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# Information communication technology (ICT) and digital education awareness amongst the university teachers during Covid-19

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**Abstract**
The paper deals with brief introduction of ICT, Digital Education and brief account of the status of Higher Education in India , role of UGC in imparting quality education, and Awareness of the Teachers towards digital education in this pandemic situation with special reference to Satavahana University, Karim Nagar, Telangana State. Further, described in the paper about the need and purpose of the study, objectives, methodology adopted and finally highlights the important survey findings in respect of ICT Awareness and of the participants of the PG courses. Besides this, some suggestions and recommendations have also been enumerated in brief.

**Keywords:** higher education–India, digital education in Covid-19 period, ICT

## Introduction
Information Communication Technology (ICT) is one of the important buzzwords of today's IT world. It has changed the society into information society and our way of life. It has been integrated in every walk of our life. Its impact has been evident in railway, air reservations, banking and insurance sectors, postal services, biotechnology, bioinformatics, biomedical sciences, health care sector, telemedicine, media and communications, teaching –learning, library and information services, printing technology, e-resources, digitization of documents, digital library, library networking, e-commerce, & trade, entertainment, and what not? It has penetrated in everywhere and its makes our life comfortable and easy.
Throughout the developed world, changes in technologies are permitting the more extensive use of electronics and telecommunications to access information. The trend in information technology use has been described in a number of ways. In USA it is described as 'Information Superhighway', and in Canada it is termed as 'Information Highway'. The European Commission has adopted the term 'Information Society'- emphasizing that the application and development in information infrastructure will have significant social as well as economic impact (Development of Information Society, 1996).
During the last couples of years since 1990s, the university libraries and other institutional libraries in India are coming under the impact of information technology. Since last two decades several initiatives have been taken by the Govt. of India for computerisation and networking of Indian of Indian libraries. Recently a Task Force for quick implementation of National Information Policy has been established and the recommendations of Task Force Committee have already been submitted to the Govt. of India for its quick implementation (Sinha and Satish, 2000) [6].

## Internet: A Network of Network
The Internet is one of the most important and complex innovations of mankind. It is a powerful means of communication, dissemination and retrieval of information. Now the facility of Internet has been increasingly used for educational course delivery (Sinha, 2004 C) [6].
Writing in the Harvard International Review, philosopher Slabbert (2006) [6] a writer on policy issues for the Washington DC-based Urban Land Institute, has asserted that the Internet is fast becoming a basic feature of global civilization, so that what has traditionally been called "civil society" is now becoming identical with information technology society as defined by Internet use. Some suggest that as low as 2% of the World's population regularly accesses the internet.

## Scenario of Higher Education in India
The University Grants Commission (UGC) came into existence in 1953 and became a statutory organisation by an Act of Parliament in 1956. It is a national body for the coordination, determination, and maintenance of standards of university education. The UGC serves as a coordinating body between the Union and State Governments and the institutions of higher learning. It also acts as an advisory body to these Governments and institutions on issues relating to higher education.

## Growth of Colleges and Universities in India
Over the past 50 years, there has been a significant growth in the number of new Universities & institutions of higher learning in specialized areas. At the time of Independence in 1947, there were only 20 universities and 500 colleges in the country. The number of students and teachers in the higher education system was also very small. But after Independence, there has been an exponential increase in all these numbers. There has been a twelve fold increase in number of universities, and 23 fold increase in number of colleges while student enrolment has gone up by nearly twenty nine times. Now Indian Universities constitute one of the largest higher education systems in the world
During 2000-01, there were 273 which increased to 294

universities/institutions, 13,150 affiliated colleges, 88.21 lakh students and 4.27 lakh teachers in the country which are uniformly spread all over the country from metropolitan cities to very remote areas and are directly under the preview of UGC (As per Latest Figure 2002).

According to Gupta (2006) [1], at present the total number of universities and colleges has increased to more than 350 and 14000 respectively. It shows that after independence, there has been an exponential increase in the colleges and universities. It has recorded an eighteen fold increase in the number of universities and twenty-eight fold increase in the number of colleges, while students enrolment has gone up by nearly thirty four times. To check the quality of these institutions, national assessment and UGC accreditation is there. So far only 94 universities and 418 colleges have been accredited .It is suggested that to maintain quality of higher education, Universities and colleges should apply to UGC for accreditation.

