ODL Students Perceptions and Feedback on the Effect of Pandemic on their Learning Dr. B. R. Ambedkar Open University

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Preface & Acknowledgements

COVID-19 – possibly the largest pandemic the world has ever seen - led to an economic crisis probably more radical and global than ever before; as well as disruption of learning on an unprecedented scale. Access to and participation in learning was temporarily closed in March 2020. Closures have affected millions of learners at all levels. The rapid shift to e-learning, prompted by the pandemic, has exposed long-standing issues of inequality and a digital divide in India that must be addressed by future economic, education and digitalization policies. Inequalities are seen in the capacity of teachers, learning outcomes, digital infrastructure provided by the government and access to technology.

During the pandemic situation, DR.BRAOU has adopted a variety of resources to reach the students .In order to know the difficulties faced by the students the present study was conducted in association with CEMCA. The present study presents an understanding of the contextual factors that may have supported or hindered in ODL institutions.

The author expresses his deep sense of gratitude to the Hon'ble Vice-Chancellor of Dr.B.R. Ambedkar Open University, Prof. K. Seetharama Rao for the appointment as coordinator for the CEMCA Project. Prof. K. Seetharama Rao is the guiding force behind this study. The author conveys his sincere thanks to Prof. Madhu Parhar, Director, CEMCA for her constant support. The author is grateful to the Registrar, Dr. G. Lakshma Reddy and Dr. Siffon Chatterjee, the Project coordinator, CEMCA. The author expresses his thanks to Prof. Phala Chandra for his Critical review. The author is greatly indebted to Prof. V. Venkaiah Former Vice-Chancellor Krishna University& Former Rector, Dr. B. R .Ambedkar Open University and to Prof. Pushpa Ramakrishna Former Director Academic, Dr. B. R. Ambedkar Open University for their inputs and their help in developing the document. The author appreciates the help provided by Mr. Vasanth, Dr. Srinivasarao and Mr. K. Ramprasad in Data processing, Analysis, Tabulation and Presentation.

Prof. P. Madhusudhana Reddy
Director

I

INTRODUCTION

The University, initially known as Andhra Pradesh Open University, was set up on 26th August 1982 through an Act of the A.P. State Legislature (APOU Act, 1982). Subsequently, the University was renamed as Dr. B.R. Ambedkar Open University on 26 October, 1991 by the Government of Andhra Pradesh. The establishment of this University, the first of its kind in India, heralded an era of affirmative action on the part of the Government of Andhra Pradesh to provide opportunities of higher education to all sections of society to meet the changing individual and social needs. All the 39 programmes offered by the University are recognized by the University Grants Commission, New Delhi. The motto of the University is "EDUCATION FOR ALL".

This innovation in distance education led to the opening of the portals of higher education to a variety of potential students like housewives, farmers, skilled and unskilled labour, jawans, policemen, etc., who would otherwise not be able to acquire new skills and higher qualifications. Even prison inmates under life sentence also enroll themselves as students and pursue education through exclusive study centers at Central Prison - Cherlapally, Warangal, Rajahmundry, Visakhapatnam, Kadapa and Nellore.

The university achieved the following recognitions

- B.Sc. programmes Ranked No-1 among India's best distance learning institutions-2011by Careers 360 of OUT LOOK magazine
- Indus Foundation Award for Education Excellence-2012 under distance education category.
- CSR top distance learning institutes of India award 2013 and 214
- Looking back at the achievements, over three decades, the University has gained a prestigiousand enviable position in the society by:
- Providing access to large number of non-formal learners to the undergraduate programmes

- Designing courses innovatively as Foundation Courses, Core Courses and ApplicationOriented Courses
- Producing quality materials for interactive learning in Telugu, English and Urdu

- Setting up a wide network of support services
- Widening access to research, postgraduate and professional programmes through thedistance mode
- Giving hands-on training for laboratory practice in Science and Technology Courses
- Using multiple modes (Print and Electronic) for delivery of instruction.

The Vision

Dr. B. R. Ambedkar's social philosophy of education as a means of creating an egalitariansociety is the vision of this University. Access to relevant quality education and training programmes for diverse sections of society with a focus on hitherto deprived sections at lower costs by using the modern technologies in teaching-learning processes as well as inadministrative and support services is the goal of this University. The University programmes aim at making education and training instruments for living and for makinga living.

The Mission

Enrichment of on-going academic programmes

* Competency building through education and training programmes
* Interactive individual based teaching learning processes;
* Reliable and credible student evaluation systems;
* Result oriented, accountable and transparent administrative and logistic support systems;and
* Research, innovation, training and networking for system development and staff development.

Objectives of the University

* To provide educational opportunities to those students who could not take advantage of conventional institutions of higher learning.
* To provide equal educational opportunities for higher education through distance mode for a large segment of the population, including those in employment,

women (includinghousewives) and adults who wish to upgrade their education or acquire knowledge and studies in various fields.

* To provide flexibility with regard to eligibility for enrolment, age of entry, choice of courses, methods of learning, conduct of examinations and operation of the programmes.
* To complement the programmes of the existing Universities in the State in the field of higher learning so as to maintain the high standards on par with the best universities in the country.
* To promote integration within the State through its policies and programmes.
* To offer degree courses and non-degree certificate courses for the benefit of the workingpopulation in various fields and for those who wish to enrich their lives by studying subjects of cultural and aesthetic values.
* To make provision for research and for the advancement and dissemination of knowledge.
* To serve as a source of continuing education, consultancy and to provide equal access to knowledge and higher education.

Table-1: Number of students enrolled since inception, graduated and number on roll:

Year (for reference)	Number enrolled since inception	Graduated in that particular year	Number on roll in that particular year
2017	18,41,693	37,397	1,45,643
2018	18,96,942	35,150	1,28,621
2019	19,58,771	35,336	1,16,354
2020	20,13,933	19,223	1,13,555
2021	20,75,276	14,079	1,24,253

It was observed that there is a decline in the enrolment since the government of Telangana and Andhra Pradesh have extended complete fee reimbursement and scholarships to all the students enrolled in the conventional colleges/ Universities. In Dr. B. R. Ambedkar Open University no such facility is available. Students have to pay fee from their own resources. The average age of the students in Dr. B. R. Ambedkar Open University is around 20 years only. At this age the students prefer conventional institutions rather than distance educational institutions because of benefits provided there. Apart from this, the university introduced

Choice Based Credit System (CBCS) in 2017. With this, the number of courses to be learned by the students has increased and it might be one of the reasons for the decline of enrolment from 2017. Further in 2020-21 the pandemic situation also contributed for the decline of enrolment. The significant rise in enrolment during 2021-22 confirms that the student community accepted the CBCS system along with the reduced impact of pandemic.

The university is offering the academic programmes through 181 learner support centres located in both the States of Telangana and Andhra Pradesh. Among these centres, some are exclusively allocated to offer special programmes such as Education, Special Education, Healthcare Management etc. A total of 429 staff members are working in different capacities as Teaching and Non-Teaching staff in the university headquarters located in Hyderabad. Around 6000 Part Time Counsellors are teaching in the 181 learnersupport centres.

II

Strategic directions/plans envisaged and implemented during pandemic for distance teaching and learning

Key modalities of distance learning adopted in the institution before pandemic

i. ***Printed course material:*** Without collecting any additional fee, printed course materials are supplied to every student who gets admission in the university. These materials are developed by eminent subject experts from different universities and printed by the university. These course materials are being supplied to the students either through learner support centres (Study Centres) for urban students or through the postal department for rural students.

ii. ***Face- to- face counselling:*** The University arranges face- to- face counselling in the learner support centres on Sundays and public holidays in the form of contact classes.

iii. ***Laboratory practicals /training:*** The practical training classes are organised in the Regional Coordination Centres (RCCs) as per the UGC regulations.

iv. ***Audio cassettes:*** The Audio lessons prepared in different subjects by subject experts and academics of the University are recorded in the University studios and aresupplied to the students as per their request.

v. ***Video cassettes:*** The video lessons prepared in different subjects by subject experts and academics of the University are recorded in the University studios and aresupplied to the students as per their request.

vi. ***Radio broadcast of lessons:*** The audio lessons are broadcast through All India Radio at fixed times, according to a schedule. The time table of the broadcast schedule is circulated to the learners from time to time.

vii. ***Telecast of lessons:*** The Video lessons prepared with the support of eminent teachers are telecast through Doordarshan at fixed times, according to a schedule. The time table of the telecast schedule is circulated to the learners from time to time.

viii. ***Supply of Compact discs with audio and video lessons:*** The audio and video lessons are supplied in the form of compact discs (on request) according to the options selected by the learners.

ix. ***Teleconferencing through Doordarshan:*** Every Sunday the university organizes live teleconference programmes from 2pm to 3 pm through Doordarshan with expert resource persons. It is a two-way audio and one way video communication between students and subject experts.

x. ***Summer/Winter Schools:*** Some extensive teaching classes are arranged in the learner support centres to orient the students before the commencement of examinations.

