

# Digitization of Teaching-Learning Process in 21<sup>st</sup> Century: Teacher's Perception towards Educational Effectiveness

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**Abstract:** Technology has changed the way of living and has significant effects on every aspects of individual life across the world including education system. There has been a paradigm shift from traditional structure of teaching and learning to a more complex and emerging technologies. Information Technology has invaded into almost all areas of education process such as curriculum, teaching methods, classroom teaching as well as learning. Due to easy access of technology, there is a constant change in the way of communication in almost every aspects starting from individual's personal space to their professional fronts. Moreover, it is said that IT today acts as a catalyst in promoting educational services and knowledge sharing across the world thus updating the knowledge base of the teachers, facilitators as well as students. This study is humble attempt to find out how the Teachers/Faculties see the digitalization of teaching and learning process. It is just a facilitator to the process or it has transformed the whole process for the good of the education system. The study is based on the Engineering and Management teaching faculties from the eastern states of India. The sample was collected through convenience sampling method and employed their opinion survey. It further tried to find the relationship of teaching effectiveness with the digitalization process through the correlation analysis. The result showed that faculty members found that digitalization has enriched the teaching and learning process to a big extent. Hence, the study further tries to explore the initiatives implemented by government and accrediting bodies in promoting digitization of teaching learning process which may provide platform for future research and policy making.

**Keywords:** Information Technology, Teaching-Learning Process, Communication, Digitization, Knowledge Sharing.

## I. INTRODUCTION

Education is power. Not surprisingly the land of "golden sparrow" has been a seat of learning from the ancient times, accolade by the universities like Nalanda, Taxila, Vikramshila and its eminent scholars. Education in India has been always held in high esteem. This sector is basically sub-divided into Primary/Elementary sector, Secondary and Higher Education sectors.

India is a young country with 563 million populations being in the age bracket of 10-35 years (Census, 2011) [1]. Henceforth, education needs special attention for developing our nation, into a strong, developed and powerful country in

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the world. This paves the way to look closely at our education sector. Precisely talking the higher education sector in India is full of potentials and opportunities, at the same time it is pre-occupied with various pertinent issues and challenges.

Education in the 21st century has become the epicenter which has led to changes and developments across all areas (Richard, 2015) [2]. Moreover, in today's competitive world information technology has become a buzz word and has facilitated the teaching learning process in the education industry and thus considered a main ingredient towards human progress. It is evident that embracing IT into education system has impacted major changes in terms of methods, purpose and perceived potential of education. Facilities to cater to the open and distance learning are also on the rise so as to cater to the needs of higher education and increase its reach in remote and distant areas. Even though we have been able to achieve ICT developments in the education system since the last two decades, there is still a challenge to integrate technology into management and delivery of learning systems in the higher education system.

## II. TRENDS IN GROWTH OF EDUCATION IN INDIA

There has been increasing trends in the growth of education in the last decade with respect to establishment of new universities, colleges in higher education and student enrollment in all courses listed by University Grants Commission.

Table 1: Trends in Growth of Education

Trends in growth of education	2009-10	2017-18
Total No. of Universities	493	851
Central Universities	42	47
State Public Universities	256	383
State Public Universities	60	295
Deemed to be universities	130	123
No. of colleges in Higher Education	31,324	41,012
Student enrollment in all courses	146.25 (in lacs)	366.42 (in lacs)

Source: Annual Report 2009-10, 2017-18, UGC [3&4]

