Role of Digitization in Enhancing Quality Education in India

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ABSTRACT
Only those technologies are appreciated which are of maximum use for a common man. A technology's success depends on the involvement of common man on it, this can only be possible when people have a knowledge about the digitization .And for this it is necessary to organize awareness camps, workshops, conferences, fairs, Nukad Natak etc so that people can be awared about the digitization. If digitization will be familiar in urban as well as in rural areas then obiviously it will help in the development of the country. Now the time has been arrived when government needs to develop a infrastructural framework for digitization of education for the purpose of enhancing quality education in India.For the success of digitization in enhancing quality education the government of India must be able to provide the basic necessities in this areas such as the facility of electricity, Internet, Wi-Fi etc. In this paper it is tried to explain each and every area of digitization in education including 2016 budget for digitization in education and leading examples that can prove how digitization will transform the nation.

Keywords
Digitization, E-Learning, E-textbooks

1. INTRODUCTION
Digitization is the process of converting information into a digital format. In this format, information is organized into discrete units of data (called bit s) that can be separately addressed (usually in multiple-bit groups called bytes).Digitizing information makes it easier to preserve, access, and share. Digitization in the sense of education is encompassed by online courses, online libraries, and online communication such as, online registration, student information, student Email, grades, and degree information. There are multiple benefits of digitization in enhancing quality education in India for the public as well as government such as if there is digitization in education then poor children will not be dependent on government for books free of cost.

2. QUALITY EDUCATION
Quality education is not only to have good education system but the learner should be healthy and well-nourished so that he can participate in the learning by his heart.

1. For that it is to provide a safe, protective and gender sensitive environment to all our learners as well as with the proper resources and facilities.
2. Quality education should also provide the content that is reflected in relevant curricula and students should be equipped with basic skills, especially in the areas of literacy. They should also be given the knowledge of health hazards like HIV/AIDS causes and preventions.

3. OBJECTIVES OF DIGITIZATION IN EDUCATION
There are different objectives of digitization in education. Some of the objectives are mentioned as follows:

1) **Student-centered Learning:** There will be a major role of technology to promote and motivate the new system in education sector and make it student-centric model.
2) **Supporting Knowledge Construction:** There are many opportunities for learners which are provided by using contemporary ICT for constructive learning and support for learning and practice.
3) **Anyplace Learning:** With the help of ICT, educational institutions can offer programs at a distance mode.
4) **Anytime Learning:** Using new technologies there is a removal of geographical barriers. Students are able to undertake education anywhere, anytime and at any place.
5) **Information Literacy:** The growing use of ICT as tools of everyday life have seen the pool of generic skills expanded in recent years to include information literacy.

3.1 Advantages Of Digitization In Education
Digitization in the sense of education is encompassed by online courses, online libraries, and online communication such as, online registration, student information, student Email, grades, and degree information.There are multiple benefits of digitization in enhancing quality education in India for the public as well as government such as if there is digitization in education then poor children will not be dependent on government for books free of cost.

Convenient: By convenient it means that in education there must be self-service (mix and match) and it should be on-demand i.e. anytime, anywhere. It is a type of private learning, self-paced and Flexible.

Cost-effective: Digitization gives virtual learning environment; lessons are shared among schools which in return reduces the material cost.

Consistent: Through digitization it can have central control of content and the same quality of content will be shared with all. By this same quality of education for all learners may be achieved.

Easier to monitor progress: Through this mode it requires less administrative work and can be more precise. Nowadays computers are acting as a teacher and using new technology like smart boards, handheld dictionaries, ipads, smart phones are used in sharing the lectures and notes with

the learners. Using mobile apps like WhatsApp and other social media websites are also used to share the subject information with students.