III

Changes made to Course materials design and delivery during Pandemic

During 2019-20 and 2020-21 the following changes were introduced

1) ***Web hosting of course material***: The e-content prepared in the form of text, audio, video modes are placed in the university website and each student is provided a password to access the content as per his/her optional subjects. The university collects the mobile numbers of the learners at the time of admission. The password is communicated to that mobile number.
2) ***Supply of e-content of course material to students through e-mail:*** About 50% of the students have submitted their mail IDs at the time of admission. The university supplied the e-content to the students through e-mail. With this experience, now the university has made it mandatory for the students to submit mail IDs at the time of admission.
3) ***On- line teaching through zoom platform:*** Immediately after the announcement of restrictions for face- to- face counselling classes in the learner support centres, the university procured about 40 licenses of zoom and organized online teaching for the students. For this approach the university availed of the services of eminent teachers to undertake the online teaching. To organize these online classes a centralized computer centre was established at the headquarters and all the internal teachers participated and monitored the online classes. The schedules were circulated to the students through personal communication in the form of SMS and also the information was given wide publicity through print and electronic media. The students were supplied with necessary links and Passwords to join the zoom sessions.
4) ***Placing video lessons in the BRAOU YouTube channel:*** The pre-recorded video lessons were placed in the YouTube channel and also linked to the university website. This enabled the students to learn as per their convenience.
5) ***Placing Audio lessons on the university website:*** About 1500 pre-recorded audio lessons were uploaded on the university website.
6) ***Telecasting of lessons through T-Sat (KU Band) Government of Telangana:*** The video lessons recorded were telecast through the T-Sat Channel and the schedules

were intimated to the students. The students can view these programmes staying in theirresidence.

7) ***The practical training programmes (Experiments):*** The practical training programmes were offered through blended mode. 60% of experiments were recorded and webhosted. The remaining 40% were conducted once the lockdown conditions were relaxed by following standard operating procedures (SOP).

8) ***Contactless admissions:*** During the pandemic times the university arranged contactless admission procedures through online methods. The students submitted their certificate copies on line and the admission/examination fee was paid through digital payments. After the restrictions were lifted the students approached the nearby study centres and gotnecessary verification of certificates completed following SOP.

IV

Efforts made to ensure delivery of quality distance education programmes during pandemic

1. Information and communication technology (ICT): These were extensively utilized to reach the students. ICT not only change the way students get information, but also alter the whole corpus of what a person knows and the information available to an individual at any given time and place. As a substitute for face-to-face communication, for example, ICTcan provide benefits such as reducing travel, saving time, and extending the geography of the human community. They may replace valuable human contact with a much less rewarding form of communication, fostering social isolation, or communication among students who might never have an opportunity to meet face to face however; they enhance the awareness and skills of the learners. Using social media, they also enrich the experience of the learners. Supply of e-content of learning materials, online classes and webhosting of study material greatly benefited the students.

2. Mobile technology: Mobile technologies are the pillars to deliver knowledge during the times of pandemic. Mobile technologies have huge potential to be one of the most effective and efficient tools to offer the services to the student clientele. The university adapted theusage of mobile technologies for providing necessary information to the students forunderstanding the instructions provided time to time. This helped the students to get proper information regarding e-content and online teaching schedules. Further, students could access the information at their convenience and use the replay facility for greater assimilation. Several instructions were available in the regional languages as well.

V

Strategies designed to ensure communication and interactivity with students during pandemic

The University utilized the social media platforms in two ways

- ***Starting YouTube channel:*** The University arranged to upload around 1200 video lessons and about 300 recorded teleconference programmes into the YouTube channel for the convenience of the students. Students can watch or download them at their convenience and even replay them for clarity about concepts and theories.

- ***Using Whatsapp:*** The University used Whatsapp to provide information to learners of programmes which have a lower enrolment and it is practically possible to do so, - such as M.Sc. programmes, MLiSc and BLiSc. As the numbers of students enrolled are less Whatsapp groups have been formed and relevant information was posted for the benefit of the students. The counselling schedules, assignments, examination schedules, practical training programme schedules etc. are posted in such groups. The students are getting information fast and also able to interact speedily.

VI

Changes made to students' assessment (assignments and examination) during pandemic

i. Assignments and examinations: The term-end/end of semester examinations are conducted physically following SOPs at the nearby study centres where the candidates are registered. This is as per the directions of UGC and the Governmentof Telangana.

ii. Online evaluation: The evaluation of the answer scripts term- end/ end of semester examinations was done through digital methodology. The examinations were held following SOP and immediately the answer scripts are scanned and communicated to the examiners. Thereafter the examiners (subject experts) evaluate the answer scripts and communicate the marks award list digitally to the university.

VII

Students' perceptions and feedback on the effect of Pandemic on their learning

Dr. B. R. Ambedkar Open University in association with Commonwealth Educational MediaCentre for Asia (CEMCA) proposed this study to know the impact of COVID-19 pandemic on thelearning of students in the university. The university is offering various academic programmes through distance mode since 1982 in the States of Telangana and Andhra Pradesh. Due toCovid19 pandemic the university adopted some more services such as web hosting of course materials, on line teaching, uploading of audio and video lessons etc to reach the students. Now university would like to know their impact on the students understanding of the subject. This will help the university to enhance services further by using the Information and CommunicationTechnology (ICT).

8.1 Methodology

Dr. B. R. Ambedkar Open University in association with Commonwealth Educational Media Centre for Asia (CEMCA) prepared a questionnaire consisting of various issues pertaining to the on line teaching and learning. The questionnaire is posted on to the university website and kept for one month to get the feedback from the students. The site is open from 1st November to 30th November 2021 for sharing the experiences of students. The information was sent to students through SMS to the available contact numbers. Further intimated to the students through a letter posted in the university website.

7.2 Students Survey findings and discussion

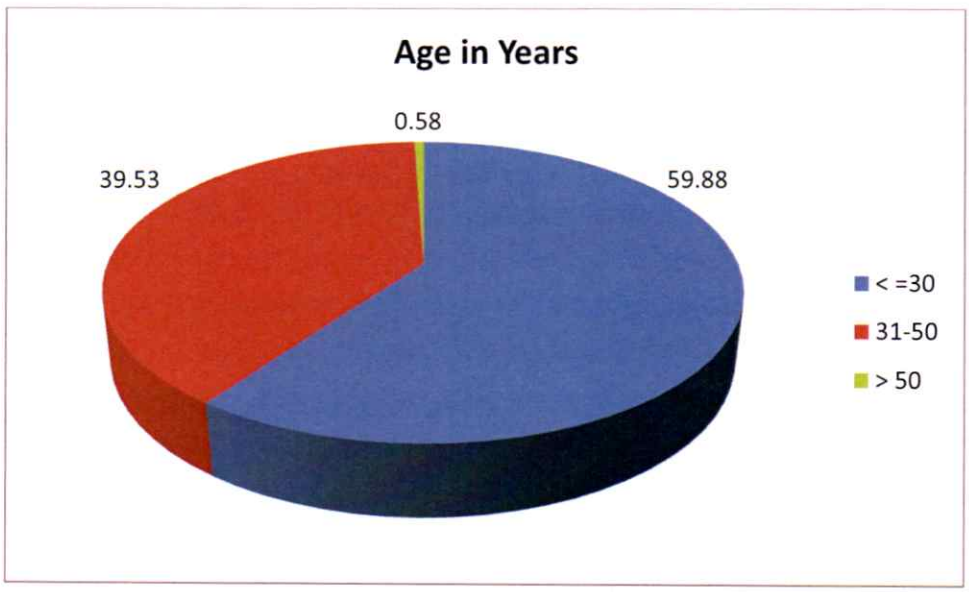
Due to Covid-19 pandemic the society has faced many challenges. In the case of educational institutions there are many due to the absence of face to face interactions. Dr. B. R. Ambedkar Open University has no exception. However, to reach the students and import education, the university adopted several modes in teaching. Now the university in collaboration with Commonwealth Educational Media Centre for Asia (CEMCA) has conducted the on line survey to know the effectiveness of the newly introduced teaching methodologies for better

implementation. The students have expressed their concerns regarding the hardships with phones, laptops and bandwidth problems.

