopted for data collection, follow-up procedures, and the expected inputs in the report.

For the convenience of data analysis, the categories of age (6 to 3), programme enrolled (6 to 3), school affiliation/area of study (8 to 4), the types of devices used (5 to 3), speed of the internet connectivity (5 to 3), and frequency of engagement in online learning activities (8 to 5) were recategorized into smaller numbers.

- The main focus of this research is understanding the impact of the Covid-19 pandemic on academic activities and experiences of students from four open universities and how the universities handled the challenges which arose due to Covid-19. Among the several stakeholders involved in distance teaching and learning processes, feedback data was collected from only two stakeholders, students and the management. Stakeholders not included in the study include programme/course coordinators, instructors/academic counsellors, and support staff.
- The study is limited to the participants of four State Open Universities.

Chapter IV: Issues and Concerns that affected ODL students during the Pandemic

This chapter consolidates the profiles of institutions and students who participated in the survey. A feedback analysis of survey data of 1,227 students and the managements' responses to the semi-structured interview are presented and discussed in the context of the objectives of the research.

Institution Profile

As mentioned, four State Open Universities representing different regions of the country participated in the survey. Some basic information regarding the universities is given in Table 4.1.

TABLE 4.1. PARTICIPATING INSTITUTIONS' PROFILES

Institution	Year of Establishment	2019 (Pre-Pandemic) and 2021(during the pandemic) Enrolment Numbers	Number of Programmes	Number of campuses/ Centres	Number of Staff	Institutional Achievements
Dr B.R. Ambedkar Open University (BRAOU)	1982	61,829 61,343	39	181 learner support centres across Andhra Pradesh and Telangana	429 teaching and non-teaching staff and 6,000 part-time counsellors	BSc programmes ranked No. 1 among India's best distance learning institutions-2011 by Careers 360 of Outlook magazine; Indus Foundation Award for Education Excellence-2012 under the distance education category; and CSR top distance learning institutes of India in 2013 and 2014.
Krishna Kanta Handiqui State Open University (KKHSOU)	2005	15,820 13,725	46	300 learner support centres	45 teaching and 87 non-teaching staff members	COL award of Excellence for Institutional Achievement in distance education in 2011; Antarahstriya Yoga Diwas Media Samman Award from MIB, Gol; and Innovation Award from IGNOU.

Institution	Year of Establishment	2019 (Pre-Pandemic) and 2021(during the pandemic) Enrolment Numbers	Number of Programmes	Number of campuses/ Centres	Number of Staff	Institutional Achievements
Netaji Subhas Open University (NSOU)	1997	81,175 92,219	36 + 2 MOOCs	162 learner support centres	82 academic staff and 86 supporting staff	Excellence in Distance Education Award (EDEA) from COL in 2008; Best Innovative University Award from DNA & Stars group in 2016; Educational Excellence Award 2021 from Zee24ghanta news in 2021; and NAAC Accreditation -Grade A in 2021.
Uttarakhand Open University (UOU)	2005	55,902 58,006	80+	125+ Study Centres 8 Regional Centres	70 academic staff, 26 non-teaching staff, and 18 technical staff	MOUs with many national and international institutions and agencies for academic collaboration including the Open University of Sri Lanka (SLOU), Colombo; Monash South Africa (MSA); Uttar Pradesh Rajarshi Tandon Open University (UPRTOU), Prayagraj; and Ministry of Communication and IT, Government of India.

From Table 4.1 it can be observed that BRAOU is the first open university in India which was established in 1982. BRAOU has the most staff members and offers programmes to potential distance learning students in Andhra Pradesh and Telangana states. KKHOU has the highest number of learning centres.

An important aspect is that the enrolment numbers in all the participating institutions were not affected much during the pandemic in comparison to the enrolment numbers during the pre-pandemic period. NSOU's efforts resulted in enrolling the highest number of students during 2021. NSOU and KKHOU are accredited by NAAC.

Two of the universities, KKHOU and NSOU, received COL awards for institutional excellence in distance education. UOU has signed MOUs with many international institutions for academic collaborations. Each of the participating institutions made significant contributions to the cause of distance education in their regions.

Participants' Profiles

A total of 1,227 students' responses were consolidated along with their profiles with respect to age, gender, place of residence, programme of study, and area of the study (Table 4.2).

TABLE 4.2: PROFILES OF STUDENTS WHO PARTICIPATED IN THE RESEARCH SURVEY

Profile Variables		Dr B.R. Ambedkar Open University (BRAOU) N:342	Krishna Kanta Handiqui State Open University (KKHSOU) N:230	Netaji Subhas Open University (NSOU) N:433	Uttarakhand Open University (UOU) N:222	Total N: 1,227
Gender	Male	235	136	293	163	827 (67 per cent)
	Female	107	9	140	59	400 (33 per cent)
Age	≤ 30	206	136	306	155	803 (65 per cent)
	31-50	134	91	122	64	411 (34 per cent)
	> 50	2	3	5	3	13 (1 per cent)
Residence Location	Rural	144	115	222	94	575 (47 per cent)
	Semi-Urban	44	38	73	44	199 (37 per cent)
	Urban	154	77	138	84	453 (16 per cent)
Programme Enrolled	Certificate/ Diploma	18	9	41	74	142 (11 per cent)
	Degree/PG Diploma	134	99	198	67	498 (41 per cent)
	PG Degree and above	190	122	194	76	587 (48 per cent)
Area of Study	Sciences/ computer sciences	200	42	117	147	506 (41 per cent)
	Humanities/ education /social sciences/ vocational studies	124	171	290	63	648 (53 per cent)
	Lib science /management and commerce	18	17	26	12	73 (6 per cent)

Table 4.2 shows that one-third of the respondents were from NSOU (N:433), followed by BRAOU (N:342). Two-third of the respondents were male and one-third were female; 65 per cent of respondents' age was 30 years and below and 34 per cent were between 31 and 50 years. Further, 47 per cent of the respondents were from rural areas, 37 per cent from urban areas, and 16 per cent from semi-urban areas. 48 per cent had enrolled in post-graduate degree programmes and 41 per cent in undergraduate degree/ post-graduate diploma programmes, followed by 11 per cent in certificate programmes. 53 per cent of the respondents were from Humanities/Social Sciences and 41 per cent were from Sciences/ Computer Sciences streams.

Table 4.2 also shows that students were well represented in the survey in all categories except students above 50 years (1 per cent) and students enrolled in Management /Commerce/ Library Science (6 per cent).

The data collected from 1,227 students of four open universities is analysed and presented with respect to the following aspects:

- Access to devices and internet connectivity.
- Perceived proficiency in using ICT for learning.
- Students' concerns during the pandemic.
- Students' learning experience during online classes.
- Challenges faced by students in learning during the pandemic.
- Opportunities in learning during the pandemic.
- Students' preferences of modes of learning in the context of online learning.
- Students' suggestions for improving their learning experience.

Access to devices and internet connectivity

For students of distance education, one of the most important challenges was using the appropriate devices for learning. The type of devices accessed by students for online learning, the type of data package used, and its connectivity in relation to their residence's location is discussed in this section.

