

# Exploring Students' Acceptance of Computer Technology in Indian Universities

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## Abstract

In the era of globalization, knowledge plays significant role in achieving competitive advantage and global competitiveness. The widespread penetration of internet provides implausible opportunities for the delivery of education, and in transforming higher education by creating a highly synergetic and personalized environment that will strengthen the way students grasp knowledge, communicate, & collaborate along with studying both on and off campus. Technology, has transformed the traditional classroom context of education. Recent research found that students in digital environment reports effective learning in both quality and quantity regardless of discipline or student type. The National policy on Education (1992) emphasized upon employing Educational Technology to improvise the quality of education and aims at preparing youth for holistic socio-economic development of the nation . The ICT era appears to have finally dawned in India and has increased the availability of educational opportunities. The objective of this research is to study perception of students regarding traditional lecture methodologies supported by digital multimedia instructional materials. It also attempts to study their impact on various learning outcomes.

**Keywords:** Globalization, competitive, opportunities, development, multimedia

## 1. Introduction

The Indian education system has drawn its roots from the traditional 'Gurukul' system where students resided along with the gurus at their premises to gain education, knowledge and moral values which were not linked to any wealth or personal gratification (Kashalkar-Karve, 2013). Development of education system remains the prime focus for the holistic development of human resource of any country

(UNESCO, 2015). Also, growing public demand for quality education, the government is trying to make higher education accessible to the masses at an affordable cost (UNESCO, 2014). During the past two decades, higher education has seen exponential growth in India. Currently, India holds supremacy in the global education industry as it has over 850 universities (as of April 2018) and 42,026 colleges (IBEF, 2018). This makes India largest and biggest hub of higher education institutions in the world. As per Ministry of Commerce and Industry Government of India, 2018, the Indian education industry is currently pegged at US \$ 97.8 billion in 2016 and is predicted to touch US\$ 144 billion by 2020 (IBEF, 2018). Currently, Government of India, under the dynamic leadership of Prime Minister Sh. Narendra Modi ji has embarked upon an action plan by circumventing the challenges to amend and reform the regulatory agencies for better and improved administration of the higher education sector. India provides the second largest platform for digital learning after the US. According to Technopak Report, 2016 India's digital learning market is poised at US\$ 2bn in 2016 and is predicted to reach US\$ 5.7 billion by the end of 2020. The Indian government has also given the requisite thrust upon higher education sector in its Five Year Plans. The Twelfth Plan emphasized upon the six pillars namely Expansion, Equity, Excellence, Governance, Funding, Implementation and Monitoring for building "excellence" in India's higher education system. Realizing the gravity of the situation, planners are working round the clock to establish a system to harness the demographic dividend that can deliver quality in terms of professional and industry-ready skilled workforce (Industrial Policy, 2017). The ability to seize this golden opportunity depends upon successfully addressing the challenges which are plaguing the Indian education system (Technopak Report, 2016). Information & Communication Technologies (ICT) have become a

powerful tool which is transforming and will continue to transform all facets of education ICT has been envisaged as an indispensable tool for providing high quality personalized and interactive knowledge platform over the internet/intranet via virtual classrooms, mobile devices, online tutorials, gaming and learning applications for all the learners in higher education institutions at anytime, anywhere mode (Yesilyurt *et al.*, 2016). This leverage of technology has bridged the gap by making educational facilities affordable and widespread for all strata of society (AICET, 2017). The application of ICT has helped in spreading and expanding education in two ways—one is access, and the other is effective teaching-learning. It has given the facility to reach out to a large number of people effectively in no time. Together with the advantages of costs savings, the World Wide Web provides users with timely and updated information and allows them to interact with parents, students, public institutions, and stakeholders. The “Application of ICT in delivery mechanism” includes vigorously working towards innovation and spreading learning in a more technologically-effective manner (Admiraal *et al.*, 2017). Teaching and learning in the present era rests upon the strong foundation of digital database, electronic communication, e-learning apps and virtual systems. Students, now-a-days are well versed with latest technology such as word processing, database management, editing tools, design and graphing software and use them in the same ways as professionals in business, communications and researches use. Effective use of technology has enabled teachers to aggregate and visualize information comprehensibly for making informed and wise decisions to meet changing needs of education. Technology led education help students to develop positive collaborative learning aptitude and attitude. ICT has made learning more flexible and convenient than traditional learning (Bindu, 2017) by supporting students with the ability to complete work at one’s own pace and one’s own time (Popa & Stănculea, 2012). Educational institutions capitalizing on the relationship between learning and technology are attempting to develop higher order skills among students. These skills will help the students to function effectively in the world beyond the classroom. It is crucial to transform our huge ripe demographics into immeasurable power house of knowledge by nurturing and honing the working population for the development of our country.