7.3 Participants (Students) Profile

The students profile is generated by collecting the data pertaining to student age group, gender,place of residence, programme of study and area of the study.

Fig-1: Number of students participated in the survey by Age (< =30, 31-50 & >50)



About 88% of respondents' age is between 31 and 50 years, followed by those under 30 years of age (Fig.2)

Fig-2: Gender (Male, Female & Transgender)

Approximately two third of respondents are male, and one third of them are females.

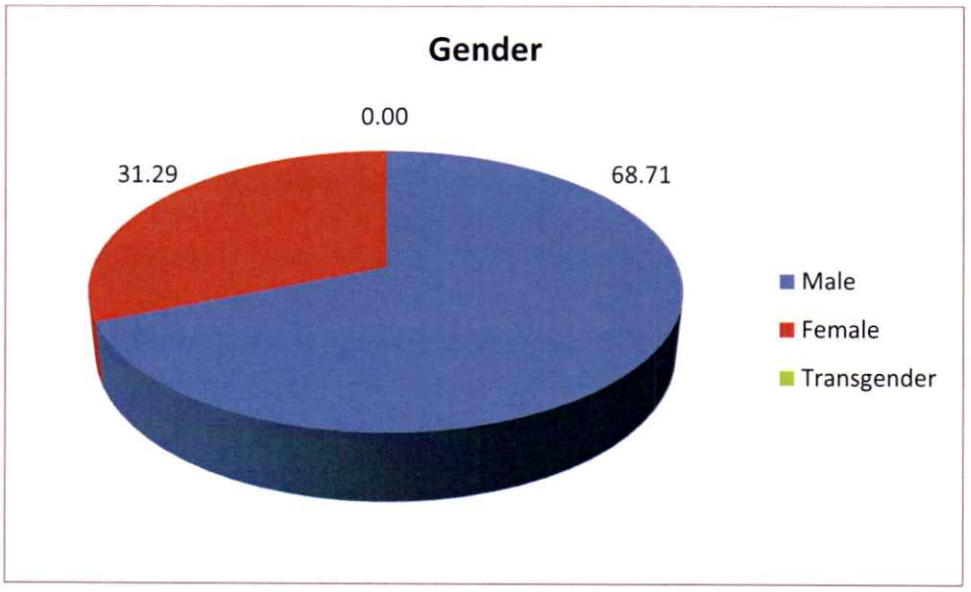


Fig-3: Location of Residence (R, SU, U)

Approximately 45% of respondents stay in the urban area, 42% of respondents stay in the rural area and 13% from semi-urban areas.

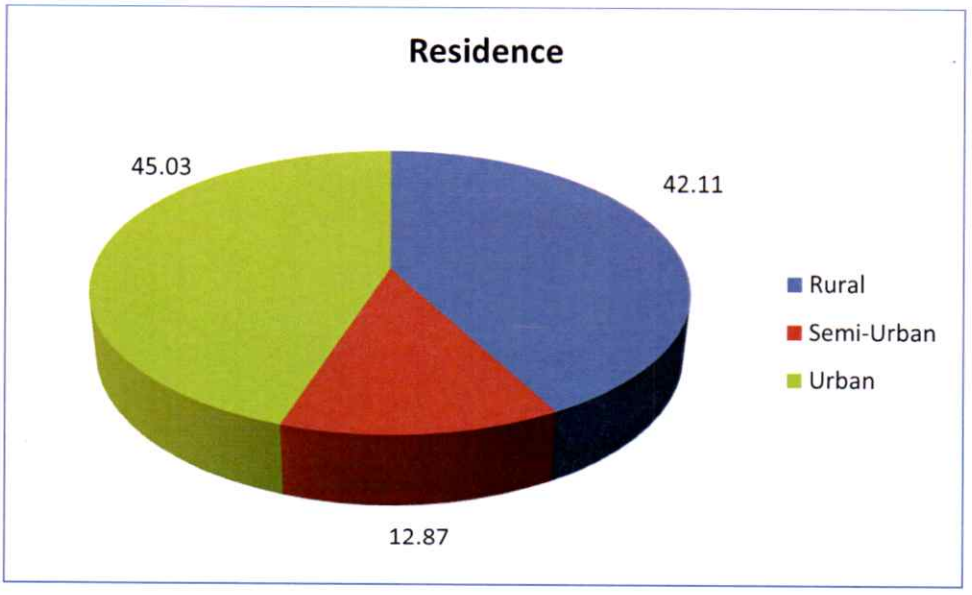
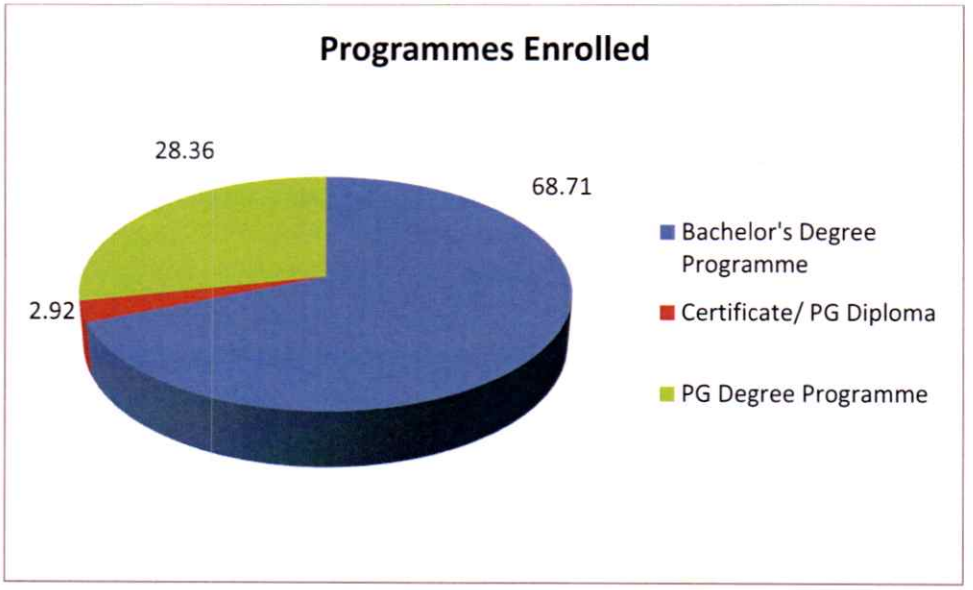
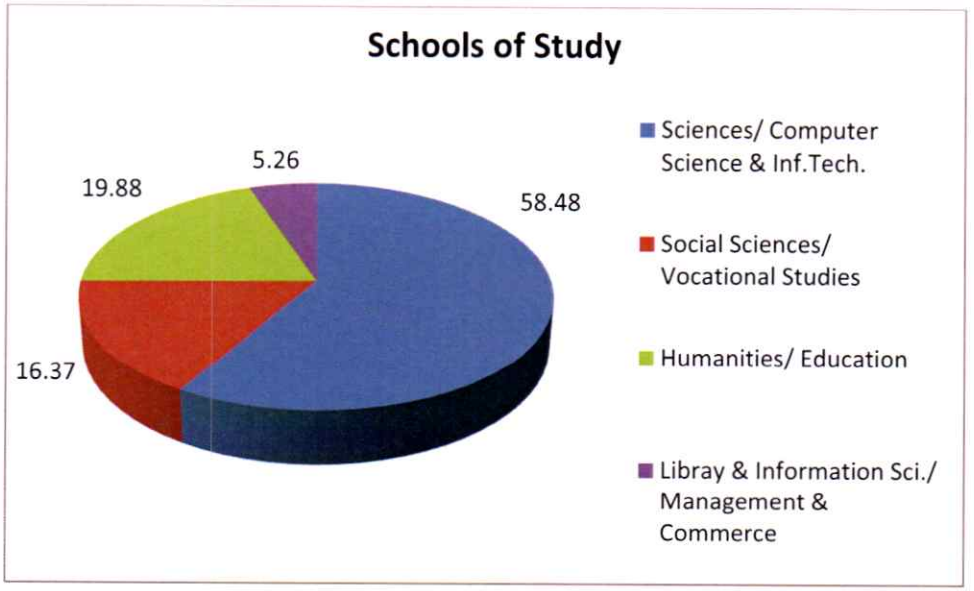