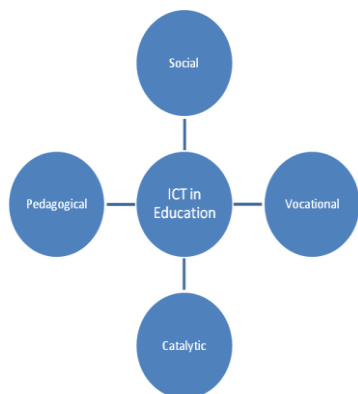
Since time immemorial providing education has been a social endeavor and classroom teaching has formed the core of teaching-learning practice. Despite the fact, inclusion of ICT in teaching-learning methods is becoming a dominant means of diffusing information into the education process (Komail, Malini & Nalini, 2015) [5]. The rationale behind



integrating Information and Communication Technology into education can be explained on the basis of four factors : Social Factor implying social perceptions regarding role of technology towards society's progress and the need for familiarizing students with technology; Vocational Factor that prepares students for jobs that require skills and applications in technology; Catalytic involving utility of technology to improve performance and effectiveness in teaching, management and many other social activities; and Pedagogical which utilizes technology in enhancing learning, flexibility and efficiency in curriculum delivery (Cross & Adam, 2007) [6].

In the 21<sup>st</sup> century, other modes of ICT enabled learning such as e-learning have become instrumental in providing easy access to quality education, thus leading to creation and development of knowledge societies. E-learning includes all forms of online based education and education in distant mode supplemented with IT applications. The various kinds of ICT usage in the form of teleconferencing, email, video conferencing, audiocassettes and CD ROMs have been used and are continuing to be in used in education for different learning purposes (Bhattacharya and Sharma, 2007) [7]. Moreover, with the effective use of technology, India has been striving to achieve excellence as well as equity (Singh, 2015) [8]. In spite of all the initiatives towards development of e-learning in India, University Grants Commission (UGC), the apex towards education system in India, is advocating and making efforts to enhance the quality of higher education by framing policy guidelines for IT integration in classroom and other e-learning activities.

**Figure 1: Rationale behind ICT in Education**



*Source: Cross and Adam (2007)*

There has been a paradigm shift in the conventional methods of teaching-learning process and focus is more on innovative methods gaining competitive advantage, thus promoting competence and performance. Development of technology driven curriculum requires various sources of information and student centric learning settings. This consequently leads towards development in educational system complying with emerging technologies.

The role of ICT not only increases student learning but also enhances capacity building in terms of developing potential of education (Mondal & Jayanta, 2012) [9]. But it is equally interesting to know how the faculty members see the digitalization in the teaching and learning process. Does it help in making the process better tuned and effective? Moreover, there is an existing notion that learning through

technology facilitates staff understanding of innovative pedagogic methods of learning and interacting, easy sharing of new practices among teaching as well as student community and result in widening the opportunities for their participation Mishra, S. & R. C. Sharma (2005) [10]. And the capabilities of competent and trained teachers/academic experts can be made available to larger target group through virtual settings. Therefore, it is an important study in the direction of examining these existing notions.

### III. DIGITIZATION OF TEACHING-LEARNING PROCESS IN THE 21<sup>ST</sup> CENTURY

The present day is experiencing a radical change where technology has become all-inclusive and digitization best describes the 21<sup>st</sup> century (Neeru (2009) [11]. The education industry is unfolding with unprecedented ideas thus creating advancement in the era of technology driven societies. The inclusion of IT enabled learning tools; easy access of multimedia such as Smart phones, laptops, and tablets has made the education system more evolving and better. Today's generation is no more confined to the limits of simple learning and expanded its horizon beyond conventional modes of learning. So we are compelled to use digitization in our educational system as the new phase of learning culture which is the call of the hour and involves various advanced techniques. With students across boundaries, learning institutions are trying to identify an integrated solution to meet the educational demands of stakeholders. The conversion and integration of digitized mode of education and use of various e-techniques like online courses, online exams, e-textbooks are improving the quality of education. The education industry has undergone massive transformations due to digitization process in academic activities and looking for implementation models integrating tradition with innovation (Machekhina, 2017) [12]. This study proposes to find the perception of the teachers regarding the digitalization of education for educational effectiveness.

#### Various Digitalization Interventions in Education

Online courses are developed by experts who have unmatched proficiency in their specific field and can give you the experience of real-time learning by designing their own online course. Online resources are being developed in a way that makes the teachers available to educate the masses, thus improving the quality of education and increasing the number of literate students.

#### Online Exams

Digitization gave way to the online exam, making the examination process convenient for both teachers and students.

