Impact of ICT in Education Systems

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Abstract- **ICT brought waves of industry transformations, which is also visible in education industry. With the changing environment and the industry demand, student's perspective towards learning is also changing at a fast pace. Gone are the days when teachers used to merely teach through blackboards in a lecture hall. The scenario is no more visible these days. ICT in education is being used to enhance creativity, interaction and knowledge sharing apart from student learning. But, the question is whether e-learning environment is able to achieve these objectives? This paper will try to uncover how e-learning is giving a new shape to the education industry. Also, it will encompass the students' perspective and experience of e-learning. The results reveal that government is taking many initiatives for developing and improving this platform. Despite the efforts by the Government, students are still not fully convinced with the potential benefits of e-learning. Furthermore, these platforms have confused the students regarding which one should they opt for. Based on these findings, the authors have developed managerial implications for the educators, students as well as educational institutions.**

Keywords: E-Learning, Educators, Education industry, ICT, Students Perspective.

I. INTRODUCTION

ICT brought waves of industry transformations, which is also visible in education industry. The transformation of Indian industries is visible since the last two decades. The increased worldwide exposure has enhanced the competitiveness of the firms in context of product or service delivery.

ICT is getting key component of every industry and education industry is not an exception to it. Education sector is also equally inspired by the remarkable potential of information and communication technology for upgrading the quality of education along with outreach (MHRD Policy, 2012) [1].

Owing to the advancement of technology as well as the mentality of the people; Indian education system is evolving in many ways (Jain, 2017) [2].

With the changing environment and the industry demand, student's perspective towards learning is also changing at a fast pace. Focus area of ICT Policy is the participation of youth in the growth of knowledge society, promoting the co-creation of quality content and developing networks between different stakeholders.

Technavio analysts report (2018) [3] revealed that the key factor that has contributed to the growth of e-learning market in India is the increased penetration of internet and smart phones.

Gone are the days when teachers used to merely teach through blackboards in a lecture hall. But, this is not the only approach used these days. The inclusion of 'Quality Education' as a key sustainable development goal has led to the expansion of the education sector globally (Pothula, 2018) [4].

ICT in education is being used to enhance creativity, interaction and knowledge sharing apart from student learning. To achieve all the above objectives, Government of India introduced centrally sponsored schemes like Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS).

ICT in Education Curricula for students and teachers has been developed at the national level and being implemented across the country.

Likewise, e-Pathshala is developed by NCERT for showcasing and disseminating all educational e-resources. A major breakthrough by the Indian Government includes the introduction of SWAYAM.

It provides an integrated platform for online courses, using ICT that covers all higher education subjects and skill sector courses to ensure the provision of the best quality higher education at affordable cost. Apart from this, National Digital Library of India (NDL), a virtual repository of learning resources has been created for wider accessibility of books (in the form of e-books) (Press Release by MHRD, December 17, 2018) [5].

ICT is increasingly used by the educational institutions as an aid to teach students. Information technology has enabled and mediated resources for teaching and learning. IT has leveraged the dissemination of information of sparse educational resources for widespread availability or reach.

Teachers are using this technology to make the class interesting with giving some practical insights on one hand, while students use it to gain an in-depth knowledge of the subject where they have interest on the other hand.

E-Learning has gained popularity amongst the students in India as it has brought a paradigm shift in their lives. Besides sharpening the skills of the students, it provides the comfort of anytime, anywhere learning.

ICT has opened new career opportunities for students who are driven to explore and learn – at their own pace and time. There is an increasing affinity of students for new technologies and products as there is a huge potential for technology to be integrated into education industry.

Students are embracing 'self-learning' through e-learning teaching models which act as a significant communication bridge between students and teachers. Studies reveal that the creative use of Information and Communications Technology in education has the capacity to increase the quality of

people's lives by enhancing teaching and learning (Goyal, 2017) [6].

It recognizes the child's cognitive, social and emotional development significantly. Moreover, it extends the child's immediate learning environment, offering incredible opportunities to push learning beyond the confines of the classroom.

Teachers, nowadays, do not only deliver lectures to the students; rather they facilitate in the provision of an e-learning environment by incorporating new age digital media technologies while doing so. It has thereby increased the scope of interactivity. Digital platforms have resolved many issues like boredom, monotony, usage of same traditional pedagogy and lack of teachers for specialized subjects thereby paving way for the best e-learning experience through the flavor of independence in their learning style. But, the question is whether e-learning environment is able to achieve these objectives?