Fig-4: Programme of Study (Certificate/Diploma, Degree/PG Dip. & PG &Above)



More than two third of students who were part of the survey, had enrolled in undergraduate Degree/Post Graduate Diploma programme, followed by Post Graduate Degree programme and very few students have taken Certificate programmes.

Fig-5: Area of study (School) (Sciences/Computer Sciences, Humanities/Education Social Sciences/Vocational Studies, Library Science/Management and Commerce)



About 58% of students who responded to the survey are from Sciences/ Computer sciences, andabout 36% of students are from Humanities/Social sciences streams.

7.4 Access to devices and internet connectivity

The university has introduced online admission process in 2013 along with digital payment of fee. Further during the year 2018, the university adopted a system of online examination registration and downloading of marks memos. During Covid-19 pandemic, some other multimedia procedures are implemented. In view of these circumstances, the present survey was carried out regarding the accessibility of computers/smart phones, net connectivity, bandwidth issues for better implementation of ICT in the process of imparting education.

Table-2: The device used by students' location of residence in percentage

Location	The device used		
	Smart Phone	Laptop/Tablet	Other including desktop
Rural	81.25	13.19	5.56
Semi Urban	76.74	20.93	2.33
Urban	65.81	28.39	5.81

The most preferred device for learning during pandemic was smart phones followed by laptops/tablet irrespective of location of the students. Less than 5% of them are using desktop and others.

Urban students are not much dependent on smart phones than that of rural and semi urban students and urban students use laptop/tablet for their learning than rural students. It shows that, though a significant proportion of urban students use laptop/tablet for online learning but still significant proportions of students use smart phones.

Table-3: Status of internet connectivity by student's location of residence in percentage

Location	The device used		
	Very poor/poor	Fair	Good/very good
Rural	11.81	20.83	67.36
Semi Urban	13.95	32.56	53.49
Urban	5.81	23.23	70.97

Approximately 67% of students from rural area were expressed the internet connectivity is good/very good, two-third of the students from urban were expressed the internet connectivity is good/very good, while only 6% of students from urban felt internet connectivity is poor/very poor.

Table-4: The data used by students by location of their residence in percentage

Location	The type of data package used		
	Mobile data package	Secured wireless connection	Others
Rural	90.97	4.17	4.86
Semi Urban	84.40	6.98	11.63
Urban	65.16	26.45	8.39

A significant proportion of students from rural and semi urban use mobile data package for their learning. Though urban students approximately 26% use secured wireless connection for online learning, but a significant proportion of students still use mobile data for learning.

Table-5: The data used by students by speed of access in percentage

Speed	The type of data package used		
	Mobile data package	Secured wireless connection	Others
Very poor/poor	11.24	4	0
Fair	24.34	14	32
Good/Verygood	64.42	82	68

From the above table, it can be observed that 65% of students who use mobile data for online learning revealed the speed of network is good/very good, 82% of students who use secured wireless connection for online learning revealed the speed of network are good/very good. Only 4% of students expressed that wireless network is very poor.

The study revealed that majority of the students are depending on smart phone for accessing the course material and for attending online classes. Since majority of the students are using smart phones. They have learned the subjects using mobile data package. However, the students felt that the internet speed was higher in secured wireless connection (table-5)

7.5 Perceived proficiency levels in using ICT for learning.

To access and understand the subject content through ICT, it is important to have proficiency in using ICT. In order to know the students' perception about the usage of ICT, opinion of the students was collected and presented based on gender, age group, location of residence, programme and schools of study.

Table-6: Students perceived proficiency in using ICT for learning by their Gender in percentage

Gender	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ Very proficient
Male	10.21	16.17	20.00	53.62
Female	14.95	25.23	23.36	36.45
Transgender	0.00	0.00	0.00	0.00

Approximately 10% of male are not having proficiency in the application of ICT for online learning, while one sixth of male need some help to use ICT and more than 50% of male are competent enough to use ICT for online learning. As compared to males, the proportion of female who are proficient with ICT for online learning is lesser. And female students need some help to become more proficient than that of male students.

Table-7: Students perceived proficiency in using ICT for learning by their Age in percentage

Age Group in Years	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ very proficient
< 30	14.08	19.42	20.39	46.12
31-50	8.21	17.91	22.39	51.49
>51	0.00	0.00	0.00	100.00

Approximately 14% of students whose age is under 30 years do not have proficiency in the application of ICT for online learning, and approximately 50% of students whose age is under 30 years are competent enough to use ICT for online learning. Interestingly the students with age less than 30 years have no experience in using ICT for online learning over the age between 31 and 50 years. It reveals that the age group 31-50 are more capable of using ICT for learning(table-7).

Table-8: Students perceived proficiency of using ICT for learning by their location of residencein percentage

Location	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ Very Proficient
Rural	13.19	20.14	22.92	43.75
Semi Urban	11.63	18.60	18.60	51.16
Urban	10.32	18.60	20.00	51.61

The competency in using ICT for online learning is almost the same between semi urban and urban students. The proficiency in handling ICT is slightly higher among urban students. Irrespective of place where the students reside, about 20% need help in handling ICT for online learning. Approximately 20% of students are able to manage basic functions in using ICT for online learning.

Table-9: Students perceived proficiency in using ICT for learning by the Programmes Enrolled inpercentage

Programme Enrolled	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ Very proficient
Certificate/Diploma	11.11	33.33	16.67	38.89
Degree/PGDiploma	16.54	21.05	20.30	42.11
PG Degree andabove	0.00	0.00	0.00	100.00

From the above table, it can be concluded that the students who enrolled for Certificate/ Diploma programmes require some help or assistance to use ICT for online learning than that of students enrolled for Degree/ PG diploma programmes. In contrast, the proportion of students enrolled for degree/ PG diploma programmes with no experience in handling ICT is more than for the students enrolled for Certificate/ Diploma programmes.

Table-10: Students perceived proficiency in using ICT for learning by the Schools Enrolled in percentage

Schools Enrolled	Proficiency of using ICT for Learning			
	No experience	Require help	Can perform basic functions	Competent/ Very Proficient
Sciences/Computer/IT/LIS	0.00	0.00	0.00	100.00
Social Sciences/Humanities	11.48	13.11	24.59	50.82
Management andcommerce	23.08	23.08	15.38	38.46
Education/Vocational/Other	22.22	26.98	20.63	30.16

From the above table, it can be concluded that the students who enrolled for Sciences/Computer/IT courses are highly comfort with application of ICT for online learning, followed by students enrolled for Social Sciences/Humanities courses. Interestingly this proportion is much less than for the students enrolled for Management and commerce courses. The students enrolled for Education/Vocational courses require some assistance in handling ICT for online learning.