Figure 4.1 - Figure 4.4 show that about 73 per cent students used smartphone and 20 per cent used laptops. About 89 per cent of rural, 76 per cent of semi-urban, and 64 per cent of urban respondents used smartphones, which means the students were largely dependent on smartphones for online learning as it is the most accessible, affordable, and convenient device for students in general, and for students in rural and

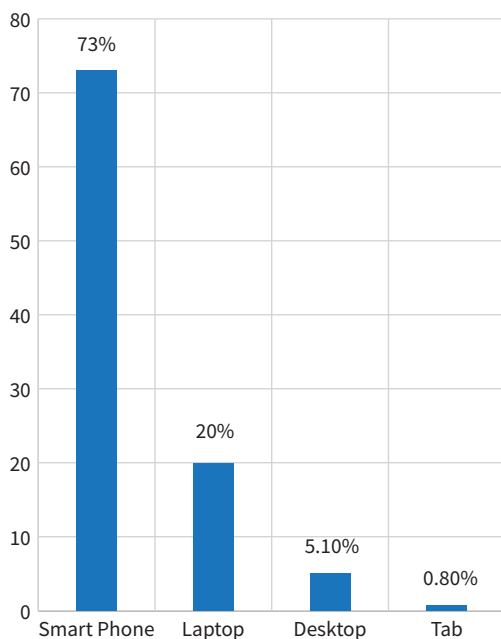


FIGURE 4.1: DEVICES USED FOR ONLINE LEARNING

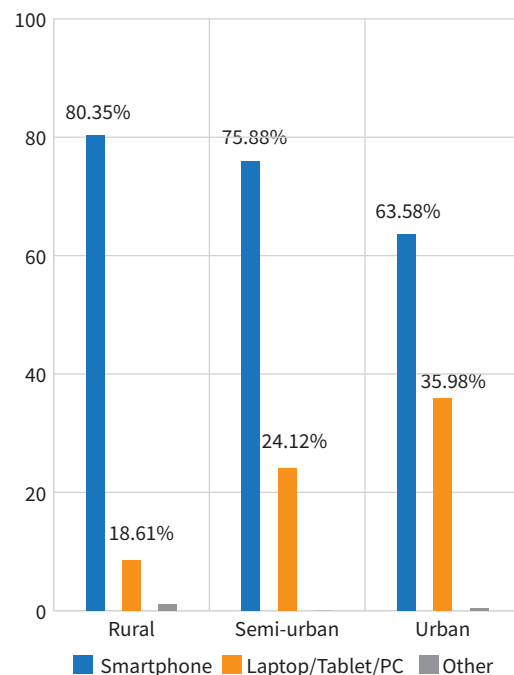


FIGURE 4.2: DEVICES USED BY STUDENTS BY LOCATION OF RESIDENCE

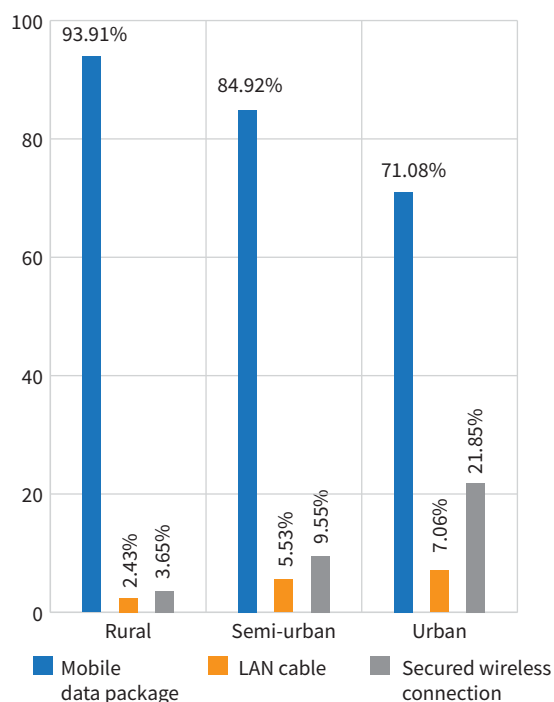


FIGURE 4.3: DATA PACKAGES USED BY STUDENTS BY LOCATION OF THEIR RESIDENCE

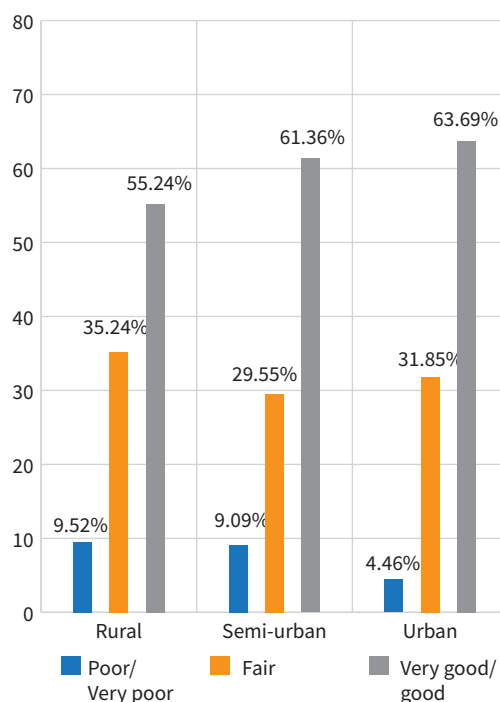


FIGURE 4.4: STATUS OF INTERNET CONNECTIVITY BY STUDENTS' LOCATION OF RESIDENCE

semi-urban areas. In view of the easily available option almost 94 per cent of rural and 85 per cent semi-urban students used mobile data packages.

However, if we look at internet connectivity about 30 to 35 per cent of the students reported that the connectivity was fair which may not be sufficient for effective online learning. About 55 per cent rural, 61 per cent semi-urban, and 64 per cent urban students reported that the connectivity was good/very good which is a critical requirement for online learning. This means about 36 to 45 per cent of the students had some difficulties with internet connectivity during online learning.

Students' ICT proficiency levels

ICT skills of a certain proficiency level are critical for online learning. The ICT skills required from the students' perspective include:

- Using a smartphone/computer and the internet.
- Information literacy.
- Processing information.
- Presenting information.
- Online communication and collaboration.

Students' success in learning in a distance education programme is likely to depend on these five skills.

The data collected from the students on their perceptions about their proficiency in using ICT for learning is analysed in the context of their gender, age, location of residence, and programme enrolled in (Figure 4.5).

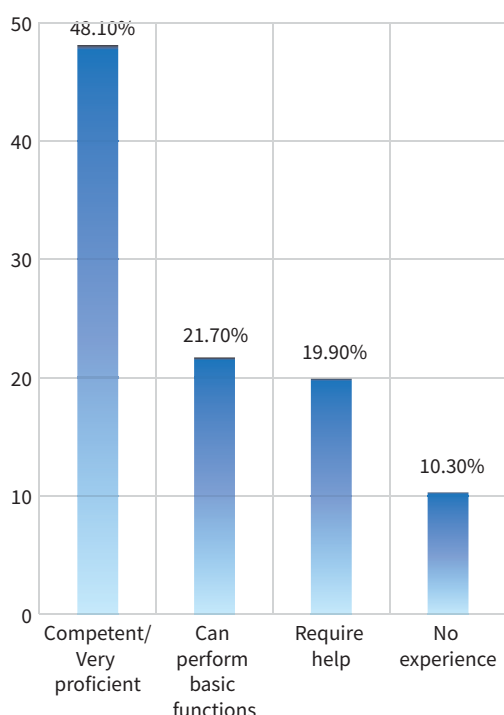


FIGURE 4.5: STUDENTS' PERCEIVED LEVELS OF PROFICIENCY IN USING ICT FOR LEARNING

Only 48 per cent students felt that they were competent/very proficient in using ICT for learning while the remaining 52 per cent seemed to have difficulties in the effective use of ICT for learning. In a further analysis an attempt was made to check whether there were any variations in the ICT proficiency levels among different categories of gender, age group, residence location, and programme of study (Table 4.3).

To be fully effective, online education requires students to be competent/very proficient in using ICT as the ability to perform basic functions may not be sufficient. From this perspective it can be said that about 53 per cent of the male and 38 per cent of the female students were competent enough in using ICT for learning. The data reported in Table 4.3 also indicates that about 9 per cent male and 12 per cent female students did not have any experience in using ICT. Further, 26 per cent female students required help in using ICT for learning. From this one can say that female students required more support for orientation/training in using ICT.

TABLE 4.3: STUDENTS' PERCEIVED PROFICIENCY IN USING ICT FOR LEARNING (BY GENDER)

Gender	Proficiency in using ICT for learning			
	No experience	Require help	Can perform basic functions	Competent/Very proficient
Male	9.31	16.81	21.04	52.84
Female	12.28	26.32	23.06	38.35

TABLE 4.4: STUDENTS' PERCEIVED PROFICIENCY IN USING ICT FOR LEARNING BY THEIR AGE

Age Group in Years	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/very proficient
≤30	11.47	20.70	21.20	46.63
31-50	7.79	18.25	23.11	50.85
>51	15.38	23.08	7.69	53.85

Note: There were only 13 respondents in the age group of >51 years.