This paper will try to uncover how e-learning is giving a new shape to the education industry. Also, it will encompass the students' perspective and experience of e-learning. The results reveal that government is taking many initiatives for developing and improving this platform.

Despite the efforts by the Government, students are still not fully convinced with the potential benefits of e-learning. Furthermore, these platforms have confused the students regarding which one should they opt for. Based on these findings, the authors have developed managerial implications for the educators, students as well as educational institutions.

II. METHODOLOGY

The present study employed Interpretative Phenomenological Analysis (IPA) to intensely scrutinize the lived in experiences of the participants (Eatough & Smith, 2008; Smith, 1996, 2004, 2011; Pringle et al., 2011) [7-11].

IPA is a qualitative technique which is specifically used for those studies where typical quantitative studies in the discipline attempt to examine a smaller sample of respondents in depth using, for example, semi-structured interviews (Smith, 1996)[8].

It helps the investigator gain insights in depth and provides a clear understanding of the participants' perceptions.

As referred by, Dipboye & Foster (2002) [12], it provides better description and hence draws meaningful specified conclusions based upon pre-existing theories and concepts.

The determination of sample size is critical and due care should be taken while selecting participants for this type of study to gain meaningful data. The studies based on IPA can be conducted with a sample size ranging from one to 15 or more (Smith & Osborn, 2008) [13].

In the present study, the respondents were selected from Delhi NCR of India. Semi-structured interviews were conducted to collect the primary data to understand the student's perspectives on Impact of ICT in Education industry. The fifteen respondents (6 Females and 9 Males) showed their interest and volunteered to be a part of the study with age ranging from 18-25 years. Most of the respondents were unmarried. Three respondents were post-graduates, seven were pursuing graduation while another five were pursuing post-graduation.

III. DATA COLLECTION & ANALYSIS

For the purpose of this research, primary data has been collected with the help of semi-structured interviews to gain in-depth insights from the respondents. The researchers used an open-ended guide while conducting interviews. The reliability and validity of the checklist was verified by four experts in the field and due modifications were incorporated as per the given suggestions.

To further test the construct validity, the revised draft with suggested changes was given to four students who were not included in the study.

In the first phase, followed by demographic details; two trigger questions were asked to the participants - "What do you feel about online leaning courses?" "What are the motivators that drive you to e-learning? "What challenges do you think reduce the interest in e-learning?" Questions asked by the researcher were simple and clear to avoid any ambiguity. The average time duration of each interview was forty-five minutes, though the overall timings of the interviews fluctuated between thirty five to eighty minutes.

Data as the whole was analyzed with the help of ATLAS.ti version 8. As recommended by Smith & Osborn (2008) [13], the current research work followed the steps for analyzing interview data. The verbatim transcripts were closely read for identification of essential themes, issues, and expressions that provided meaningful insights into each participant's outlook on e-learning.

In the second phase, the notes prepared were examined for themes emerging and were marked up on the transcripts. Later, identified themes were recorded separately to the transcript and list of themes emerged were analyzed for associations-checking for similarities and differences between them and forming clusters of the theme. Similar themes were placed together and given terminology. The researchers coded independently and validated the entire process with internal consistency amongst them was eighty percent.

Each interview was analyzed from the transcript notes which were converted to themes and thereby clusters leading to high order themes. The 'cutting and sorting' technique suggested by Ryan &Bernard (2000) [14], to ensure objectivity and transparency of the analysis process.

The results obtained were further deliberated till consistency is achieved. Further authentication is confirmed by supporting outcomes with verbatim excerpts from interview participants. As suggested by Smith (2011) [10], excerpts from three to four respondents per theme are sufficient for sample size bigger than eight. To maintain the word count, the perspective of every individual participant was not detailed; although aspects of all individuals and themes were identified across the entire group.

The researchers have tried to capture the data of the current research through the analysis of three different situations, which are detailed below.

IV. RESULTS AND DISCUSSION

This section presents the findings from the analysis of fifteen interviews using Interpretative Phenomenological Analysis. The findings have been grouped under two sections referred as 'themes,'

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which includes 'drivers for e-learning adoption' and 'inhibitors which restrict the adoption of e-learning'.