To provide education to the students, the total number of teachers in colleges and universities were 4.27 lakhs, out of which 82% are in affiliated colleges and the remaining 18% in university departments during 2001-02. In the University departments and University colleges, 33% of the total strength was in the grade of Readers followed by lecturers (29%), professors (20%), Sr. lecturers (16%) and tutor & demonstrators (2%) during 2001-02.On comparison with colleges we find that 51% of the total teaching strength was in the grade of lecturers followed by readers 21%, sr lecturer16%, professors 7 % and tutor /demonstrators5%. Since majority of the teachers are in colleges, there is need to reorient the quality of teaching in colleges. In the area of research universities are not lacking behind. The number of research degrees awarded by various universities increased from 11,296 in 1999-2000 to 11,450 in 2000-01. The faculty of arts awarded the maximum number of degrees i.e. 4330, followed by the faculty of science with 3734 research degrees. These two faculties together accounted for 70% of the total number of research degrees awarded. There is need of more quality research even in other faculties (Gupta, 2006) [1].

**Covid-19 and Digital Education**

The **Covid-19** outbreak has disrupted children's lives, pushed out many, and stalled classes and examinations across the country. To ensure students do not miss out on studies, schools shifted the classes to online mode.

With the pandemic forcing the teaching and learning process to migrate to the online mode, the education system has faced an upheaval like never before. Many of the students have been left clinging to their phones and computer screens.

However, the 2017-18 National Sample Survey suggested that less than 15% of rural Indian households have Internet as opposed to 42% of their urban counterparts.

Therefore, this shift to the e-learning system has sparked a debate on whether it helped the students to learn or has impeded their progress, social and emotional well-being, and more importantly if this is indeed education.

**Digital education**

Digital Education is the innovative use of digital tools and technologies during teaching and learning and is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technologies gives educators the opportunity to design engaging learning opportunities in the courses they teach, and these can take the form of blended or fully online courses and programs.

**Government Initiatives for Smooth Conduct of E-Learning**

Several initiatives have been taken to enable online education in India, such as:

**E-PG Pathshala:** An initiative of the Ministry of Human Resource Development to provide e-content for studies

**SWAYAM:** it provides for an integrated platform for online courses.

**NEAT:** It aims to use Artificial Intelligence to make learning more personalized and Customized as per the requirements of the learner.

Other initiatives include: National Project on Technology Enhanced Learning (NPTEL), National Knowledge Network, (NKN), and National Academic Depository (NAD), among others.

PRAGYATA: The Ministry of Human Resource Development (MHRD) released guidelines on digital education titled PRAGYATA.

Under the PRAGYATA guidelines, only 30 minutes of screen time per day for interacting with parents is recommended for kindergarten, nursery and pre-school.

Schools can hold live online classes for a maximum of 1.5 hours per day for Classes 1-8, and 3 hours per day for Classes 9-12.

**National Programme on Technology Enhanced Learning**

The NPTEL is a project of MHRD initiated by seven Indian Institutes of Technology (IIT), along with the Indian Institute of Science Bangalore.

It was created in 2003 to provide online education

The aim was to have web and video courses in engineering, sciences, and management

**Technology as a Saviour**

**Flexibility:** Online education enables both the teacher as well as the students to set their own learning pace plus provides the flexibility of setting a schedule that fits everyone's agenda. Consequently, providing a better work-study balance.

**A Wide Range of Courses:** In a space as vast and wide as the internet, infinite skills and subjects are there to teach and learn.

A growing number of universities and higher education schools are coming forward to offer online versions of their programs for various levels and disciplines.

**More Cost-Effective than Conventional Learning:** Lesser monetary investment is there with better results.

With the online mode of learning, the money spent on study materials along with commute charges is considerably less.

**A Comfortable Learning Environment:** Online learning allows students to work in the environment that best suits them.

The Other Side of the Coin

**Lack of a Healthy Learning Environment:** Education is not just about classes but interactions, broadening of ideas, and free-flowing open discussions. Students learn more from each other while engaging in challenging collective tasks and thinking together. There is substantial learning that is lost when education goes online. Staring at a screen prevents them from using their mind and acting as remote receptors of what is beamed.