It was observed from the study on the proficiency of students in using ICT, that the male students have higher proficiency than female because most of the male students are from working group and most of the female students are home makers. There is no much difference between the age groups, but about 20% need help in handling ICT for online learning. Post graduate degree students are highly capable in handling on line learning. Only 40% of the students enrolled for other programmes are having proficiency in dealing with online learning. The students who have taken science and computer sciences are more proficient followed by social sciences/ humanities.

7.6 Overall Concerns of students during Pandemic Period

The university arranged audio and video lectures through the learner support centres since 1998. These lectures are also delivered through television and radio during fixed time slots. Due to pandemic conditions the university implemented some more multimedia approaches such as web hosting of course (Study) materials, online teaching, sharing of course material through E-mails etc. Now it is also necessary to know the students' concerns regarding physical health, mental and emotional well-being, education disruption and financial aspects during the pandemic time.

Table-11: Students concerns during pandemic by their Gender in percentage

Gender	Female			Male		
Concern	Most Important / Very Important	Important	Somewhat/ least Important	Most Important/ Very Important	Important	Somewhat/ least Important
PhysicalHealth	0	16.7	0	28.4	14	7.4
Mental and emotional well-being	38.5	13.3	16.7	27.5	14.7	18.5
Education disruption	28.7	36.7	58.3	22.2	37.1	31.5
Financial Aspects	32.8	33.3	25	21.9	34.3	42.6

From the above table, it is seen that female students perceived that Mental and emotional well- being is the primary concern, followed by financial aspects and education disruption respectively. For them education disruption is the least important concern. While for male students, Public Health and Mental and emotional well-being are the primary concerns and financial aspects is the least important concern.

Table-12: Students concerns during pandemic by their Age in percentage

Age	< 30			31 -50			> 51		
Concern	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 Healthh	28.0	17.2	2.4	28.8	9.5	13.2	14.3	100.0	0.0
Mental and emotional well-being	27.1	15.6	21.4	28.3	12.2	13.2	28.6	0.0	0.0
Education disruption	21.9	35.9	40.5	21.5	39.2	36.8	28.6	0.0	0.0
Financial Aspects	23.1	31.3	35.7	21.5	39.2	36.8	28.6	0.0	0.0

From the above table, it is observed that the students whose age is under 30 years and age is between 31 and 50 years perceived that Physical Health &Mental and emotional well-being are the primary concern, followed by financial aspects. For them education disruption is the least important concern. While for the students whose age is above 51 years perceived that, Physical Health, Mental and emotional well-being and financial aspects are equally very important concerns.

Table-13: Students concerns during pandemic by their Location of residence in percentage

Location	Rural			Semi Urban			Urban		
Concern	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	28.1	18	5.7	28	11.1	16.7	28.3	11.8	7.7
Mental and emotional well-being	27.2	16	22.9	28.7	11.1	0	27.5	13.2	15.4
Education disruption	23.1	33	25.7	21.7	44.4	16.7	20.6	39.5	53.8
Financial aspects	21.5	33	45.7	21.7	33.3	66.7	23.6	35.5	23.1

From the above table, it is observed that irrespective where the students reside perceived that Physical Health &Mental and emotional well-being are the primary concern, followed by education disruption. For the students who reside in the rural and semi urban financial aspects is the least important concern. While for the students who reside in the urban perceived that education disruption is the least important concern.

Table-14: Students concerns during pandemic by the Programmes Enrolled in percentage

Programme	Certificate/Diploma			Degree/PG Diploma			PG Degree and above		
Concern	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	30	7.7	22.2	27.1	20.3	0	28.9	11.7	8
Mental and emotional well-being	24	23.1	33.3	27.5	12.7	19	27.9	14.4	14
Education disruption	28	15.4	22.2	21.8	40.5	33.3	21.2	36.9	44
Financial Aspects	18	53.8	22.2	23.6	26.6	47.6	22	36.9	34

From the above table, it is observed that the students enrolled for Certificate/Diploma programmes perceived that Physical Health is the primary concern, followed by Education disruption. For them Mental and emotional well-being is the least important concern. While for the students enrolled for Degree/PG Diploma programmes perceived that, Physical Health, Mental and emotional well-being are their primary concern and Financial aspects is their least important concern. And the students enrolled for PG Degree and above programmes perceived that Physical Health and Mental and emotional well-being are their primary concern. For them education disruption is the least important concern.

The female students expressed that mental and emotional well-being is the primary concern while male students opted physical health as primary concern. According to age groups the age group 30-50 stated that physical health and mental well-being are primary. Based on the locationof residence, all the students mentioned physical health and mental well-being are the dominant factors. Similarly, the under graduate, post graduate and post graduate diploma students expressed that physical health and mental well-being are the main concerns during pandemic foronline learning.

7.7 Students Learning Experiences during online classes

The survey also concentrated on the students learning experience during and after the pandemic about online classes. The student's response programme wise and location wise are also obtainedin order to know the learning experience.

Table-15: Students Learning Experience before and during/post pandemic period in percentage

OnlineClasses	Students Learning Experiences						
	How often students engaged in online classes						
	Yes	No	Not at all	1-4 times a year	1-4 times a month	1-4 times aweek	Almost every day
Conducted online classes before Pandemic	52.63	47.37	28.95	24.85	16.96	16.67	12.57
Conducted online classes During/Post Pandemic	80.12	19.88	16.08	20.76	22.51	23.68	16.96

It is evident from the above table, the percentage online classes has been increased significantly during or post pandemic time compared to pre-pandemic (from 55.6% to 80.2%).

Approximately 41% of students were engaged in the technology-enabled and online learning activities during or post pandemic time against 29% before pandemic, indicate that there is increased engagement with technology-enabled and online learning activities during pandemic period.

Table-16: Students engagement in classes by the Programme Enrolled in percentage

Programme Enrolled	Students Learning Experiences				
	How often students engaged in online classes				
	Not at all	1-4 times ayear	1-4 times amonth	1-4 times a week	Almost every day
Certificate/Diploma	22.22	16.67	22.22	22.22	16.67
Degree/PG Diploma	30.83	27.82	15.04	14.29	12.03
PG Degree and above	27.89	23.16	17.89	18.4	12.63

28% of students who enrolled for PG degree are not engaged with technology-enabled and online learning activities during pandemic period. Among all programmes, who enrolled for Certificate/Diploma programmes approximately 39% are engaged 1- 4 times in a week or every day with technology-enabled and online learning activities during pandemic period, While approximately 60% of students enrolled for Degree/PG Diploma programmes are least engaged with technology-enabled and online learning activities during pandemic period.

Table-17: Students engagement in classes by location during or post pandemic in percentage

Programme Enrolled	Students Learning Experiences				
	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 everyday
Rural	18.75	24.31	18.06	22.22	16.67
Semi-urban	11.63	18.60	27.91	25.58	16.28
Urban	14.84	18.06	25.16	24.52	17.42

Approximately 41% of students from urban and semi urban are highly engaged with technology-enabled and online learning activities during pandemic period. On the other hand, 42% of students from rural area are least engaged with technology-enabled and online learning activities during pandemic period.