1. Situation 1:

It was 2:00pm and Dr. Smitha, a finance faculty, was delivering a lecture in a management college. The students were least interested as they were feeling sleepy. The teacher tried a lot to generate interest, but it was of no use. On being asked by the teacher the students replied, why don't you make the class interesting as we see in online courses? Why are we still following the same old pedagogy that we used to follow decades back? What if, we want to know more about this topic? Do you think all related information will be available in a book? The teacher was taken aback with all these questions. She realized that she has to update herself if she wants to stay in this profession. The demands of the students have changed, so she has to also change her pedagogies.

The responses received from the respondents were as follows:
- E-learning makes use of interactive technologies to enhance the learning experience' (Respondent 2).
- 'Education through online platform is more or less like an interactive text book' (Respondent 5).
- 'I believe visuals, apart from holding the attention of the student, help in retaining the content for longer period' (Respondent 10).
- 'I believe that e-learning breaks monotony from the regular study pattern. It is visually appealing & interactive' (Respondent 12).
- 'The use of technology helps enhance the understanding and the knowledge part of the concepts' (Respondent3)
- 'E-learning helps in diving and exploiting more resources other than textbooks to impart knowledge and content' (Respondent 13).
- 'Being a Marketing student myself, the digitized aspect of it is taught with great extensity and detail, it makes it that much more logical to use such aids for learning the same' (Respondent 14).

2. Situation 2:

Simran, a B.Tech. student, was very excited for being placed in a good and reputed company with a decent package. Her parents had financed her education through bank loan. She didn't want to put an extra financial burden on her parents for getting more certifications to securing a good job. She was in a dilemma as to what she should do. Because she wanted to get more certifications and knowledge for the course, as whatever was taught in the college was basic and the companies who came for placements were expecting more from the students. Also, she wanted to distinguish herself from the rest. She looked forward to e-learning where she can earn few certifications with in-depth quality knowledge at no cost. Amongst the pool of resources, it was a tough decision for selecting an optimal solution.

The respondents shared their opinions for the above mentioned situation:
- 'E-learning has always been very helpful for me...I was able to secure both the jobs by going through the courses online and whenever I am in doubt I would try to find a YouTube video for that concept and was able to clarify' (Respondent 15).
- 'It helps in enhancing learner's confidence which can open good opportunities' (Respondent 12).
- 'It creates access to large number of people through easy connectivity. In short, it is leading towards a better world through technology' (Respondent 1).
- 'The convenience of E-learning makes it accessible to everyone from anywhere they want at any time, this flexibility promotes learning 24x7' (Respondent 3).
- 'The solutions provided are fully accessed and can be trusted' (Respondent 4).
- 'The biggest advantage of e-learning is the accessibility of the content on the go. You don't have to labor to find the content as its on your fingertips' (Respondent 7).
- 'E-learning is a cost-effective learning solution that transcends time and distance' (Respondent 6).
- 'Students who don't go to coaching or tuitions can learn through e-learning by sitting at their home and without putting much efforts and money. This proves to be very beneficial for a country like ours where there's a lot of poverty and if somehow every student gets connected with internet and e learning websites, in no big Time India will see a vast difference in its education sector' (Respondent 9).
- 'You don't have to spend much for gaining an extra knowledge!' (Respondent 11)
- 'As this model is at a developing stage, there is a problem with the security of these online resources, the authenticity of the effort put by the student is doubtful as anyone can complete the same for him/her' (Respondent 10).

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3. Situation 3:

Pooja, a mother of second year student Parth; was worried about his future. The reason for her tension was his phone on which he was glued 24 x 7. She complained that Parth was a fun loving child and an extrovert. But, within a span of just one year, his nature has changed a lot. He is just busy in playing games or chatting with his friends or just scrolling the social media platforms whenever you see him. He has stopped going out with his friends and started staying alone. He doesn't even go for outing with the family. All he need is his phone or laptop. She claimed that excessive use of technology can be more or less similar to the drug addiction.

The viewpoint of the respondents were as follows:
- 'Yes, its excessive usage can inculcate addictive behavior' (Respondent 5).
- 'However, during the process we get addicted to the technology and become dependent on it, which becomes a challenge for us' (Respondent 9).
- 'There may be many fraud websites which can charge a wholesome amount of money from students and can give them false hope' (Respondent 13).
- 'Exposes students & their personal information to the big ocean of the world wide web which may be dangerous to their privacy' (Respondent 15).
- 'You don't have a physical presence to guide you through the stuff hence the lack of motivation to complete the learning' (Respondent 2). 'The Indian education system has been built on the fundamentals of a classroom, student-teacher interaction with the assistance of blackboard and chalks. This change in today's day and age is imperative and destined to happen, but it all boils down to the right balance' (Respondent 8).