From Table 4.4 it can be inferred that only 46.63 per cent of the age group 30 years and below and 50.85 per cent of the 31-50 years age group perceived that they were very competent/proficient in using ICT for learning. It can also be noted that 11 per cent of 30 years and below and about 8 per cent of 31-50 years did not have experience in ICT. Almost 53 per cent of the 30 years and below and about 49.8 per cent of 31-50

TABLE 4.5: STUDENTS' PERCEIVED PROFICIENCY IN USING ICT FOR LEARNING BY THEIR LOCATION OF RESIDENCE

Location	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ very proficient
Rural	12.87	22.43	21.22	43.48
Semi Urban	9.05	22.11	20.10	48.74
Urban	7.52	15.71	23.01	53.76

TABLE 4.6: STUDENTS' PERCEIVED PROFICIENCY IN USING ICT FOR LEARNING BY THE PROGRAMME ENROLLED

Programme Enrolled	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ very proficient
Certificate/Diploma	11.27	20.42	17.61	50.70
Degree/PG Diploma	12.65	21.49	21.89	43.98
PG Degree and above	8.02	18.43	22.53	51.02

years required additional orientation/training for using ICT for learning in the context of distance education.

From Table 4.5, about 43 per cent rural, 49 per cent semi-urban, and 54 per cent urban students perceived that they were very competent/proficient in using ICT for learning. As in the case of age groups, the students, irrespective of their residence's location, required support in using ICT for learning. The level of support varied between rural to urban students. Almost 13 per cent students in rural areas had not had any experience in using ICT for learning.

In Table 4.6 it can be noted that the PG degree and certificate/diploma students were more competent in using ICT as compared to degree students (6 to 7 per cent).

From this discussion on the students' perceived competency in using ICT for learning it can be concluded that most of the students enrolled in distance education programmes required some sort of training or a generic course on using ICT for learning with some hands-on experience to be effective online learners.

To conclude and respond to the research question mentioned earlier:

- There is a difference among male and female students in the perceived level of competency in using ICT for learning. More male students reported higher perceived levels of competency than female students in using ICT for learning.
- Percentage of students in the age group 31-50 years reported higher perceived levels of competency.
- Urban and semi-urban students reported higher perceived levels of competency than rural students in using ICT for learning.
- Students of degree and PG diploma programmes reported lower perceived levels of competency than students of certificate/diploma and PG degree courses.

Students' concerns during the pandemic

Students were asked to identify the concerns during the pandemic. The concerns listed in the order of importance were physical health, mental and emotional well-being, education disruption, and financial aspects (Figure 4.6).

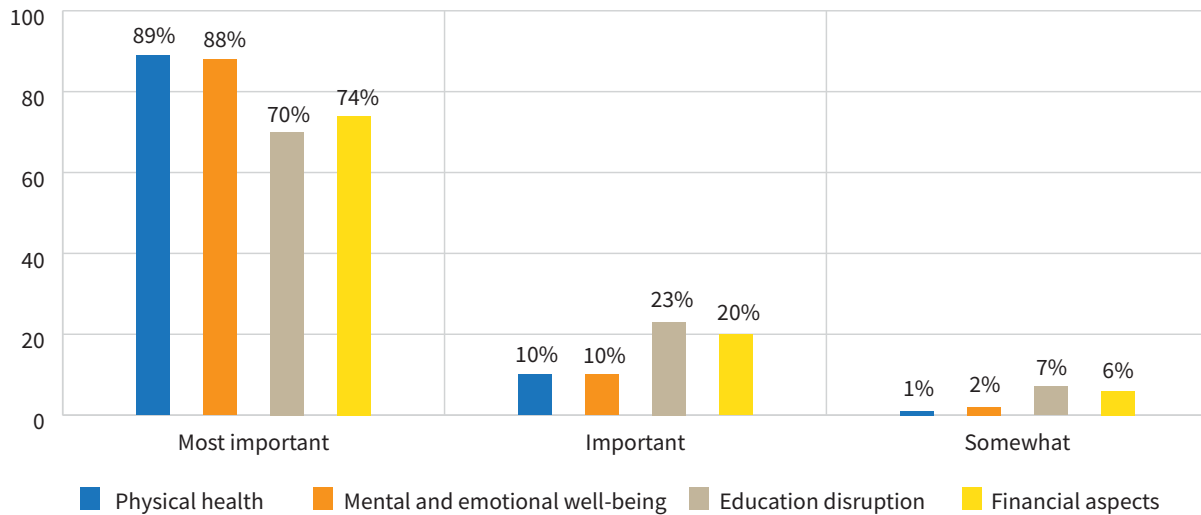


FIGURE 4.6 : STUDENTS' CONCERNS DURING THE PANDEMIC

Students' concerns were further analysed in relation to their background variables such as gender, age, area of residence, and programme enrolled in (Table 4.7).

TABLE 4.7: STUDENTS CONCERNS DURING THE PANDEMIC (BY GENDER)

	Male			Female		
	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important
Physical health	88.03	10.28	3.86	90.75	7.50	1.75
Mental and emotional well-being	87.42	10.04	5.79	87.75	10.25	2.00
Education disruption	70.13	22.01	17.91	69.00	24.50	6.50
Financial aspects	72.67	20.19	16.25	75.25	19.75	5.00

Table 4.7 shows that 88 per cent male and 91 per cent female students considered physical health as the most/very important concern followed by mental and emotional well-being (87 per cent male and 88 per cent female students) as major concerns during the pandemic. Education disruption and financial concerns were also considered as most important by both the groups.

TABLE 4.8: STUDENTS' CONCERNS DURING PANDEMIC (BY AGE)

	≤ 30 years			31-50 years			51 years and above		
	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important
Physical health	88.29	10.34	1.37	90.27	7.30	2.43	84.62	15.38	0.00
Mental and emotional well-being	87.17	10.71	2.12	88.08	9.00	2.92	92.31	7.69	0.00
Education disruption	71.36	22.04	6.60	66.18	24.82	9.00	84.62	7.69	7.69
Financial aspects	74.60	19.68	5.73	71.05	20.92	8.03	84.62	15.38	0.00

All the four aspects were of concern to different age groups. There is a clear indication that physical health and mental and emotional well-being were major concerns among all the three age groups during the pandemic period (Table 4.8).

TABLE 4.9: STUDENTS' CONCERNS DURING THE PANDEMIC (BY LOCATION OF RESIDENCE)

	Rural			Semi -Urban			Urban		
	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important
Physical health	86.61	10.96	2.43	89.95	8.54	1.51	91.39	7.73	0.88
Mental/ emotional well-being	85.39	11.48	3.13	88.94	10.05	1.01	89.62	8.39	1.99
Education disruption	70.96	22.09	6.96	72.86	23.62	3.52	66.89	23.40	9.71
Financial aspects	70.26	21.74	8.00	74.87	19.10	6.03	77.04	18.32	4.64

Like findings in relation to gender and age, physical health and mental and emotional well-being were major concerns among all the categories of students as per their residential locations (rural 87 per cent, 90 per cent semi-urban, and 81 per cent urban) (Table 4.9).

Table 4.10 shows that among the four concerns, 89 per cent of the respondents enrolled in certificate/ diploma programmes, 90 per cent in PG degree or higher degree programmes, and 88per cent in degree/ PG diploma programmes considered physical health as the most or very important concern. The other concern of mental and emotional well-being was considered the most important by 86 per cent of certificate/diploma and 88per cent of degree/PG diploma and PG degree students.

From the findings reported in this section it can be concluded that though all concerns were considered as important, physical health and mental and emotional well-being were more of a concern among the students irrespective of their gender, age, residential location, and programme of study.

TABLE 4.10: STUDENTS' CONCERNS DURING THE PANDEMIC (BY PROGRAMME ENROLLED)

	Certificate/Diploma			Degree/PG Diploma			PG Degree and above		
	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important
Physical health	89.44	9.15	1.41	87.75	11.04	1.20	89.78	8.01	2.21
Mental and emotional well-being	86.62	10.56	2.82	87.55	10.24	2.21	87.73	9.88	2.39
Education disruption	69.01	23.24	7.75	72.49	22.69	4.82	67.63	22.83	9.54
Financial aspects	73.24	23.94	2.82	74.70	20.08	5.22	72.57	19.08	8.35

Participation in online classes

This section presents details about the frequency of students' engagement in online classes during the pre-pandemic and pandemic periods.