**Lack of Technology Access:** Not everyone who can afford to go to school can afford to have phones, computers, or even a quality internet connection for attending classes online.
Due to this, the mental stress that students have to undergo is very high.

**In Contradictory with Right to Education:** Technology is not affordable to all, shifting towards online education completely is like taking away the Right to Education of those who cannot access the technology. Moreover, the National Education Policy that talks about the digitization of education is also in contradiction with the right to education.

**Health - Eye issues:** Younger students, especially in classes 1 to 3 were most likely to suffer from eye-health issues due to staring at the computer or mobile screen for extended Periods. Other health issues like neck and back pain etc. due to bad posture and lack of movement have been noticed in older students.

**Way Forward**
**A Multi-Pronged Approach:** Flexible rescheduling the academic timetable and exploring options in collaboration with schools, teachers, and parents for providing access to education to a larger section of students.
Staggering teacher-student interactions in physical mode with not more than 50% of the total strength attending schools on alternate days.
Giving priority to the less advantaged students who do not have access to e-learning.
Genuine efforts must be invested to ensure every child gets good quality equitable education as a fundamental right.

**Making Online Education More Effective:** Shorter but quality discussions rather than long hours of monotonous sitting and one-way communication, should be preferred.
The teacher's role has to go beyond just being in control of the class to being a facilitator for the transfer of knowledge.

**Focusing more on Knowledge Aspect:** Education is not about competence but more about motivation. The students are meant to discover not just cover the syllabus.
The system should not just heartlessly push the students and teachers in only finishing the course regardless of any gain of knowledge, stress should be upon quality learning and not quantity cramming.

**Need and Purpose of the Study**
The present study was conducted during Pandemic situation of Covid-19 in Satvahana University, Karimnagar where about 49 university teachers have participated in their PG courses teaching. In the Covid – 19 pandemic, every education institution follows the online teaching mode of education. For this purpose, the above topic was selected by the author and the study on the ICT and digital education Awareness amongst the Teachers in University has been carried out by administering the self-designed questionnaire. The present study was carried out in order to know the ICT and Digital education awareness amongst the Teachers. In the middle of the course the study was conducted and the data were analysed and interpreted which gave an interesting findings.

**Objectives of the Study**
In order to carry out the study, following objectives were taken into account:
1. To examine the Information Technology and Digital Education awareness among the teachers of University for their class work;
2. To evaluate the facilities of ICT available at university;
3. To investigate the Digital Education Literacy among the participants ;
4. To suggest some measures to improve the facilities in the Rural State Universities

**Hypotheses Framed**
1. All the participants may not be well aware use; and
2. All the participants may not be comfortable using Internet.

**Delimitation of the Study**
The present work is delimited to the university teachers who have participated in the PG Course work of teaching and learning at Satavahana University, Karimanagar only. For more generalized findings, this study may be carried out on the bigger population.

**Review of Literature**
For the present study, the primaries as well as the secondary source of literatures have been consulted. Some journal articles and theses have also been consulted. Sinha (2004 A) [6] has studied the Internet Use pattern of the academic community and local population of Barak Valley and find the interesting findings in respect of Internet use pattern.
Sinha (2004 B) [5] has described the detail accounts of importance of information technology in the various library activities. Besides that the information has also been collected from the deliberations of the resource person.

**Methodology Adopted**
**Survey Method**
For any empirical study, the researcher has to identify the method of study. For the present study survey method has been adopted by the investigator, which comprises of administration of questionnaire, observation of the participants, and interview of some of the participants for knowing the opinion of the respondents in respect of usage of ICT and awareness of digital education in this pandemic situation for their day to day activities.

**Selection of Sample**
All the participants of the University Teachers have been selected as samples of the present study. There are two categories of the samples-

**First Category:** For those participants who are having little awareness of Information Communication Technology and

digital education.
Second Category: For those who are from computer background and are comfortable in using Internet.

**Design of Questionnaire**
The questionnaire has been designed by the investigator himself. The questionnaire comprising of 34 questions, has been prepared for the two groups of samples.