Table-18: Students preferred learning activities during or post pandemic

Preferred Learning Resources	Number of students responded (N)	Students Response in percentage				
		VGE	GE	SE	OLE	NA
1. Learnt from print-based learning materials	342	37.72	34.50	19.88	4.97	2.92
2. Learnt from e-SLM (Text format) available on University Website	342	20.47	25.15	31.87	11.99	10.53
3. Accessed audio-video lectures from University Website	342	31.29	26.90	23.68	9.36	8.77
4. Accessed lecture notes, videos, e-books, online from sources other than University Website	342	29.82	28.36	22.81	9.94	9.06
5. Completed and submitted assign-ments online	342	27.49	19.59	17.25	9.36	26.32

6. Attended examinations online	342	20.47	18.13	16.37	7.89	37.13
7. Accessed digitallibrary resources	342	23.39	21.35	19.59	8.48	27.19
8. Searched for academic information on the internet	342	37.43	30.70	21.05	7.31	3.51
9. Used University Learning Management System	342	27.78	26.90	22.81	8.77	13.74
10. Accessed University repository of educational resources	342	23.98	27.19	24.56	11.70	12.57
11. Accessed online educational repositories and digital education platforms such as SWYAM, NPTEL, Virtual Labs, e-PG Patashala and others	342	25.73	24.56	20.18	11.11	18.42
12. Enrolled in online courses including MOOCs	342	24.56	21.64	20.47	10.53	22.81
13. Joined live online lecture/tutorial sessions	342	38.30	27.49	19.30	6.73	8.19
14. Received feedback on assignments online	342	21.64	24.27	18.13	9.94	26.02
15. Participated in online discussion forums for study related purposes	342	26.02	23.98	21.93	9.06	19.01
16. Used email for academic purposes	342	32.75	27.49	20.76	9.36	9.65
17. Used social media for academic purposes	342	34.21	26.90	20.18	7.31	11.40

Approximately three – fourth of students preferred print-based material a great extent during pandemic period. Only a 10% of students learnt from e-SLM (text format) which is available on the university website. Most of the students accessed audio-video lectures from university website, also a significant number of student's accessed audio-video lectures other than from university website. Two- third of students were enrolled for MOOCs courses and accessed online educational repositories and digital education platforms such as SWAYAM, NPTEL, Virtual Labs, e-PG Patashala. One-fourth of student were expressed that they haven't received feedback for assignments submitted online. Majority of the students have used email/social media as correspondence tool to know the academic activities held for university.

The data analysis reveals that about 47% of the students are not aware about online teaching before pandemic. However during and after pandemic the awareness is increased to 80%. Only 12% of students attended online classes

regularly and about 30% of the students never attended any online class. The semi urban and urban students are benefitted more with online classes. About 42% of rural students are least engaged in online classes. In the university attendance to classes is not mandatory. Since the establishment of the university, students mainly depend on printed course material and face to face interaction. Now some positive change is observed towards multimedia approach.

7.8 Challenges faced by students in learning during the pandemic

During the period of pandemic, the society is largely dependent on the internet and electronic communication systems for news, entertainment and education. The student community also used ICT for learning and communication. For better design of learning programmes during suchconditions the following data is obtained.

Table-19: Challenges faced by students during their learning in pandemic period

Challenges	Number of students responded (N)	Students Response in percentage				
		Most Important	Very Important	Important	Somewhat Important	Least Important
1. Internet connectivity issues	342	34.50	32.16	14.62	7.89	10.82
2. Lack of access to device	342	33.33	28.65	19.01	9.36	9.65
3. Sense of isolation due to no in- person interaction with other students/tutors	342	46.78	28.65	12.28	4.97	7.31
4. Fatigue due to continuous screen time exposure	342	32.46	33.33	18.13	4.39	11.70
5. Inadequate ICT skills among students forlearning online	342	29.53	33.04	21.64	4.39	11.40
6. Challenges incompleting and submitting assignments	342	31.58	32.16	16.37	7.60	12.28
7. Difficulties inmanaging academic workload	342	32.46	31.58	15.79	8.19	11.99
8. Difficult to receive feedback on assignments	342	28.36	29.53	20.18	9.06	12.87
9. Difficulties with taking online/remoteexaminations	342	27.78	31.58	16.08	8.19	16.37
10. Lack of adequate learner support	342	31.58	27.49	17.54	7.89	15.50
11. Lack of motivation tolearn	342	32.46	30.70	15.50	7.60	13.74

12. Difficult to concentrate for Prolonged live online sessions	342	30.41	32.16	17.84	7.60	11.99
13. Difficulty in getting notifications regarding study	342	32.46	30.70	15.79	8.19	12.87
14. Absence of supportive Environment for learning at home	342	31.58	30.99	16.67	8.19	12.57
15. Difficulty specific to course of study, for example, access to science laboratories,field work, etc.	342	33.04	33.92	16.08	8.48	8.48
16. Costly in terms of resources and the time and effort required	342	29.82	30.12	19.88	8.77	11.40
17. Difficult dueto inadequate ICT skills among teachers.	342	29.82	29.82	18.71	10.53	11.11
18. Lack of availability of quality onlineacademic content.	342	33.04	28.36	7.54	9.06	11.99

Table-20: Rank wise Challenges faced by students in learning during the pandemic

Challenges	Weighted Score	Rank
3. Sense of isolation due to no in-person interaction with other students/tutors/ counsellors	0.5892	1
15. Difficulty specific to course of study, for example, access to science laboratories, field work, etc.	0.5184	2
1. Internet connectivity issues	0.5178	3
4. Fatigue due to continuous screen time exposure	0.5117	4
2. Lack of access to devices	0.5037	5
7. Difficulties in managing academic workload	0.5021	6
6. Challenges in completing and submitting assignments	0.4987	7
13. Difficulty in getting notifications regarding study	0.4980	8
11. Lack of motivation to learn	0.4968	9
18. Lack of availability of quality online academic content.	0.4965	10
5. Inadequate ICT skills among students for learning online	0.4954	11
14. Absence of supportive environment for learning at home	0.4945	12
12. Difficult to concentrate for prolonged live online sessions	0.4928	13
16. Costly in terms of resources and the time and effort required.	0.4845	14
17. Difficult due to inadequate ICT skills among teachers.	0.4823	15
10. Lack of adequate learner support	0.4799	16
8. Difficult to receive feedback on assignments	0.4714	17
9. Difficulties with taking online/remote examinations	0.4663	18

From the above table it is observed that the most challenging issue for the students is a sense of isolation due to lack of face to face interaction with other students/tutors/ counsellors, followed by difficulty to access science laboratories, field work, etc. The least challenge they faced was taking online/remote examinations.

The implications expressed by the students will be addressed by the university. During the current academic year, the university adopted blended approach. 60% classes are arrangedthrough face to face interactions, rest through online teaching. Regarding practical training, 100% real time physical training is arranged.

7.9 Opportunities in learning during the pandemic1

It is essential to any educational institute to provide proper channel of learning to the students during the time of pandemic. Accordingly, the university implemented complete multimedia approach using ICT for learning. Because of the digital divide in the society some of the studentshave not utilized the services provided by the university.

Table-21: Students degree of agreement on the opportunities provided by the technology - enabled learning during pandemic

Learning Opportunities provided by the technology - enabled learning during pandemic	Number of students responded (N)	Student's degree/level of Agreement on the opportunities provided by the technology-enabledlearning in percentage				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Helped to maintain continuity in learning	342	51.46	35.09	10.53	0.88	2.05
Offered flexible opportunities forlearning	342	43.57	42.11	11.11	1.75	1.46
Enabled communication with peers and teachers	342	40.64	35.96	16.96	4.09	2.34
Provided multiple ways (audio, video, presentation, text) of learning the same material	342	45.91	35.38	12.57	3.22	2.92
Improved learning through self-assessmentquizzes and activities	342	34.50	39.47	16.08	5.56	4.39
Provided opportunitiesfor group assignmentsamong students at different locations	342	34.80	36.26	15.50	8.48	4.97

Provided opportunitiesfor regular feedback from teachers	342	33.63	36.84	16.08	6.73	6.73
Provided access to quality course contentfrom different subjectexperts	342	35.38	41.23	13.74	4.97	4.68
Promoted participationin online platforms/forums for doubt clarification and discussion	342	35.96	38.30	13.74	7.31	4.68
Promoted my time management skills andself-discipline	342	38.60	39.47	11.11	5.26	5.56
Improved my conceptual understanding throughself-paced learning	342	37.72	41.81	11.11	5.56	3.80
Made me more involved in learningactivities	342	40.64	40.06	11.40	4.97	2.92
Improved my ICTskills	342	46.78	35.67	11.40	3.80	2.34

The technology enabled learning was well received by the students who have participated in the survey. They stated that this type of ICT is useful to maintain continuity in learning. Further the learning skills are improved a lot with this process. Students have given less importance to discussion forums, group assignments, and regular feedback.