## 2. Review of Literature

Innovations in digital technologies, particularly the Internet, have exponentially increased modern people’s reach to access information (Greene *et al.*,

2018). Online learning plays a pivotal role in disseminating higher education, by connecting the demands and expectations of prospective students through quality learning experiences (Garrison & Kanuka, 2004). However, eLearning refers to extensive usage of internet technologies to deliver a wide array of solutions that improvise understanding along with efficiency and effective outcomes (Rosenberg, 2001). eLearning is basically a learning channel by using electronic technologies to access educational curriculum without the need of traditional classroom premises (Nair, 2019). Modern multi-disciplinary approaches provided by ICT is a boon to educationalist since it has a positive impact on pupils’ learning behavior (Stošić & Stošić, 2015) along with improved professional productivity (McLaughlin & Talbert 2006). Gross *et al.*, (2012) found that ICT plays a decisive role in teaching and interaction among teacher and students whether they belong to the Net-generation or not. Roll *et al.*, (2018) concluded the positive impacts of tutors’ academic and computer self-efficacy on attitude for applying computer based education system. Sun (2008), suggested that students are enthusiastic about the use of ICT, which enhances their satisfaction in e-learning courses. eLearning is fast becoming the foundation for education system across the globe based on different means like: Means of communication (*blended eLearning*); Schedule (*Synchronous or Asynchronous*); eLearning class structure (*self-paced, instructor-led, or self-study with an expert*; and Technologies used (*Video/Audio tape Internet cable modems*) (Hyder, *et al.*, 2007). This process of restructuring enables appropriate growth in specific areas, promotes the prominence of learning and improvise professional productivity (McLaughlin & Talbert 2006). eLearning is beneficial at all spheres of life that works as a catalyst in accessing the rich pool of information over worldwide web educational resources beyond the classroom (McKenna *et al.*, 2014; UNESCO, 2014). eLearning formulates personalized learning tools (Kurilovas *et al.*, 2014) which are flexible, convenient, affordable and easily accessible (Ventayen, *et al.*, 2018). Additionally, eLearning is better than traditional learning (Dascalua *et al.*, 2015) as they overcome the hassles and challenge posted by geography, demographics, resources and provide knowledge and innovative opportunities to the learners at their convenience (Burns, 2011). Effective eLearning environment facilitates faster and independent learning along with understanding of abstract concepts (Wang & Hannafin, 2005; Alexander, 2006), work socially with each other (Phillips, 2005) and help learners to comprehend in a things in a faster way (Smith, 2010). eLearning also benefits the learner by catering to meet their individual needs (Tang & Austin 2009). Learners enjoy the essence of learning at their own pace and at

time convenient to them. Holvig & Crisci (2001) provides following evidence in support of technology:

- Empowerment : students feel more power in hand
- Engagement: students collect data and analyze them
- Authenticity : students feel technology has helped them
- Leading with technology: students feel technology will help them in latter part of their life.

eLearning is a student- centered approach and can complement classroom teaching (Mohanty & Vohra, 2006). It provides opportunity to learners for more interactivity and simulations for maximizing learning. Academicians attempts to combine internet technologies into the teaching and learning process in higher education (Roby *et al.*, 2013). In this changed scenario, traditional classroom teaching with the help of books, lectures and written examinations to evaluate the students need to be replaced by newer and more effective methods of imparting education. (Yalman, *et al.*, 2016). With modern technologies like multimedia, online-training etc., the emphasis will shift to computer-based training which uses audio, visuals, and animations in interactive manner (Van Laar, *et al.*, 2017). However, there is limited teaching of basic ICT skills and no integration into the classroom teaching and learning process (Barakabitze, *et al.*, 2015) which is posing a hindrance in fast penetration of e-Learning methodologies. Along with this lack of access to multimedia in traditional classrooms and poor internet connections is another constraints encountered across the globe (Mulder & Kontakos, 2015; Ndibalema, 2014). Past researchers concluded that e-learning will improve student involvement in both volume and quality by engaging learners in higher-order learning (Hiltz, *et al.*, 2000; Mikulecky, 1998). In the present study, an attempt has been made to study the perception of students towards eLearning in teaching learning and assessing their computer competencies for learning.