**Administration of Questionnaire**
The self –designed questionnaire has been distributed among the participants of the University Teachers who are teaching through online mode to teach PG students and the author has requested them to fill the questionnaire in time return back to the investigator.

**Collection of Filled up Questionnaire**
The filled up questionnaires have been collected from the respondents for the data analysis and interpretations. The authors are very much thankful to them for their timely response.

**Data Analysis and Interpretations of the Responses Received from the Respondents**
On the basis of filled up questionnaire the data has been analysed and tabulated. All the results have been highlighted in major findings section. For data analysis only percentage technique has been adopted.

**Data Analysis and Interpretations**
After collection of filled up questionnaire from the respondents the data has been tabulated using SPSS Software and in the present report only results has been shown in percentage (%). All these results have been shown in the graphical format using MS-Excel. Only important findings have been enumerated. For any quires the first author may be contacted for details.

**Important Findings**
Followings are the major findings of the present study:

**Personal Background of the Respondents**
Questionnaires were distributed to 49 respondents and out of which 41 (83. 67 %) respondents have respondents.
Designation wise analysis shows that maximum numbers of respondents are Assistant Professors (Contract and Regular) (65.85 %), which is followed, by Associate (24.39 %) and Professors stand for only 9.75 %. Subject wise analysis shows that 17.07 % respondents are from Life Sciences / IT background, which is followed by 9.75 % each for Languages; 7.31% belongs to Social Sciences, 4.87 % each are from Commerce and Management studies 2.43 % each from Pharmacy Teachers. Age - Group wise analysis shows that 60.97 % respondents belongs to 31 to 40 Years age group which is followed by 19.51 % for 41-50 Years, 17.07 % are below 30 years whereas only one (2.43 %) is above 50 years of age. Income Group wise analysis shows that 56.09 % come under income group between 50,000-90,000, which is followed by 41.46 % who are in between 90,001-2,00,000 whereas 2.43% is drawing above 2,00,000 /- salary. Sex wise analysis shows that 68.29 % are male whereas 31.70 % are female participants.

**Information communication technology (ICT) Awareness**
75.60 % participants are using computers whereas 24.39 participants are not using computers in the pandemic situation for their online class. Most of the University
Teachers are enhanced their knowledge of digital education. Similarly all respondents (75.60 %) who are using computers are saying that they are comfortable in using computers for their day to day work whereas remaining 24.39 % are not comfortable using computers due to they taught subjects of languages and they are not aware of digital education in their subjects. 21.95 % respondents came across the computer during 2019-2021 which is followed by 19.51 % respondents who have been using computers from 2015-2020 and 17.07 % are using computers prior to 2015 whereas 14.63 % come in contact with computer use during 2012-2009 and 12.19 % have not responded. 90.24 % teachers are using IT in their classroom activities whereas only 9.75 % are not using IT for this purpose of inline teaching in this pandemic situation. 63.41 % teachers are comfortable in using MS-Office for their class work whereas 36.58 % are not able to use this. MS-Office are using frequently by 42.30 % teachers which are followed by 38.46 % for moderately use whereas 19.23 5 are using MS-Office often for their class work. Rating IT in University shows that 29.26 % respondents have rated their university for good IT infrastructure. Excellent IT infrastructure is found it only 19.51 % whereas very good IT infrastructure is found in only 14.63 %. Only 12.19 % have satisfactory IT infrastructure. 9.75 % are willing to introduce and only one (2.43 %) have initiated action for procurement of IT for their University. 73 .17 % respondents say that they are having PC at their home and in their personal chambers of Departments of university and 7.31 % are willing to purchase it. The survey results indicates that 46.31 % have taken formal IT Training whereas 53.65 5 have not taken any formal training for IT in University. 82.92 % participants are allowed by their respective university authorities to take part in such training programmes whereas only 17.07 % have responded in negative. 53.65 % universities have conducted IT training programme to deal online mode of teaching which are organized by MHRD, State and Central Universities for the faculty and staff whereas 46.31 % universities have not arranged any such programme for manpower development. 77.27 % respondents say that they have participated in this training programme whereas 22.72 % have not participated in such programme to develop their digital technology towards education. Those (80.48 %) who have attended this training programme find IT training programme interesting. UGC-MHRD is a place where 51.21 % respondents have taken IT training first time which is followed by colleges (21.95 %), other places (7.31 %), ICSSR (4.87%) and 2.43 % each at University computer centre and INFLIBNET Centre. After taking IT training 80.49 % respondents say that they are able to learn the necessary IT skills whereas 12.19 % have not learn this skills. While asking the choice of place of IT training where the participants are intended to go, 36.58 % like to attend IT training at their University Computer Centre which is followed by some new places (24.39 %), outside colleges (19.52 %).