Information was collected from the students on how many online classes they were engaged in before and during the pandemic. The respondents were asked to respond on how many times they had engaged in online classes, that is, whether they had engaged in online classes every day, 1-4 times in terms of days, weeks, months, or years. This data is presented in relation to the programme enrolled in.

About 60 per cent of the respondents mentioned that online classes were conducted before the pandemic while 82 per cent of the respondents mentioned that online classes were conducted during and in the post-pandemic periods, which is a significant increase. The percentage of students not engaging in online classes decreased by 13 per cent during the pandemic from 25.3 per cent during pre-pandemic period. The percentage of students engaging in 1-4 times a week/almost every day in online class increased by 14 per cent during the pandemic as compared to the pre-pandemic period (Table 4.11).

About 29 per cent of the respondents from certificate and diploma programmes were engaged in online classes 1 to 4 times a week and another 19 per cent almost every day while 25 per cent of the respondents

TABLE 4.11: STUDENTS' LEARNING EXPERIENCE BEFORE AND DURING/POST PANDEMIC PERIOD

Online Classes	Students' Learning Experience						
	Yes	No	How often students engaged in online classes				
			Not at all	1-4 times a year	1-4 times a month	1-4 times a week	Almost every day
Conducted online classes before Pandemic	60.2 per cent	39.8 per cent	25.3 per cent	28.5 per cent	15.6 per cent	15.8 per cent	14.7 per cent
Conducted online classes During/Post Pandemic	82.3 per cent	17.7 per cent	12.6 per cent	20.2 per cent	22.9 per cent	23.3 per cent	21 per cent

TABLE 4.12: STUDENT'S ENGAGEMENT IN ONLINE CLASSES (BY PROGRAMME ENROLLED)

Programme Enrolled	Frequency of students' engagement during online classes				
	Not at all	1-4 times a year	1-4 times a month	1-4 times a week	Almost every day
Certificate/Diploma	4.76	33.33	14.29	28.57	19.05
Degree/PG Diploma	22.22	25.00	16.67	11.11	25.00
PG Degree and above	11.63	25.58	25.58	27.91	9.30

from degree and PG diploma programmes engaged in online classes almost every day and another 11 per cent 1 to 4 times a week (Table 4.12). About 39 per cent of the students enrolled in PG degree and higher degree programmes engaged in online classes 1-4 times a week/almost every day. It is surprising to see that 22 per cent degree/PG diploma students did not participate in online classes. However, this percentage is much lower in case of certificate/diploma students (about 5 per cent) and PG degree students (about 12 per cent).

In conclusion we can say that **the frequency of participation in online classes differed during the pre-pandemic and pandemic periods and across programmes of study.**

Since the percentage of students not engaging in online classes or engaging in online classes 1 to 4 times a year is relatively high, this requires a further analysis to find out the underlying reasons for working out a strategy to address this.

Students' preferred learning activities

During the pandemic, institutions used digital platforms extensively to implement ICT-integrated pedagogy which provided opportunities for students to choose various learning activities for learning a given course content. The activities included audio-video lectures, lecture notes, online assignments, and print-based and e-self learning materials. In the survey, the students were asked to respond to each of the learning activities they preferred for learning on a point scale ranging from VGE-Very Great Extent, GE- Great Extent, SE - Some Extent, OLE - Only to a Little Extent, and NA - Not at All. This was scored from 5 to 1, the weighted average rating was calculated and preferred activities ranked as given in Figure 4.7.

It can be seen from the findings in this section that the weighted average rating ranged from 2.47 to 3.12 out of a possible maximum rating of 4.0. The top preferred learning activities during the pandemic included:

- Searched for academic information on the internet (3.12).
- Joined live online lectures/tutorial sessions (2.99).
- Used email for academic purposes (2.99).
- Learnt from print-based learning materials (2.88).
- Completed and submitted assignments online (2.88).
- Used social media for academic purposes (2.85).
- Accessed audio-video lectures from the university's website (2.82).

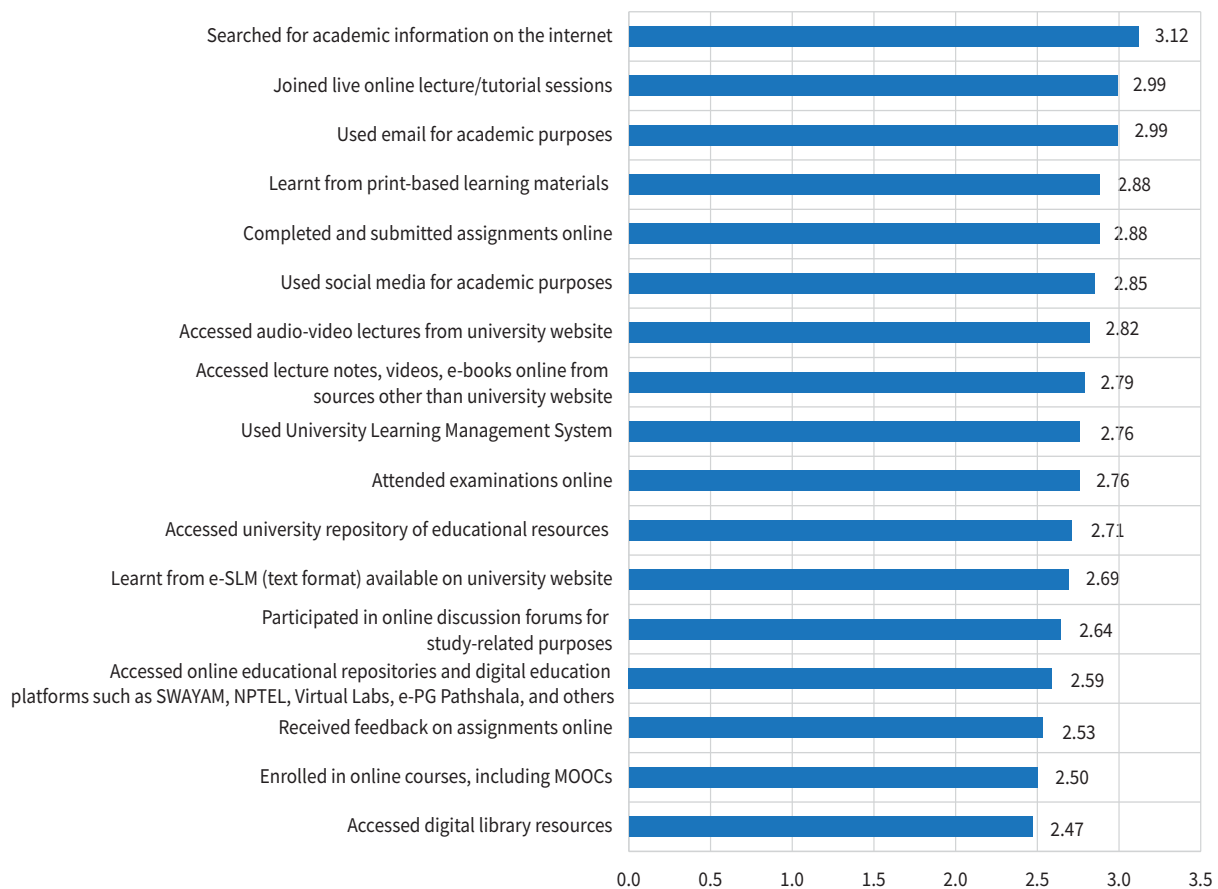


FIGURE 4.7: STUDENTS' PREFERRED LEARNING ACTIVITIES DURING AND IN THE POST-PANDEMIC PERIOD

Challenges faced by the Students

The pandemic forced students to face a lot of challenges in the context of their learning, which are presented in this section. The study focussed on challenges like internet connectivity issues, lack of access to devices, sense of isolation, fatigue due to continuous screen time exposure, and inadequate ICT skills for online learning.