Table-22: Rank wise opportunities in learning during the pandemic

Learning Opportunities provided by the technology-enabled learning during pandemic	Weighted Score	Rank
Helped to maintain continuity in learning	0.5721	1
Improved my ICT skills	0.5403	2
Offered flexible opportunities for learning	0.5390	3
Provided multiple ways (audio, video, presentation, text) of learning the same material	0.5336	4
Made me more involved in learning activities	0.5099	5
Enabled communication with peers and teachers	0.5009	6
Improved my conceptual understanding through self-paced learning	0.4938	7
Promoted my time management skills and self-discipline	0.4914	8
Provided access to quality course content from different subject experts	0.4765	9

Promoted participation in online platforms/forums for doubt clarification and discussion	0.4706	10
Improved learning through self-assessment quizzes and activities	0.4661	11
Provided opportunities for group assignments among students at different locations	0.4563	12
Provided opportunities for regular feedback from teachers	0.4495	13

From the above table it is seen that, the most opportunity for the students is due to the technology -enabled learning is it helps them in continuous learning followed by improved technological skills. The least opportunity for them is regular feedback from instructors andshare and contribution towards group assignments even from remote locations.

Table-23: Students Preferences of modes learning in the online learning context

Learning Resources	Number of students responded (N)	Students (in percentage) preferences of learning resources				
		Most preferred	Very preferred	Preferred	Somewhat preferred	Least preferred
Pre-recordedvideo lectureonly	342	35.67	19.88	21.35	11.11	11.99
Pre-recordedvideo lecturewith reading material provided	342	37.43	21.35	22.22	9.94	9.06
Reading material only	342	27.19	24.85	23.98	11.4	12.57
Synchronous(real-time orlive) online sessions	342	38.01	28.36	21.05	7.89	4.68
Asynchronousself-learning from available material	342	28.65	27.78	23.98	10.23	9.36
Live interaction sessions fordoubt clarificationand addressing queries	342	48.54	24.27	18.42	4.97	3.8
Live lecture/tutorial sessions thatcan be recorded	342	45.91	28.36	17.54	4.97	3.22
Use of presentationin video lecture	342	43.57	31.87	16.67	4.09	3.8
Use of whiteboard in video lecture	342	42.69	26.9	19.3	5.26	5.85
Individual assignments	342	37.13	30.7	21.64	6.43	4.09
Group activities and assignments	342	40.06	27.78	19.88	7.31	4.97

Digital platform/forum for postingqueries and clarifying doubts	342	45.61	27.49	18.71	4.68	3.51
Email for communication with peers and instructors	342	42.4	30.99	18.13	3.8	4.68
Live chat for communication with peers and instructors	342	43.27	28.95	19.59	4.39	3.8

Table-24: Rank wise Students Preferences of modes learning in the online learning context

Learning Resources	Weighted Score	Rank
Live interaction sessions for doubt clarification and addressing queries	0.5508	1
Live lecture/tutorial sessions that can be recorded	0.5466	2
Digital platform/forum for posting queries and clarifying doubts	0.5427	3
Use of presentation in video lecture	0.5416	4
Live chat for communication with peers and instructors	0.5326	5
Email for communication with peers and instructors	0.5315	6
Use of whiteboard in video lecture	0.5191	7
Group activities and assignments	0.5052	8
Individual assignments	0.4984	9
Synchronous (real-time or live) online sessions	0.4947	10
Pre-recorded video lecture with reading material provided	0.4632	11
Pre-recorded video lecture only	0.4423	12
Asynchronous self-learning from available material	0.4274	13
Reading material only	0.4041	14

From the above table it is seen that, in online learning the factor "Live interaction sessions for doubt clarification and addressing queries" has highest weight indicate that they need a live interaction with instructor to clarify their doubts so that teaching learning will be effective. Live lecture/tutorial sessions that can be recorded has the next highest weight indicate when students have doubt in lacking understanding the concepts they can watch again the recorded video lectures, so

that the learning would be effective. The least preferred learning resource is reading material with least weight

7.10 Suggestions

At the end it is also required to get suggestions from the students to find a solution for the difficulties they have faced while learning during pandemic. The net connectivity, skills of the teachers for online teaching, dedicated mechanism for monitoring of online classes are some issues where the student feedback is essential for further refinement of usage of ICT for teaching and learning.

Table -25: Major suggestions provided by students in percentage

Suggestions	Students Response	
	Number of students provided the suggestion (N)	Students Response in percentage
Improved connectivity infrastructure	40	32.26
Improved access to devices	21	16.94
Provide more teacher training and capacity building opportunities in ICT skills	14	11.29
Teacher training and capacity building in online and blended course development, delivery and teaching-learning strategies	10	8.06
Guidelines on online/digitalplatforms, repositories, and educational resources	13	10.48
Provide ongoing technical support to students and teachers for technology-enabled learning	10	8.06
Develop a mechanism for monitoring online learning activities	6	4.84
Strengthen quality assurance for online and blended learning	10	8.06

As per the analysis of students' suggestions, about 32% of students expressed that internet connectivity and infrastructure are the main issues to be addressed as first priority followed by access to the devices. Only 5% students suggested for improvement of the monitoring mechanism of online teaching. Students opined that teachers need training for online teachingand students require the skills for online learning.

VIII. Future directions including plans for improving distance teaching and learning based on the experiences gained during pandemic

The strategy in vogue before the pandemic in Dr.B.R.Ambedkar Open University was supply of printed course material to all the students, arranging face to face interaction (Counselling) classes in learner support centres (attendance is not mandatory) supported by multimedia through ICT. During the time of pandemic, university arranged course material as soft copies through E- mail, web hosting of course material. In place of face to face interaction online teaching is introduced. As a statutory obligation, printed course material was supplied once after lockdown conditions are removed by following SOP.

The present survey reveals that the students have faced certain challenges such as internet connectivity, access to devise, physical health and mental well-being during pandemic for their learning. With these observations the university decided to shift towards online education in a phased manner. Meanwhile the university has developed some resilient systems to face any difficult situations.

The university initiated efforts to find solutions to the challenges. Some of the measures are as follows

- Started training programmes to the faculty and other teachers on the skills for online teaching through Centre for Staff Training and Development(CSTD)
- A separate centre for online learning is established
- A communication network is established to send on time communication to the studentsregarding schedules, ID and Passwords for online teaching.
- A well-established monitoring mechanism was started to monitor online teaching.

The university is planning to resolve the other issues also which comes under the purview of the university. However certain issues such as net connectivity, speed and access to devices will be solved in due course with technological advancement in the society.

For the academic year 2021-22, the university has given choice to the students to choose course material either in the soft copy or in the printed version. The

university has given some incentives to the students who opted for soft copies. But it was observed that 90% of the students opted for printed copies only. The reason may be that more than 70% of the students are using smart phone as tool for online learning which is not ideal for continuous studying. Hence the university has decided to continue to distribute both soft and printed copies of course material.

Regarding the face to face interaction arranged in the learner support centres, the university implemented a blended mode, where in 60% of the classes are arranged physically and the remaining 40% are done virtually.

During the pandemic time the university was not in a position to conduct online examinations. So no evaluation was taken place. Now it is decided to hold formative evaluation through online and summative evaluation physically following the regulations of University Grants Commission (UGC) and Government of Telangana.

The university is planning to move towards online education in a phased manner by evolving greater role for multimedia with ICT. This may be possible in due course of time at least for some of the programmes.