V. ANALYSIS AND INTERPRETATION

E-learning is an innovation, which has drastically impacted the way of learning and teaching as well. While analysing the responses, the researchers analyzed that there are certain factors which motivate the students to adopt e-learning while there are certain inhibitors which restrict the adoption of e-learning amongst students.

As identified by the researchers, the key factors which impact e-learning are:
- Most of the students are motivated to adopt e-learning or engage themselves in courses through online education due to the ease in access of online courses. It's just on touch of a button the students can study or learn the courses of their interest. Students yearn for learning more, but not at the cost of convenience. E-learning is a very convenient and flexible option of training oneself not only on a day-to-day basis, but whenever one has free time to. It enables just-in-time learning.
- Students are eager to adopt courses through e-learning because they find it affordable. There are many online education portals that are providing quality education free of cost, which is a major attraction for the students. Many students adopt e-learning of some specialized courses parallel with their education (degree course) as it is cost-effective with not much of a financial burden.
- The students highlighted that they adopt e-learning because of its captive nature. The e-learning content can capture the interest of participants because of the use of multimedia and in some cases its interactive nature. Students were highly motivated to adopt e-learning due to interactivity it creates and hence engage the audience for longer time duration.
- The students also shared that it adds value to their on-going courses or education and hence increase the chance of employability. The courses can be selected as per one's choice and thereby knowledge can be enhanced without even setting the limit.
- Students showed their inclination for e-learning due to many reasons. But, the consideration of future opportunities was very much talked about. Directly or indirectly their major concern for gaining knowledge was attached with future prospects or building a good career. The students discussed those e-learning acts as a support for carving their career. It helps in grooming their skills and enhancing their knowledge which ultimately provides employment opportunities.
- Students felt that one of the major causes of disinterest in e-learning is data security. The student's creativity is also at stake as it encourages plagiarism.
- Students were of the opinion that that they are not motivated to study alone. They are being tempted away from studying when they have an access to internet. They lose interest when given a chance to surf net. Almost everyone has a smart phone and a laptop along with internet connection. If left alone, they would be more prone to engagement in other activities like gaming, watching movies or series which may also give rise to potential health risks associated with excessive usage.

- Students were of the opinion that even though e-learning is interactive, but still they feel that face-to-face interaction and the knowledge sharing is a must for education which is missed on virtual platform. Students shared that there is lack of motivation to study alone. They are tempted away from studying when they connect to the internet, hence may not be able to perform as well as they would do it in a traditional class.

VI. DISCUSSIONS & CONCLUSION

India is emerging as a superpower and it cannot function without the support of ICT (Goyal, 2017)[6]. During the investigation, the researchers' recommended that technology should not drive education; rather, educational goals and needs must drive technology use. Due care must be taken in developing e-learning content because students look forward for this as an opportunity to excel. Merely providing ongoing e-learning courses for academics is insufficient; they expect some hands on experience for better understanding of the concepts.

E-learning cannot by itself resolve educational problems in the developing world. Itcan act as additional educational tools, if they are used prudently, to raise the quality of education. E-learning can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures to increase the tangibility.

Also, it encourages active and independent learning, self-responsibility and maturity for learning. E-Learning is a relatively new concept in Indian education whether in schools, colleges or other academic institutions, but it has a huge potential in the next few years. With the integration of ICT in schools, education in India is poised for a paradigm shift, where the education system will be compatible with international education standard (Jain, 2017)[2].

Technology has entered in every domain of the society and embedding itself while providing advantages like – faster and easier access to information, increased flexibility, affordability and many more. There are still few hurdles which make this ride a bit more comfortable and smooth.

For this, many bridges are yet to be crossed like the confusion or clutter, tech-phobia, reliability, etc to name a few. Indeed, it is a long term strategy and will take time for its acceptability by the stakeholders. It is the researchers' conviction that the systematic consideration of these factors will contribute in gearing up this industry as a whole. This can make e-learning the most effective way of learning in today's scenario. It will be seen as a way of transforming the face of education in India.

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