The 18 identified challenges that distance learners can face were listed and students were asked to what extent they considered the challenge on a 5-point scale consisting of Most Important, Very Important, Important, Somewhat Important, and Least Important. This was scored from 5 to 1 (Most Important- 5, Very Important-4, Important-3, Somewhat Important-2, and Least Important-1) and the weighted average rating was calculated and ranked (Figure 4.8) shows that most of the challenges listed were experienced by the students during the pandemic. Among these, the following challenges were considered the most important:

- Internet connectivity issues (4.28).
- Sense of isolation due to no in-person interaction with other students/tutors/ counsellors (3.90).
- Lack of access to devices (3.88).
- Challenges in completing and submitting assignments online (3.82).
- Inadequate ICT skills among students for learning online (3.80).
- Difficulties specific to course of study, for example, access to science laboratories and field work (3.80).

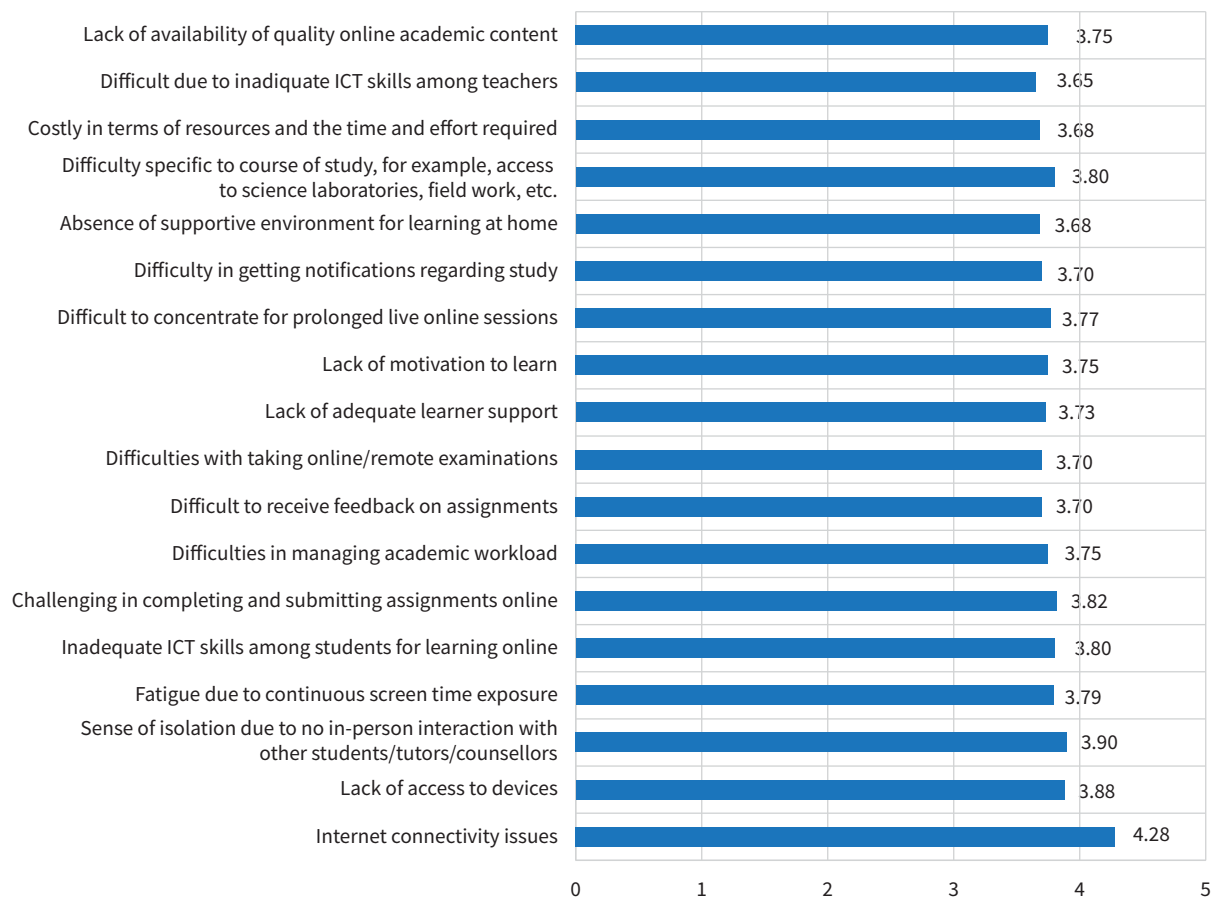


FIGURE 4.8: CHALLENGES FACED BY STUDENTS IN THEIR LEARNING IN THE PANDEMIC PERIOD

Opportunities created by technology-enabled learning

The pandemic also created various opportunities for learning in view of the technology-enabled pedagogy adopted by the distance education institutions for the delivery of content and students support systems and assessment. Institutions created discussion forums on LMS and WhatsApp groups for ensuring continuous interaction among peers and instructors.

In this context, a question was included in the survey questionnaire to know from the students the types of opportunities provided by technology-enabled learning during the pandemic. A list of 13 learning opportunities like helping maintain continuity in learning, offering flexible opportunities for learning, enabling communication between peers and teachers, providing learning material, group assignments, regular feedback from teachers, promoting participation in forums and discussions, promoting time management, and improving conceptual understanding and ICT skills were included in the questionnaire. Students were required to respond on a 5-point scale (**SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, and SD = Strongly Disagree**) to express their degree of agreement. Each item was scored by assigning 2 for SA, 1 for A, 0 for neutral, -1 for D, and -2 for SD. The item weighted average rating was estimated for each of the opportunities listed to understand students' choices. The analysed data is reported in Figure 4.9.

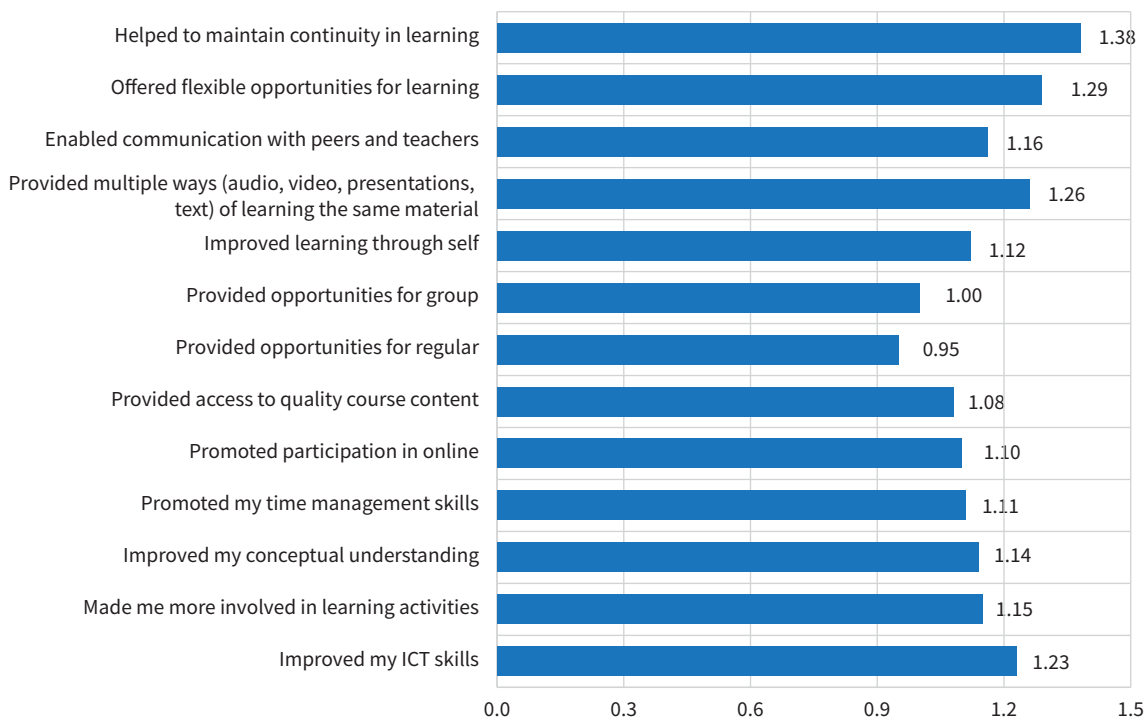


FIGURE 4.9: STUDENTS' DEGREE OF AGREEMENT ON THE OPPORTUNITIES PROVIDED BY TECHNOLOGY- ENABLED LEARNING DURING THE PANDEMIC

Figure 4.9 shows that most of the opportunities listed were relevant for the students. Among them, the following were considered the most important:

- Helped maintain continuity in learning (1.38).
- Offered flexible opportunities for learning (1.29).
- Provided multiple ways (audio, video, presentations, text) of learning the same material (1.26).
- Improved ICT skills (1.23).
- Enabled communication with peers and teachers (1.16).
- Made one more involved in learning activities (1.15).