QUESTIONNAIRE

Dear Sir/Madam,

The aim of this survey is to understand how the pandemic affected your learning experiences and the related opportunities and challenges. We request you for about 15-20 minutes of your time to respond to this survey. All the responses will be kept confidential, and results will be presented at an aggregate level. If you have any concerns, please feel free to contact _____. We thank you for your support. 1

I. Demographic details & General Information

a. Enrolment number
b. Age in years
   - Below 20
   - 20-30
   - 31-40
   - 41-50
   - 51-60
   - 61 and above
c. Gender
   - Male
   - Female
   - Transgender
d. Place of residence:
   - Rural
   - Semi-urban
   - Urban
e. Programme enrolled:
   - Certificate
   - Diploma
   - Bachelor's Degree Programme
   - PG Diploma
   - PG Degree Programme
   - PhD
f. School:
   - Sciences
   - Social Sciences
   - Humanities
   - Vocational Studies
   - Education
   - Computer Science and Information Technology
   - Library and Information Sciences
   - Management and Commerce
   - Any other, please specify

II. Access to devices and internet connectivity

a. Which device did you use for learning from home during the pandemic?
   - Laptop
   - Personal Desktop Computer
   - Tablet
   - Smartphone.
   - Any other, please specify _____

b. The device listed above was
   - Owned by you before the pandemic commenced
   - Bought to facilitate your studies once pandemic started
   - Rented
   - Borrowed
   - Any other, please specify _____

c. How would you rate your internet connectivity for effective online learning?
   - Very poor
   - Poor
   - Fair
   - Good
   - Very good

d. The data used for your study at home is through
   - Secured wireless connection
   - LAN cable
   - Mobile data package
   - Any other, please specify _____

III. Select **any one** option that best describes your proficiency in using ICT for learning.
- I have no experience with using online learning devices and platforms.
- I have attempted to use online learning devices and platforms, but I still require help on a regular basis.
- I can perform basic functions using a limited number of online learning devices and platforms.
- I can competently use online learning devices and platforms.
- I am very proficient in using a wide variety of online learning devices and platforms.

IV. Overall concerns during the pandemic

Overall, what were your crucial concerns during the pandemic? Please rank each concern in order of importance.

	Most Important	**Very Important**	**Important**	**Somewhat Important**	**Least important**
Physical health					
Mental and emotional well-being					
Education disruption					
Financial aspects					
Employment prospects					

V. Learning experience before the pandemic

A. Did the Open University in which you are enrolled conduct online or technology-enabled academic activities before the pandemic? Yes / No

B. Please indicate how often you engaged in technology-enabled and online learning activities before the pandemic.
   a. Not at all
   b. 1-2 times a year
   c. 3-4 times a year
   d. 1-2 a month
   e. 3-4 times a month

f. 1-2 a week
g. 3-4 times a week
h. Almost everyday

VI. Learning experience during or post pandemic

A. Did the Open University in which you are enrolled conduct online or technology-enabled academic activities during or post pandemic? Yes / No

B. Please select how often you engaged in technology-enabled and online learning activities during or post pandemic.
   a. Not at all
   b. 1-2 times a year
   c. 3-4 times a year
   d. 1-2 times a month
   e. 3-4 times a month
   f. 1-2 times a week
   g. 3-4 times a week
   h. Almost everyday

C. Think about your learning activities **during or post pandemic.** For each of the following activities, please select the option which best describes your experience **during or post pandemic.**
(VGE = Very Great Extent, GE = Great Extent, SE = Some Extent, OLE = Only to a Little Extent, NA = Not at All)

	VGE	GE	SE	OLE	NA
Learnt from print-based learning materials					
Learnt from e-SLM (text format) available on university website					
Accessed audio-video lectures from university website					
Accessed lecture notes, videos, e-books online from sources other than university website					
Completed and submitted assignments online					
Attended examinations online					
Accessed digital library resources					
Searched for academic information on the internet					
Used University Learning Management System					
Accessed university repository of educational resources					
Accessed online educational repositories and digital education platforms such as SWAYAM, NPTEL, Virtual Labs, e-PG Pathshala, and others					
Enrolled in online courses, including MOOCs					
Joined live online lecture/tutorial sessions					
Received feedback on assignments online					
Participated in online discussion forums for study-related purposes					
Used email for academic purposes					
Used social media for academic purposes					
Any other, please specify and select option- _____					

VII. Challenges in learning during the pandemic

Please rank each of the challenges below in order of priority. If you think that some challenges have the same ranking, please rank accordingly. Please specify other challenges, if any, and rank them.

	Most Important	**Very Important**	**Important**	**Somewhat Important**	**Least Important**
Sense of isolation due to no in-person interaction with other students/tutors/ counsellors					
Fatigue due to continuous screen time exposure					
Internet connectivity issues					
Lack of access to devices					
Inadequate ICT skills among students for learning online					
Challenges in completing and submitting assignments					
Difficulties in managing academic workload					
Challenges in receiving feedback on assignments					
Difficulties with taking online/remote examinations					
Lack of adequate learner support					
Lack of motivation to learn					
Difficult to concentrate for prolonged live online sessions					
Difficulty in getting notifications regarding study					
Absence of supportive environment for learning at home					
Difficulty specific to course of study, for example, access to science laboratories, field work, etc.					
Costly in terms of resources and the time and effort required.					
Difficult due to inadequate ICT skills among teachers.					
Lack of availability of quality online academic content.					

Opportunities in learning during the pandemic

For each of the following statements, please select the option that best matches your perception of opportunities from technology-enabled learning during the pandemic.

(SA = Strongly Agree, A =Agree, N = Neutral, D = Disagree, and SD = Strongly Disagree)

Technology-enabled learning during the pandemic

	SA	A	N	D	SD
Helped to maintain continuity in learning					
Offered flexible opportunities for learning					
Enabled communication with peers and teachers					
Provided multiple ways (audio, video, presentation, text) of learning the same material					
Improved learning through self-assessment quizzes and activities					
Provided opportunities for group assignments among students at different locations					
Provided opportunities for regular feedback from teachers					
Provided access to quality course content from different subject experts					
Promoted participation in online platforms/forums for doubt clarification and discussion					
Promoted my time management skills and self-discipline					
Improved my conceptual understanding through self-paced learning					
Made me more involved in learning activities					
Improved my ICT skills					

VIII. Preferences in online learning

Please rank in order of preference **with 1 as most preferred and 5 as least preferred.**

	Most preferred	**Very preferred**	**Preferred**	**Somewhat preferred**	**Least preferred**
Pre-recorded video lecture only					
Pre-recorded video lecture with reading material provided					
Reading material only					
Synchronous (real-time or live) online sessions					
Asynchronous self-learning from available material					
Live interaction sessions for doubt clarification and addressing queries					
Live lecture/tutorial sessions that can be recorded Use of presentation in video lecture					
Use of whiteboard in video lecture					
Individual assignments					
Group activities and assignments					
Digital platform/forum for posting queries and clarifying doubts					
Email for communication with peers and instructors					
Live chat for communication with peers and instructors					

IX. Suggestions

Please share your suggestions on how to improve the educational experience during disruptions in education such as the pandemic. Please tick all the suggestions you think are relevant and add any further suggestions:

- Improved connectivity infrastructure
- Improved access to devices
- Provide more teacher training and capacity building opportunities in ICT skills
- Teacher training and capacity building in online and blended course development, delivery, and teaching-learning strategies
- Guidelines on online/digital platforms, repositories, and educational resources
- Provide ongoing technical support to students and teachers for technology-enabled learning
- Develop a mechanism for monitoring online learning activities
- Strengthen quality assurance for online and blended learning
- Any others, please specify_____

X. Any observations/comments/reflections you would like to share about the overall effect of the pandemic on your learning.

About the Author

Prof. P. Madhusudhana Reddy is the Director G. Ram Reddy Academy of Distance Education (GRADE) and Centre for Quality Assurance Cell (CIQA). He joined Dr. B. R. Ambedkar Open University in the year 1994 as assistant professor of Geology. He is also the Head, Department of Geology and programme coordinator M.Sc. Environmental Sciences. 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, conferences nationally and internationally. He has visited University of IOWA, USA 2000, University of Toronto, Toronto, Canada, 2005 and Participated in the International Conference (ICEST 2010) Bangkok, Thailand, 2010. He was the editorial board member for seven books published on environment by B.S. Publications Hyderabad. He was the recipient of Best Teacher Award from the Government of Telangana, 2016, Acharya Devo Bhava Award from the Brainfeed Magzine 2016, Recognition as research scientist by National Geophysical Research Institute (N.G.R.I-C.S.I.R), Hyderabad in 2016 and Young Scientist award by DST, Govt. of India in 1996 . He has served as CFE Committeemember, State Pollution Control Board from 2008 to 2018.