3.2 Disadvantages Of Digitization In Education

There are many disadvantages of digitization in education like:

1. Because information can be accessed quickly and displayed through multiple mediums there are fears that students might not remember information because they can now look it up elsewhere.
2. There are arguments that because of all the new technology that there is a loss of communication skills and the ability for people to interact with each other.
3. The students that do not have as much access to modern technology such as people in lower income situations. Unable to access even the more common technologies such as a computer on a regular basis.
4. To make use of digitization in education children must have knowledge of computer and latest digitization techniques which sometimes create problems for children belonging to rural areas.

3.3 Key components of digitization

Ubiquity-Extent to which consumers and enterprises have universal access to digital services and application.
Affordability-Extent to which digital services are priced in a range that makes them available to as many people as possible.
Reliability-Quality of available digital services.
Speed-Extent to which digital services can be accessed in real time.
Usability-Ease of use for digital services and the ability of local ecosystems to boost adoption of these services.
Skill-Ability of users to incorporate digital services into their lives and businesses**.**

3.4 Digitization in Education in Budget - 2016

In 2016 Budget, digitization in education was also taken care of .Hon'ble Finance minister also mentioned that government will strive to make 10 private and 10 public institutions which will have world class facilities. An announcement of the capital intensive long-term plan, on the line of Chinese 985 or Korean Brain 21, would have been more appropriate. The main highlight of the budget remains, its focus on skills development and entrepreneurship. Allocation of Rs 1,700 crore for 1500 multi-skill development centres, target of skilling 1 crore youth in the next 3 years under the PM Kaushal Vikas Yojna and allocation of Rs 500 crore for promoting entrepreneurship among SC/ST are welcome steps. The government also announced an allocation of Rs 1804 crore for skill development however, it is insufficient to gain advantages of demographic divide. It also included the

Digital Literacy Mission for rural India with target to cover 6 crore new households within next 3 years. If this scheme is implemented successfully, it can play an important role in increasing literacy in rural areas. The Government's effective usage of technology for imparting education in the remote parts can be a game changer for a large country like India. Opening 62 new Navodaya Vidyalayas to provide quality education will help in increasing enrolments in Navodaya Vidyalayas, however, deteriorating quality of existing government schools also requires government's immediate attention and if the FM could have addressed it in the budget.

3.5 Stages of Digitization

Constrained Economies : Those with a digitization score below 25% face challenges in realizing basic digitization building blocks such as widespread access and affordability. In these nations, services remain expensive and limited in reach.

Emerging Economies: Those with a score between 25 and 30%, largely have addressed the affordability challenge and have achieved significant progress in providing affordable and widespread access. However, the reliability of services in emerging digitization nations remains below par and capacity is limited.

Transitional is the next digitization stage, encompassing those countries with a digitization score in the range of 30 to 40%. Countries in the transitional stage have addressed the reliability challenge and provide citizens with access to ubiquitous, affordable, and reasonably reliable services.

Advanced Stage is the most mature stage of digitization, achieved with a score greater than 40%. These countries have made significant strides in addressing ICT usability and developing a talent base to take advantage of available technologies, products, and services while improving the speed and quality of digital services.

4. FUTURE TECHNOLOGY IN EDUCATION

1) **Foldable Tablets**: Many tablets have popped up on the market and are all being used by teachers and students for easily learning and teaching. In the future students and teachers will use Foldable Tablet Pc's , these tablets can fold in many different directions.

(2) **Digitized Classrooms**: The future classroom will be digitized; teachers and students will use less or no paper and chalk. In a future digitized classroom, each student will have a personalized computer and all lessons will be conducted with educational tools displayed on the electronic interactive board and also displayed on student's computers.

(3**) Electronic Paper screens**: Future technology will replace the normal papers which is used in the classrooms to take notes with an electronic paper screen.

Other future educational technologies can include:

1. E-library.
2. Educational Programming Tools.
3. Student Developed Apps.
4. Video Lessons.
5. Education App Stores.
6. Flipped Classrooms.
7. Inter-school Teaching Platforms.