#### Digital Text Books

E-textbooks and e-texts, digital textbooks provide an interactive interface in which the students have access to multimedia content such as videos, interactive presentations, and hyperlinks.

#### Animation

Visual representation of the topic makes it easy for students to grasp the concept in a more comprehensible manner and simplified way.

### Administrative Activities: An Integral Part of the Education Industry

With digital systems being prevalent in education we are experiencing different levels of ease in online education, but the administrative part is not off the table. Keeping the records of students and maintaining their attendance and roll number is a big headache, that too when the students are outnumbering the administrative heads. So colleges and schools are adopting more hassle-free computerized methods and avoiding the old manual methods of maintaining the records.

### Recent Integration of ICT in Education

During 2017-18, the UGC has launched new UGC Website with highly interactive, informative and user friendly applications in addition to the launching of The Central University portal and the University Activity Monitoring Portal (UAMP). The significant features of the portal include increased productivity, improved communication, transparency in fund allocation/ expenditure, and the prospect of building a stronger relationship between MHRD, UGC and Central Universities. The University Activity Monitoring Portal (UAMP) has been recently launched in 2018 to serve as a one point stop for events/activities undertaken by HEIs from time to time. This portal facilitates universities to upload details of various events/activities undertaken by them. As part of e-Governance, e-Office has been implemented in the UGC to create paperless environment as regards receipt and movement of files, maintaining of pay slip, e-leave etc. Moreover, for production of courseware e-content for Post Graduate Subjects, UGC Developed e-PG Pathshala with high quality, curriculum-based and interactive content in different subjects. UGC is also appointed the National Coordinator for Non Technology Post Graduation Degree programme for Massive Open Online Courses for SWAYAM Platform offered by various universities.

## IV. PROPOSED METHODOLOGY

The survey was carried out in the five eastern states in India namely, Bihar, Jharkhand, Uttar Pradesh, Odisha and West Bengal in the month of November to December 2018. A total of 220 samples were collected through convenience sampling method and 201 responses were used for final analysis after data purification.

**Sample:** It consisted of the faculty members from the engineering and Management teaching institutes from the above mentioned five chosen states from the eastern part of India.

**Instrument:** A self-made questionnaire, consisting of five items on respondent's demography, eight items on the ease of the use of IT in education and eight items on the effectiveness of teaching and learning process through digitalization was made. The responses were coded on a four point intensity scale.

**Sample Characteristics:** Most of the respondents were Male (55.7%) as compared to Female (44.3%). It was heartening to find that most of the faculties were in lower age bracket. The highest number of faculties belonged to the age group of 31 – 40 years (36.8%), followed by age group 23 – 30 years (27.4%) and 41 – 50 years (26.9%). In terms of experience maximum faculties had an experience of 0-10 years (80.6%).

Most of the faculties were either Post graduate with NET/SET/GATE qualification or Ph.D. without NET/SET/GATE qualification (66.6%). 72.6% of the respondents were either Assistant Professor or Associate Professor. Table 2 shows the demographic distribution of the respondents.

**Table 2 Sample Characteristics**

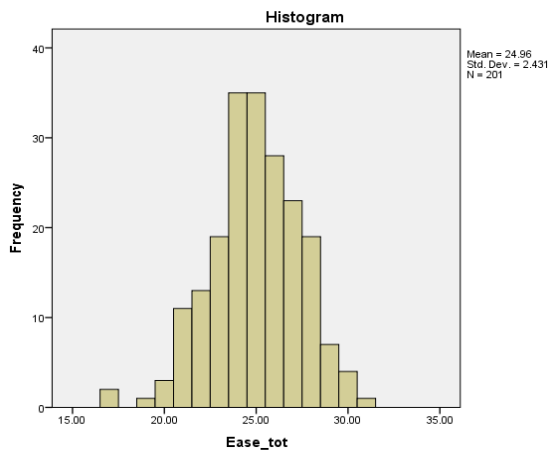
## V. RESULT ANALYSIS AND INTERPRETATION

The respondents were asked to give their opinion on the two dimensions of the digitalization of the teaching and learning process; ease of the use of ICT and Effectiveness of the teaching and learning process after use of the ICT, as compared to the traditional teaching and learning method.