## 2. Objectives of the Study

The objectives of the present study are to:

- i. Assess the computer competencies of the students.
- ii. Assess the computer technology usage in teaching/learning methodology.
- iii. Study students' perception about technology-mediated learning methods in teaching learning.

## 3. Methodology of the Study

Survey method of research was used to conduct the study. Stratified (equal) random sampling technique was used to select 150 students pursuing management and engineering courses .75 students (selected randomly) from each of the two courses constituted the sample of the study. However, 130 students (63 from engineering & 67 from management) responded to the questionnaire. Table: 1 presents the profile of the respondents who had participated in this research study.

**Table 1 : Distribution of Respondents Among Two Groups of courses**

Gender	Engineering (n=63)		Management (n=67)	
	n	%	n	%
Male	39	61.9	36	53.7
Female	24	38.1	31	46.3
<b>Total</b>	<b>63</b>	<b>100.0</b>	<b>67</b>	<b>100.0</b>

## 4. Results and Discussion

### 4.1 Computer Competency of Students for Learning

The analysis of the data regarding computer competencies for learning are entered in Table 2. It can be seen that more than 60% of the students were of the view that they have moderate competency in operating MS office (66.6%), operating MS Excel (60%), using computer for data processing and analysis (46.6%). Also, more than 60% of the students found to have high competency in usage of internet (54.6%) and e-mail (74.6%). This shows that students today are competent in operating MS office, operating MS Excel, operating power point, using computer for data processing and analysis, usage of internet and e-mail. However, students are found to be less competent in Using Audio & Video Communications ( 27.3%), advanced web technologies (22.6%), audio & video conferencing (46.6%), and global digital library (32.0%).The underlying reason for comparatively low competency in video conferencing may be because of limited facilities in the country

**Table 2 : Computer Competency of Students for learning**

Competencies	High competency frequency	Moderate competency frequency	Less competency frequency	No competency frequency
Operating MS Office	30 (20.0%)	100 (66.6%)	15 (10.1%)	5( 3.3%)
Operating MS Excel	50 (33.3%)	90 (60%)	10 (6.6%)	-----
Operating Power point	67 (44.6%)	63 ( 42%)	11(7.3%)	9(6.9%)
Use of Printer/Fax	43 (28.6%)	78 (52.3%)	13 (10.0%)	6( 4%)
Usage of Internet	82 (54.6%)	57 (38.0%)	9 (6.9%)	2(1.3%)
E-Mail	112 (74.6%)	38 (25.3%)	-----	-----
Using computer for data processing& analysis	45 (30%)	70 (46.6%)	27 (18%)	8(5.3%)
Using Audio & Video Communications	44 (29.3%)	46 (30.6%)	41 ( 27.3%)	19(12.6%)
Using Advanced web technologies	16 (10.6%)	76(50.6%)	34( 22.6%)	24(16%)
Using Automated web search engines	41 (27.3%)	55(36.6%)	40(26.6%)	14 (9.3%)
Using Audio & video conferencing	19(12.6%)	38(25.3%)	70(46.6%)	23(15.3%)
Using digital library	35(23.3%)	50(33.3%)	48(32.0%)	17(11.3%)

Government of India in the year 2004 launched a satellite called EDUSAT (Education satellite) to serve educational sector. It is aimed at providing all sectors of education from primary to university, professional and non-formal education and basically reaching the unreached in India's every corner. The network has been quiet successfully utilized by the national users like CIET/NCERT, CEC/UGC, IGNOU, AICTE/NITTTR, and IDSP. This facility has yet to pave its way for frequent usage in the university setting. The competencies in advanced web technologies, audio & video conferencing, and global digital library must be extensively built in the country for transforming teaching learning process through e-Learning among the students

## 4.2 Computer Technology Usage in Teaching/Learning Methodology

Computer technology can also be used by students for independent learning. Students use computer technology for preparing assignments, project reports etc. Table 3 depicts the use of various technologies used by students for learning.