5. SOME CASE STUDIES ON GROWING FOOTPRINT OF DIGITIZATION IN HIGHER EDUCATION

1. The National Mission on Education through Information and Communication Technology (NMEICT) is envisaged as a centrally sponsored scheme to leverage the potential of IT/ICT, in teaching and learning process for the benefit of all the learners in Higher Education Institutions in any-time any-where mode. Content

generation and connectivity along with provision for access devices for institutions and learners are the major components of the mission.

2. Creation of e-content for 996 courses in Phase-II in Engineering, Sciences, Technology, Humanities and Management has been undertaken by IIT Madras.
3. Consortium for Educational Communication has been tasked with creation of e-content for 87 undergraduate courses.
4. UGC has cleared a proposal to publish e-content for 77 post-graduate courses.
5. National Programme on Technology Enhanced Learning (NPTEL), a joint initiative of the IITs and IISc provides E-learning through online Web and Video courses in Engineering, Science and Humanities streams aiming to enhance the quality of Engineering education in the country by providing free online coursewar .
6. In 2007, the Distance Education Council (DEC) allowed all premier institutes in the country to offer online courses. Since then IIM-C, IIM-B, IIM-K, XLRI and other management institutes have started offering courses in association with private players like Hughes, Reliance, NIIT, etc.
7. IIT-Kanpur has developed Brihaspati, an open source e-learning platform.

5.1 Common Critiques for these Technologies

Value added: Technology does not add value to educational outcomes or processes and technology investments can crowd out other investments that could bring value.

Weak infrastructure and equity: The infrastructure needed for technology to be successful is weak and often only available for the developing-country elite.

Low reliability and sustainability: Technology often breaks down and quickly becomes out of date. Its short shelf-life makes it little more than an ultimately unproductive distraction for users.

Less ease of Use: Technology is difficult to use. Often it is too complicated or not available in the needed languages.

Lack of Teacher support: Teachers are frequently not trained or supported to use the technology.

6. PRINCIPLES FOR SMART USE OF TECHNOLOGY IN EDUCATION

Educational problem first. First, identify the educational problem that needs to be addressed, and then assess which, if any, is the best technology to do the job.
Added value- If technology is to be deployed to address an educational problem, make sure that the technology will add value to other existing solutions.
Sustainability. Carefully considering the full range of enabling conditions is essential to design and implement an intervention that will last over time.
Multiple uses. Where possible, select a technology and design an intervention so that the technology can be used for multiple purpose.
Lowest Cost : While there may be many different types of technologies that can provide the assistancesought, other things being equal, it is best to select the least expensive option for the job(s) desired. Very little is gained by opting for the more expensive option, especially if there is a reliable and cheaper option available.

Reliability: Before deploying a technology, ensure it is reliable and will not rapidly break down.

7. DIGITAL INDIA

Digital India is a concept to make a new Smart India . It is an large programme which will cover almost all departments where everyone will share and contribute their ideas, thoughts and vision to reach the one goal. Under this scheme everyone will be provided with an infrastructure to provide Governance & Services on Demand.

7.1 Nine Pillars of Digital India

1-Broadband Highways.
2-Universal Access to Mobile connectivity.
3-Public Internet Access Programme i.e. National Rural Internet Mission.
4-e-Governance: Reforming Government through Technology.
5-eKranti - Electronic Delivery of Services.
6-Information for All.
7-IT for Jobs.
8-Early Harvest Programmes.

7.2 The following major aspects need to be addressed in a Policy for digitization in Education:

1) Content/Digital Resources.
2) Capacity Building.
3) Monitoring and Evaluation Framework.
4) ICT for Education Management.
5) Implementation Plans.
6) Financial Allocations.
7) Political and Administrative support.