**Digital Education Awareness amongst the University Teachers**
Digital Education literacy is very much poor among the respondents in Satavahana University after the implementation online mode of education. Out of 41

participants only 36.59 % are digital education literate whereas maximum respondents (63.41%) are digital illiterate.

Out of 15 respondents (36.59 %) of the whole, 40.0 % are expert, 53. 33 % are intermediate and 6.66 % are novice in using Internet and digital education.

While assessing the rating of Internet /e-mail services, e-mail ranks first which is followed by WWW (2nd), e-journals access (3rd), INFLIBNET Databases Search (4th) and Chatting (5th). Teachers are using various digital technologies in teaching

For e-mail service, Yahoo and gmail (33.33 %) is emerged as most preferred e-mail service which is followed by India times mail service (26.66 %), BSNL and Rediffmail (13.33%) and 6.66 % for NICNET and Google mail service.

53.33 % respondents prefer www.google.com search engine which is followed by

www.yahoo.com (26.66 %) whereas www.msn.com, www.rediffmail.com and www.indiatimesmail.com are preferred by only 6.66 % each. Home (46.66 %) is most suitable place of Internet usage which is followed by the University Computer Centre (20.0%) and 6.66 % each access Internet service at Cyber Café and Departments. Morning (40.0%) is the most preferred time for Internet /e-mail access/ digital classes which is followed by evening (33.33%), afternoon (13.33%) and Internet is being accessed least during night and late night hours (6.66 %) which may be non-supply of electricity. Most of the Teachers are lacking digital knowledge on off sudden to introduce the online mode of education in rural state universities. Universities do not have digital facilities in Universities and administrators also not have the knowledge of digital education and not aware of it also.

**Suggestions and Recommendations**

Followings are few suggestion and recommendations for imparting ICT training and also mainly focused the training of Digital education to the university teachers and administrative staff in this pandemic situation and also normal situation to strengthen the Teachers Skills and Development of University:

1. Make all the faculty members Information Communication Technology empowered by giving them an opportunity to attend such type of courses and training programme;
2. Teachers must acquire their own computer (PCs or Laptop) and use it for teaching –learning activities. This will also help in carrying out research activities;
3. Universities should arrange training programme for Information Communication Technology applications and Internet Use and all the faculty members and staff should be encouraged to take part in this activity.
4. Public Funded State Universities which are located in rural areas, these are lagging beyond to facilitate facilities of Wi-Fi, Internet, Online tools, Web Cams, E-Content making techniques and using the various online modes to teach to students by teachers in this Covid-19 pandemic. Therefore, so many Universities do not have digital boards in the Departments of University then it's make a very difficult to handle the teaching – learning process by the University teacher in Universities.
5. Govt. should provide instruments digitally and imparting the digital knowledge to University Teachers, it can be helpful in teaching and research which will be to surpassing University conditions.

**Conclusion**

It is concluded that the in this pandemic situation, all education institutions depends upon the online mode of Education, so what every teachers learn the online tools and they able to teach to PG students from offline to online mode of education. The present work explored that the usage of ICT and awareness of digital education and how much of digitally literate in state University of Satavahana University. The findings of the study are most of the University do not get sufficient digital education knowledge of online mode and they intensively attended the so many online mode of education courses and they trained after they getting into the online mode of education. Govt. and University administrators should organized training programmes whenever we occurred this type of pandemic situations accord to that we mould the teachers to train to teach students using different mode of education.

'Equality of Opportunity' is one of the basic principles of the Indian Constitution. Shifting to a system that benefits only a section of people and leaves behind the neediest ruins the very notion of this statement. Moreover, digital education is something where India is not successful yet. There is still a lot to do in terms of checking if students' entitlements are not being compromised or in providing meaningful academic curriculum alternatives.

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