Demographic Variables	Measures	Frequency	Percentage (%)
Gender	Male	112	55.7
	Female	89	44.3
Age	23 – 30 years	55	27.4
	31 – 40 years	74	36.8
	41 – 50 years	54	26.9
	51 – 60 years and above	18	9.0
Experience	0-5 years	88	43.8
	Above 5-10 years	74	36.8
	Above 10-15 years	31	15.4
	Above 15-20 years and more	8	4.0
Qualification	Post- Graduate	37	18.4
	Post- Graduate with NET/SET/GATE qualification	71	35.3
	Ph.D.without NET/SET/GATE Qualification	63	31.3
	Ph.D.with NET/SET/GATE Qualification	30	14.9
Designation	Assistant Professor	97	48.2
	Associate Professor	49	24.4
	Professor	29	14.4
	Senior Professor	16	8.0
	Dean/HOD/Director/Head of Institute	10	5.0

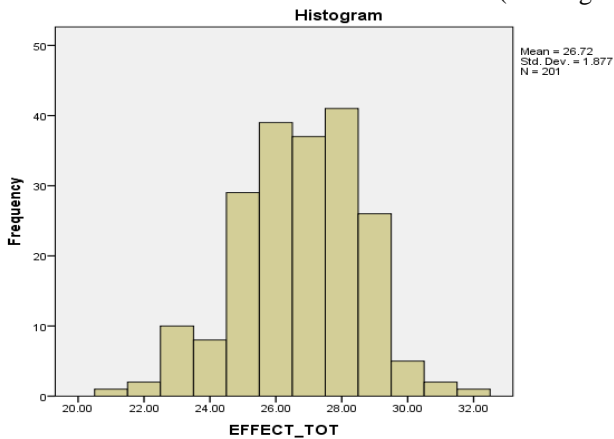
Source: Authors own survey data

Most of the respondents found that using ICT in teaching and learning process was not very difficult and they were finding it appropriately easier to use it in teaching and learning process, with a mean of 24.96 and Standard Deviation of 2.431 (refer fig-2).



**Figure- 2 Ease in the use of ICT in teaching and learning process**

Similarly it was found that most of the faculties found that the effectiveness of the teaching and learning process increased with the introduction to the ICT practices with a mean of 26.72 and Standard Deviation of 1.877 (refer fig-3).



**Figure- 3 Effectiveness due to use of ICT in teaching and learning process**

Both the results shows that the engineering and Management faculties feel that the digitalization of the teaching and learning process is helping in making the process more effective in the meantime it is not difficult to use the ICT in teaching and learning processes. A faculty doesn't need to be an expert or specially trained to use the ICT practices in teaching. As a whole it may be summed up that the faculties too advocate the digitalization of the education in the 21<sup>st</sup> century.

**Limitations:**

This Study is based on convenience sampling method and employs opinion survey. It may be the personal opinion of the respective faculties marred by various response or personal biasness. A more robust statistical method can be used to get a better understanding of the faculty's perception. At the same time the measure are self-made, so the issues of construct and content validity needs to be better addressed.

**VI. CONCLUSION**

The increasing use of information and communication technologies (ICTs) has brought changes to teaching and learning at all levels of higher education systems leading to quality enhancements. However, digitization of education system has not dusted the value of our conventional classroom mode of learning. But to compete with the existing

system, traditional forms of teaching and learning are increasingly being changed to online and virtual process. However, combined with the aspects of both; classroom learning and online learning methods, both forms walk parallel and act as a support system to each other, which gives a stronghold to the student masses. The use of ICT in education not only improves classroom teaching learning process, but also provides the facility of online learning. Digitalization of education seen as a blessing by the faculty across the eastern states in India and thus the teaching fraternity too encourages the digitalization of the educational sector as a whole.

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