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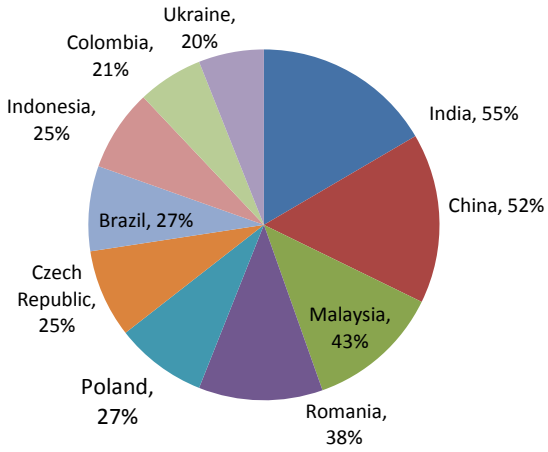
8. E-LEARNING STATISTICS AND FACTS FOR 2015 THE GLOBAL ELEARNING INDUSTRY MARKET

By the year 2015 it is expected that the worldwide market of e-learning is going to reach $200. Industries are getting unexpected revenues from e-learning which means that the self-paced e-Learning market should see estimated revenues of $50 billion in 2016.

8.1 Growth Rates in some of the Countries

Nowadays every country is adopting e-learning mode to improve their growth rate. The growth rate of self-paced eLearning by country is



8.2 Mobile Learning Market

Every Mobile company nowadays is trying to give learning apps in their mobiles and this service was reached to $5.0 billion in the year 2012. With a compound annual growth rate of 18.2% for the next five years, it is estimated that the worldwide mobile learning market in 2017 will reach $12.0 billion. Many years before the top buyers of mobile learning products and services where US, Japan, South Korea, China, and India, it is expected that by 2017 the top buyers of mobile learning products and services will be China, US, Indonesia, India, and Brazil.

9. MOOCS IN CORPORATE TRAINING

Currently 8% of companies use MOOCs, while another 7% consider experimenting with MOOCs. It is predicted that in the following two years this percentage will rise to 28% Examples:

1. More than 350 companies cooperate with Coursera and Udacity to identify the best students that would probably make the best possible candidates for relevant jobs.
2. Google has already enrolled 80,000 of its employees in Udacity's HTML5 course.

9.1 Online Corporate Training

The online corporate market is expected to grow by 13% per year up to 2017. Today, 77% of USA companies offer online corporate training to improve the professional development of their employees.

10. E-LEARNING TOP BUYERS

Large companies are the main purchasers of e-Learning products and services. As a matter of fact, these companies make up roughly 40% of all eLearning buyers.

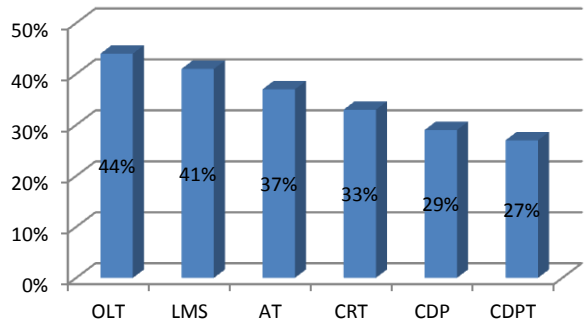
10.1 Corporate Training Delivery Methods

The training delivery methods for 2014 were as follows-

1. There were faculties who were acting as an instructor for providing the training to the students. It was approximately 45% of the training given in the classrooms.
2. After the involvement of online teaching process 28.5% of training was provided by the online mode.
3. Students were also involved in learning mode through virtual classroom/ webcast only (instructor from remote location gives the instructions)
4. Social media channels were also involved in providing training which was also increased by 0.9% as compared to previous methodologies used.
5. After the vast usage of mobiles, these devices were also used to provide the training via mobile apps.

11. DEMAND OF E-LEARNING SOFTWARE AND SERVICES IN 2015

The following statistics present what the small, mid-sized and large companies intend to purchase in 2015, based on the 2014 Training Industry Report. It is also predicted that in 2017 the learners will prefer the online mode which will be easy to access anytime, anywhere in the world. Universities are also working on having the online mode too where student can enroll himself and can get the subject knowledge and class information from the online portal or mobile apps are to be developed for providing the subject information. Students will use these apps and mobiles will be official in the classrooms.