**Table 3: Computer Technology Usage in Teaching/Learning Methodology**

Competencies	Engineering (n=63)		Management (n=67)	
	High competency frequency	Moderate competency frequency	Less competency frequency	No competency frequency
Operating MS Office	30 (20.0%)	100 (66.6%)	15 (10.1%)	5( 3.3%)
Operating MS Excel	50 (33.3%)	90 (60%)	10 (6.6%)	-----
Operating Power point	67 (44.6%)	63 ( 42%)	11(7.3%)	9(6.9%)
Use of Printer/Fax	43 (28.6%)	78 (52.3%)	13 (10.0%)	6( 4%)
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### 4.3 Students' perception about Technology-mediated learning methods in teaching learning.

Teachers engaged in teaching in the two selected courses make use of competencies such as CD-ROM, DVD in their classroom instruction. As a result the students are exposed to computer technology in their teaching learning. High percentage of students perceive following benefits of Technology-mediated learning methods in teaching learning:

- The method is particularly suitable for introducing a subject (83.3%).
- The proper perspective and orientation of a subject can be presented (82.2%).
- Most efficient teaching methods for presenting many facts or ideas in a relatively short time (85.1%).
- Stimulate very good interest in the subject (91.9%).
- Provide teachers with an opportunity to estimate student progress before an examination (66.9%).
- Many teachers find it difficult to hold the attention of their students for an entire class period (77.8%).
- Convenient method for instructing large groups (88.0 %).
- Help in enhancing retention and transferring to the job (85.4 %).
- It is waste of time to repeat the matter already present in books (30.6 %).
- The teacher make the lecture impressive may care more for manner and style but very little for matter or content (30.5 %).
- Method is very fast, the pupil cannot easily take notes and will not have any written record of the salient points made out (87.4 %).
- Increasing spontaneity and interactivity among audience (46.2 %)
- The learners are more passive than be active in class (42.8%).
- Low cooperation and interaction between the teacher and pupils (27.2 %).
- High teaching quality (80 .0%).
- Offer students with varied backgrounds a common understanding (75.6 %).
- Enriching curriculum with interdisciplinary (79.4 %.)
- Help learners and instructors share thoughts and build their own self- knowledge (64.9%).
- Useful to supplement material from other sources or for information difficult to obtain in other ways (70.7%).

- Effective way of communicating the energy and enthusiasm of a person who has actual experience in a field, thus motivating students (85.5%).
- Help to integrate new knowledge and skill into their everyday life (79.5%).

The response for the statement corresponding to e-Learning as a de-humanizing process of learning got somewhat mixed response where 65.7% of the students agreed, 20.5% neither agreed nor disagreed and 13.8% disagreed. About 74% of the students feel that universities should create more facilities for e-learning

### 5. Conclusion and Recommendations

The analysis of the study highlighted that even though students' have made vigorous efforts to blend information technology with learning, but the pedagogical usage is still very low. Although, male and female students differ significantly in their perceptions of ICT usage, but largely the students' perception towards technology-mediated learning methodology is positive. The growth and impact of information technology in education is fast paced and substantial. Undoubtedly, e- Learning environment provide advantages in terms of convenience and flexibility but also include reduced interaction between faculty and students. From the research results, it could be concluded that most students are willing to learn new skills with the help of information technology, but they would rather prefer face-to-face interaction. Faculty members must understand student teaching/learning preferences so as to structure content/ courses that maximize learning among the students. Also, to meet learning requirements of students, teachers must employ a variety of instructional methods to make learning easy and enjoyable. It will not be possible to prepare 21<sup>st</sup> century learner by using 19<sup>th</sup> century processes. The education system requires new teaching and learning mythologies to prepare the 21st Century learner for a 21st Century world. The students now seeking admission in colleges and universities are competent to use computer technology. They have already achieved high to moderate competencies in technologies like operating MS office, operating MS Excel, operating power point , using computer for data processing and analysis, usage of internet and e-mail, advanced web technologies etc .Therefore, there is need to change the learning environment of educational institutions including universities to accommodate and promote the use of new technologies. Use of new technologies provides the tools to explore and collect information with greater ease, thereby leaving

enough time for learners to analyse and integrate information.

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