Some additional observations made by the students include:

- Digital library and case studies provided should align with industry technology and internet speed will be important.
- The pandemic created a learning gap between those who had access to digital devices/media and those who did not have access to them.

Preferred modes of learning

The institutions provided course content inputs through synchronous activities such as online lecture sessions, live interaction sessions for doubt clarification, live lectures/tutorial sessions, and live chats for communication with peers and instructors. Asynchronous activities such as pre-recorded videos, reading materials, group activities, forums for posting queries and clarifying doubts, and email for communication with peers and instructors were also provided. Through these, the students had various options of choosing a mode for learning to suit their convenience. To understand students' preferences of learning in the pandemic a list of

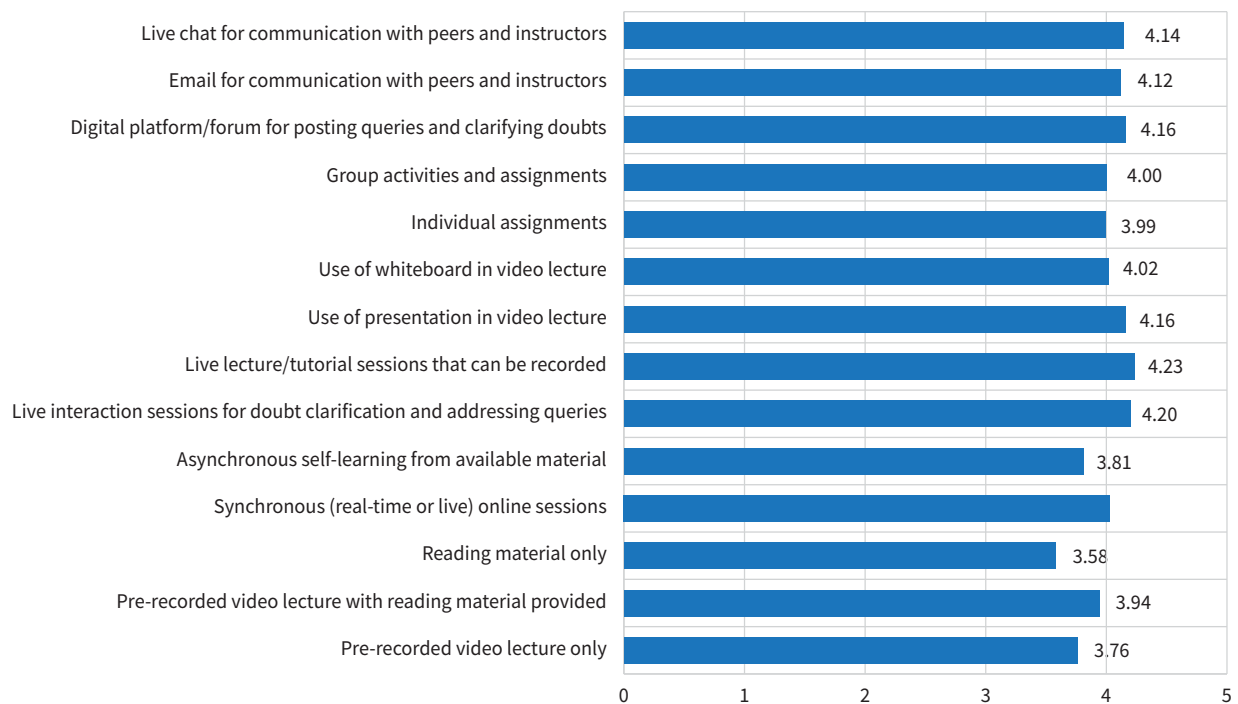


FIGURE 4.10: STUDENTS' PREFERENCES FOR MODES OF LEARNING DURING THE PANDEMIC

synchronous and asynchronous modes/activities were provided in the survey. Students were asked to identify the activity and the level preference on a 5-point scale ranging from Most preferred, very preferred, Preferred, Somewhat preferred, and Least preferred. Each item was assigned a score from 5 to 1 (Most preferred as 5 and Least preferred as 1). The weighted average was estimated for each of the statements on modes of learning to understand students' degree of preferences of modes of learning. The analysed data is reported in Figure 4.10.

All the modes of learning were preferred by almost all the students as the weighted average rating ranged from 3.58 (reading material only) to 4.23 (live lectures/tutorial sessions that can be recorded). It is worth noting that the top preferences include synchronous modes such as live lectures/tutorial sessions that can be recorded, live interaction sessions for doubt clarification and addressing queries, and live chats for communication with peers and instructors.

Some of the other observations made by the students include:

- The systems that have been designed are fair for supplementing offline and distance learning. However, we can have more detailed systems to complement but not replace offline learning or a parallel learning.
- Need more support from the study centres and availability of SLM on time. If we have any doubt, then there should be a helpline number 24*7.
- The pandemic created a learning gap between those who had access to digital devices/media and those who did not have access to them. It greatly affected the young learners especially school going children. This gap created by the pandemic will never be filled.
- YouTube channels helped a lot and students learnt easily and attempted exams. They were helpful.
- The pandemic hindered proper learning obviously, but online

learning also helped study according to one's own schedule and at one's own pace.

We can see slight variations among students of different regions (institutions) in their perceptions regarding preferred learning activities, challenges, learning opportunities, modes of learning, and suggestions Table 4.13. However, some of the aspects were common across institutions.

TABLE 4.13: STUDENTS' PERCEPTIONS ABOUT VARIOUS ASPECTS ACROSS INSTITUTIONS

	BRAOU	KKHSOU	NSOU	UOU
Top-3 most preferred learning activities during the pandemic	Print-based material. Live online lectures. Use of social media.	Print-based learning materials, e-SLM, audio-video lectures.	Digital library resources. Academic information on the internet, The University Learning Management System.	Submission of assignments online. Searched for academic information on the internet. Enrolled in online courses, including MOOCs.
Top-3 challenges faced by students during the pandemic	Sense of isolation. Access to science laboratories, field work, etc. Internet connectivity issues.	Sense of isolation. Difficulties with taking online/remote examinations. Completing and submitting assignments.	Internet connectivity. Sense of isolation. Conducting laboratory counselling/ field work.	Internet connectivity issues. Lack of access to devices. Sense of isolation.
Top-3 learning opportunities provided by technology enabled learning during the pandemic	Helped maintain continuity in learning. Improved ICT skills. Offered flexible opportunities for learning.	Helped maintain continuity in learning. Offered flexible opportunities for learning. Improved ICT skills.	Helped maintain continuity in learning. Provided multiple ways of learning the same material. Improved ICT skills.	Helped maintain continuity in learning. Improved ICT skills. Offered flexible opportunities for learning.
Top-3 preferred modes of learning during the pandemic	Live interaction sessions for doubt clarification. Live lecture/tutorial sessions. Digital platform/forum for posting queries and clarifying doubts.	Live lecture/tutorial sessions. Live chat for communication with peers and instructors. Email for communication with peers and instructors.	Live lecture/ live lecture/tutorial sessions. Use of presentations in video lectures. Digital platform/forum for posting queries and clarifying doubts.	<ul style="list-style-type: none"> • Live interaction sessions for doubt clarification and addressing queries. • Digital platform/forum for posting queries and clarifying doubts. • Email for communication with peers and instructors.

Chapter V: Issues and concerns that affected Open Universities during the Pandemic

This chapter discusses the feedback from the authorities of the participating institutions on the effect of the pandemic and the strategies that they adopted to overcome the challenges.

The chapter presents consolidated responses from the top management of the four institutions on the semi-structured questions. The interviews focused on the initiatives taken by the open universities' management in handling challenges in delivering programmes during the pandemic. With respect to this main research question, four sub-questions were framed and included in the interview schedule.