OLT-Online learning tools

LMS-Learning Management System

AT-Authoring tools/system

CRT-Class Room tools

CDP-Content development products
CDPT-Courseware design and presentation tools

11.1 E-Book

The term e-Book stands for "Electronic Book". It is exactly the same as a regular book, however e-Books can be read on your PC and are usually delivered via email therefore saving on any postage costs.

11.2 16.2 Advantages of E-Books

1. No shipping costs, delivered via email.
2. Print off as many copies as you like in your own time.

11.3 Disadvantages of E-Books

1. Some people don`t like reading books on their computer screen.
2. If choosing to print an e-Book you may use a lot of printer paper!

11.4 E-Textbooks

Nowadays students prefer E-textbooks instead of purchasing traditional books. Students want to save money and sometimes many of them cannot afford the cost of books. E-Textbooks are portable and students can read it anytime, anywhere without paying cost. Mostly all Institutes, Universities, Colleges are having e-library where students can register themselves and can afford as many book as he/she can. Many companies are now manufacturing the gadgets which will provide e-learning facilities. Now the students are moving from printed mode to technology based e-learning mode.

11.5 E-Yantra

E-Yantra is a project -- sponsored by the National Mission for Education through ICT (NMEICT) of the Ministry of Human Resource Development (MHRD), Government of India – to promote robot enhanced education at engineering colleges.

11.6 Free of cost to Indians

1. Web-based embedded system courseware.
2. Video tutorials on programming robots.
3. Robotics projects and code available under open source for students to build upon.

12. TECHNOLOGY TRENDS IN INDIAN UNIVERSITIES

1. **Digitization of Books (E-Text Books)**
   There is an increased trend towards creation of a digital repository of books to create a digital learning environment for students. The digital version of the books embedded with text, pictures along with video, simulations and visualizations help students learn the concepts in an interactive way.

2. **Content Delivery using IT/ICT**
   Higher Education is purely a content driven play where educational content is delivered through innovative use of ICT.

3. **Open Education Resources**
   Many Indian universities are contemplating Technology enabled free access of education resources. AICTE – Indian National Digital Library in Engineering & Technology (AICTE – INDEST) is a consortium set up by the Ministry of Human Resource to enhance greater access and generate annual savings in access of bibliographic databases.

4. **Virtual Technical University**
   The National mission on Education through ICT is working on a war foot to establish a virtual technical university to impart training to UG/PG students along with new teachers.

13. SIZE OF ONLINE EDUCATION

Nowadays every Traditional University is now trying to offer online courses. From last 2-3 years, tremendous growth has been seen in the enrolments in these online courses. Now many organizations have also made it mandatory to have at-least one online course certification

14. TOP 14 COMPANIES PROMOTING SMART EDUCATION AND E-LEARNING

1. Adobe Systems
2. Educomp Solutions
3. NIIT
4. Scholastic
5. Smart Technologies
6. Three Rivers Systems
7. Cisco Systems
8. Desire2Learn
9. Blackboard
10. Ellucian
11. Intel
12. N2N Services
13. Saba Software
14. SunGard

15. CONCLUSION

The generation is of a revolution in information and communication technology. Every person wants to achieve and learn more and more things in a very short period of time and the government of India is focusing to achieve this target. With the development of digitization, India is also developing in a fast speed. By keeping the needs of the people in mind companies are developing new software.

There are multiple benefits of digitization in enhancing quality education in India as explained throughout the research paper, but digitization in education should be used in such a way so that it may not led to any harm,because every coin have too aspects and there are also few disadvantages of digitization in education but a lot of advantages.

Now the time has been arrived when government needs to develop a infrastructural framework for digitization of education for the purpose of enhancing quality education in India.For the success of digitization in enhancing quality education the government of India must be able to provide the basic necessities in this areas such as the facility of electricity,Internet,Wi-fi etc. A special budget needs to be prepared at every level such as block level,state level,national level for digitization of education for the enhancement of quality education in India. The Government's effective usage of digitization for enhancing quality education can be a game changer for India.

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