Question 1: What has been the overall impact of the pandemic on distance learning with respect to Open universities and Distance learners?

According to the BRAOU authorities no significant impact was observed with regard to teaching and learning in open universities as the open universities had implemented multimedia practices. During the pandemic, the university adopted online teaching, web hosting of course material, sharing of course material through emails, and started the BRAOU You Tube channel for the students' benefit.

However, some of the students expressed a sense of isolation due to the absence of F2F interaction. Soft copies of course material was not convenient to study from because of poor net connectivity, band-width problems, and cost of download/printing.

According to KKHSOU, the university adopted various technical devices and apps for use in online education and could manage the delivery of course content, students' support system, and students' assessment.

NSOU expressed the view that during the pandemic, day to day administrative functioning of the OUs was considerably impacted by the need to switch over to complete e-governance, establish reasonably good coordination among the officers and non-teaching staff, and arrange transport facilities for IT personnel. The learners were not as affected as the teaching – learning processes, as aspects like evaluation of assignments continued through the virtual platform. But the PCPs in the F2F mode, peer-to-peer interactions, and arranging practical classes particularly for science subjects at LSCs were considerably affected in the initial phase of the pandemic

According to UOU, most of the open universities are comparatively new and have adopted IT based processes. Therefore, it was easy for them to cope with the pandemic. However, the printing and delivery of self-learning material was largely affected due to the pandemic which was largely compensated by sharing e-resources with the learners. There was

an increase in students' adoption of internet based online processes for teaching and learning.

Question 2: How did the pandemic affect the Institution with respect to Organization structure, Academic activities, Enrolment, and Completion rates?

BRAOU established a Centre for Online Education and initiated steps for digital streaming of its content. The university purchased zoom licenses for online teaching, promoted online counselling, and used a YouTube channel for facilitating students' learning. Students' registration for examinations got affected; however, the enrolment numbers increased.

KKHOU made some internal arrangements. Faculty members assumed the responsibilities of e-mentoring. The university created a Centre for Online Education. With the existing organizational structure, the university could reinvigorate some of these mechanisms and with the help of these mechanisms it could address the issues and challenges. So, academically the university could sustain all the programmes and all the courses and evaluations. The university enrolment numbers were low though completion rates increased due to changes in the assessment strategy with MCQ items and open book exams.

Since NSOU already had a reasonably good ITC infrastructure the online classes and assignment evaluation processes continued without much difficulty. Examinations for the practical classes were arranged at the regional centres in batches. The passing rate was almost 98 per cent in four programmes.

UOU operated with minimum possible manpower, but the operations were performed smoothly with the help of ICT. UOU's enrolment rates were not affected, and the completion rate increased as the learners were given more flexible options to complete their assessments.

The other questions for which responses were solicited include:

Question 3: What were the initiatives taken by your university to overcome the effects of the pandemic? What changes do you anticipate in your university during the post-pandemic period as the 'new normal?'

The responses of VCs and Registrars of the participating open universities to these questions are given in Table 5.1.

TABLE 5.1: INSTITUTIONS' INITIATIVES FOR OVERCOMING THE PANDEMIC'S EFFECTS

	University Initiatives to overcome the effects of the pandemic	Changes anticipated in the University's Initiatives as the 'new normal'
Dr B.R. Ambedkar Open University (BRAOU)	<p>The university adopted:</p> <ul style="list-style-type: none"> • Online course materials and online counselling sessions. • BRAOU YouTube channel, radio, video, and teleconferencing. • Social media platforms and web portal for online services. • Online instructions to study centre co-coordinators. 	<ul style="list-style-type: none"> • Plans to build resilient structures to face all types of situations. • Adopt an online education approach by using multimedia practices with ICT in a phased manner keeping in view the infrastructure facilities of the students. • Started the Centre for Online Education. The university wants to introduce a proctor based online examination system.
Krishna Kanta Handiqui State Open University (KKHSOU)	<p>The university initiated:</p> <ul style="list-style-type: none"> • E-mentoring. • Online book examination, submission of assignments online. • Forming WhatsApp groups. • LMS developed using 4 quadrants. 	<p>The university:</p> <ul style="list-style-type: none"> • Invested in infrastructure, a multimedia studio, and the online??. • Directly engaged with the learners bypassing the learner support centres,
Netaji Subhas Open University (NSOU)	<p>The university adopted/initiated:</p> <ul style="list-style-type: none"> • Online admission process and online classes and interaction with students. • Rapid implementation of the ICT Policy and web-radio-MUKTAK. • Forming different media-based groups (on WhatsApp, google chat group etc.). • Training and capacity building of stakeholders • Strengthening the network infrastructure at HQrs, RCs, and other campuses. • Setting the Centre of Online Education (CoEdn). • Conduct of TEE, continuous evaluation (assignments), some practical classes in sciences etc. on the virtual platform. • Dedicated digital platform for teaching and learning (LMS).and user friendly MobileApp Web TV. • Introducing online short-term awareness programme through LMS—MOOCs. 	<p>The university's initiatives include two path-changing events/ matters almost simultaneously during the pandemic:</p> <ul style="list-style-type: none"> • Promulgation of UGC (ODL Programme – OL Programme Regulations), 2020. • The Covid-19 situation ushered in a different type of learning experience for the academia across the country. The age-old reservations and inhibitions about adopting ICT mediated learning were minimized.
Uttarakhand Open University (UOU)	<p>The university's initiatives include:</p> <ul style="list-style-type: none"> • Licenses procured for virtual conference (VC) solutions. • Capacity building of teachers and educational administrators to handle online teaching-learning tools. • Recoding and broadcasting of video lectures and uploading lecture notes on websites. • Online repository for educational contents • Telephonic-community radio-based counselling. • Populating the courses on LMS and offering online counselling. • Live sessions and LMS based discussion forums. • Online submission and assessment of assignments. • Initiating departmental blogs. • Broadcasting lectures through DTH channels (SWAYAMPBHA). 	<p>The university will have:</p> <ul style="list-style-type: none"> • Increased adoption of IT tools for teaching-learning. • More acceptance of online courses and programmes. • Increase in online courses. • Increase in ODL based research. • More innovating tools for teaching-learning. • Adoption of AI, Augmented Reality, and Virtual Reality tools in the teaching-learning process. • Adoption of tools for a proctored examination.

Conclusions

The feedback received from 1,227 students and four top management personnel from the participating open universities shows that students had difficulties in adapting to the changed system of blended teaching-learning as well as fully online education. The difficulties were related to devices, connectivity, and health concerns. Their feedback also points to a few challenges that they faced while pursuing their education during the pandemic. The students' responses to the survey highlight the various strategies that they adopted in the form of preferences for learning activities and modes of learning. The students' suggestions for improving their learning experience are noteworthy and will help institutions to think of strategies to address them. The responses received from the top management indicate the tireless efforts made by the institutions in handling the challenges which arose due to the pandemic and the future plans envisaged to deliver uninterrupted quality education to students.

Chapter VI: Improving the Learning Experience: Students' Suggestions

Students' suggestions for improving their learning experience by the institutions were solicited. A list of eight suggestions was provided. About 800 students responded. The students' responses are consolidated and given in Tables 6.1 and 6.2.

TABLE 6.1: MAJOR SUGGESTIONS PROVIDED BY STUDENTS IN PERCENTAGE

Suggestions	Students' Responses	
	Number of students provided the suggestion (N)	Students' Responses in percentage
Improve connectivity Infrastructure	833	67.9
Provide ongoing technical support to students and teachers for technology-enabled learning	773	63
Guidelines on online/digital platforms, repositories, and educational resources	765	62.3
Develop a mechanism for monitoring online learning activities	762	62.1
Strengthen quality assurance for online and blended learning	751	62
Improve access to devices	755	61.5
Provide more teacher training and capacity building opportunities in ICT skills	744	60.7
Teacher training and capacity building in online and blended course development, delivery, and teaching-learning strategies	707	57.6

TABLE 6.2: STUDENTS' SUGGESTIONS FOR IMPROVING THE ONLINE LEARNING EXPERIENCE ACROSS INSTITUTIONS

	BRAOU	KKHSOU	NSOU	UOU
Top-3 students' suggestions for improving online learning experience	<p>Improve connectivity infrastructure.</p> <p>Improve access to devices.</p> <p>Provide more teacher training and capacity building in ICT skills.</p>	<p>Improved the connectivity infrastructure.</p> <p>Strengthen quality assurance.</p> <p>Provide ongoing technical support to students and teachers.</p>	<p>Improve connectivity infrastructure.</p> <p>Provide ongoing technical support.</p> <p>Provide more teacher training and capacity building in ICT skills.</p>	<p>Provide more teacher training and capacity building in ICT skills.</p> <p>Provide ongoing technical support to students and teachers.</p> <p>Guidelines on online/digital platforms, repositories, and educational resources.</p>

About 60 per cent of the respondents checked seven of the eight suggestions listed for improvements. In view of these findings it can be inferred that the institutions need to focus their efforts on strengthening connectivity infrastructure, technical support for technology-enabled learning, guidelines on online/digital platforms, repositories, and educational resources, mechanisms for monitoring online learning activities, quality assurance, and access to devices to improve the students' online learning experience.

Chapter VII: Improving Students' Learning Experiences: Suggestive Action Points

The process of shifting towards fully online learning started in early 2020 due to Covid-19. But issues and concerns continue for policymakers and managers of distance education as the readiness/preparedness on the part of stakeholders is still in question. The readiness involves attitudinal changes; access to devices with high speed connectivity and skills in using ICT for teaching and learning on the part of the students, teachers and instructors; institutional readiness with respect to infrastructure facilities, technical, and support staff; programme readiness like structuring of course content and its development to make it compatible to the content delivery platforms and the development of assessment tools; and training of teachers in designing appropriate assessment tools and orienting students to familiarize them with online education.

The current research findings indicate that while several initiatives were taken up and implemented by the institutions, considerable efforts are still needed for offering fully online programmes/courses by the distance education institutions. Some efforts already made include investments in infrastructure, online enrolments and assessments, training of faculty in using ICT for teaching and learning, orientation of students in using ICT for learning and assessments, and using alternative platforms like LMS, YouTube, and WhatsApp for delivery of course content, student-teacher interactions, and communication.

Based on the findings of the current study on the learning experiences of distance learners of four State Open Universities, the following recommendations are made for promoting online education in higher education institutions in general and in open universities in particular.

1

Designing intensive training programmes for faculty members in using ICT for teaching and learning with focus on practical aspects. The course could be developed collectively by a group of institutions and offered to programme coordinators and other faculty members of the institutions. The required ICT skills and competencies for teachers include (a) pedagogical skills, (b) content skills, (c) design skills, (d) technological skills, (e) management and institutional skills, and (f) social and communication skills (Albrahim 2020). In this context, it is worthwhile to critically look at the existing courses on ICT used for teaching and learning and resources such as the UNESCO document on the ICT competency framework for teachers (UNESCO, 2011).

2

In view of the similarities in programmes and course content offered by the institutions it is desirable to develop a question bank to include different questions which could be shared across institutions.

3

A short training package for part-time academic counsellors/instructors may be designed. This may be designed with a focus on conducting online classes, conducting online assessments, providing continuous student support, and helping students overcome a feeling of isolation.

4

Many institutions have signed MOUs for collaboration. There is a lot of scope in these with regard to sharing resources, conducting joint training programmes, staff exchange programmes (short term), and collaborative research programmes. In this context it is worth making efforts with respect to the recommendations listed in points (1-3)

5

In view of the large proportion of students using smartphones for online education, it is important to redesign the existing course material to make it compatible with mobile learning and other online education platforms. Working out strategies for designing new courses keeping in view the features of online education and the students' preferences for learning activities, resources, and modes of learning as discussed in Chapter 3 will be useful.

6

Designing a short generic course on managing mental and emotional health specific to distance learning students will be very useful. This course could be offered as a MOOC.

7

Given that only 48 per cent of the students said that they were competent/very proficient in using ICT for learning there is a need to design a course on ICT skills for online learning and offering it as generic course to students.

8

In the 'new normal,' distance education institutions need to strengthen the efforts initiated by them during the pandemic. Since the open universities have made considerable progress towards online education it is worth considering the option of offering a blended approach in the first two semesters of a degree programme and switching over to the fully online mode from semester 3, which may result in better students' adjustment to the requirements of online education. Some specific programmes could be restructured to be fully online. The restructuring in terms of blended or fully online offerings will depend on the programme and area of study.

9

In a typical course, about 10 per cent of the students' time is for counselling, while the remaining time is for self-study, assignments, and their involvement in academic activities at the study centres. There is a need to work out the distribution of students' instructional time across different inputs for a course and ensure its implementation by the programme/course coordinators. The inputs may include study materials (self-study), attending tutorials (if it is blended), online participation, library research, telephone consultations with tutors, and assignments and examinations. This will help students understand the expectations and requirements of a course and may strengthen participation across different modes of delivery including online learning.

10

The 1,227 learners who participated in the current study were from various backgrounds in terms of programmes (certificate to PG degree programmes) and area of study (ranging from Computer Sciences to Humanities). To have a deeper understanding of issues and concerns of distance learners, it is desirable to focus on students of specific programmes and areas of study. For example, the programme and area of study with the highest enrolment number could be selected for further study.

References

- Albrahim, F. A. (2020). Online teaching skills and competencies. *Turkish Online Journal of Educational Technology-TOJET*,19(1), 9-20.
- Amini, C. M., & Oluyide, O. P. (2020). Analysis of ICT competencies among distance learning students in selected study centres of the National Open University of Nigeria. *Journal of Learning for Development*,7(1), 78-89.
- Aristeidou, M., & Cross, S. (2021). Disrupted distance learning: the impact of Covid-19 on study habits of distance learning university students. *Open Learning: The Journal of Open, Distance and e-Learning*,36(3), 263-282.
- Aristeidou, M., & Cross, S. (2021, July). The impact of the Covid-19 disruption on distance learning higher education students and activities. In *7th International Conference on Higher Education Advances (HEAd 2021)*. Universitat Politècnica de València.
- Atika O. Hasan, N., Abayomi-Alli, O., Hardaker, G., Scherer, R., Sarker, Y., ... & Maitama, J. Z. (2021). Gender differences in information and communication technology use & skills: a systematic review and meta-analysis. *Education and Information Technologies*, 1-34.
- CEMCA (2022). Handbook on Online Education in Commonwealth Asia, New Delhi
- Distance Education Bureau (DEB),www.ugc.ac.in.
- Madiope, M., Mendy, J., Pool, B., & Lincoln, L. (2021). Analysis Of Current Trends In Distance Education During Covid-19: A South African Higher Education Context. *The Online Journal of Distance Education and e-Learning*,9(1), 1-7.
- Musingafi, M. C., Mapuranga, B., Chiwanza, K., & Zebron, S. (2015). Challenges for open and distance learning (ODL) students: Experiences from students of the Zimbabwe Open University. *Journal of Education and Practice*,6(18), 59-66.
- Naciri, H. (2016). Gender Discrepancies in the Use of ICT in Higher Education. In *Conference proceedings, ICT for language learning*(p. 157).
- The World Bank (2021). <https://www.worldbank.org/en/news/immersive-story/2021/01/22/urgent-effective-action-required-to-quell-the-impact-of-covid-19-on-education-worldwide>
- United Nations Educational, Scientific and Cultural Organization (2011).UNESCOICT competency framework for teachers.
- Yeung, M. W., & Yau, A. H. (2022). A thematic analysis of higher education students' perceptions of online learning in Hong Kong under COVID-19: Challenges, strategies and support. *Education and Information Technologies*,27(1), 181-208
- Zhao, J.H. Wu, P.Z. and Liu, G. (2020). Guidance for Teachers: Online Education during COVID -19 Pandemic. Shenzhen: Centre for Higher Education Research, Southern University of Science and Technology.



CEMCA

Commonwealth Educational Media Centre for Asia

7/8, Sarva Priya Vihar, New Delhi 110016, India

Tel: +91-11-2653 7146 / 47 / 48

Web: www.cemca.org

