

# Digitalization of education in India – An analysis

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**ABSTRACT:** *Technology has swept and is sweeping fast all spheres of life and almost everything is based on use of technology and application of ITC starting from communication, to visual and audio entertainment, electrification, security, travelling, voting rights to mention a few. Even education is transforming with rapid pace from being traditional chalk and talk based and book based study to internet based education system. The traditional class rooms with black boards are being replaced by smart classes fitted with audio and visual system followed by PPTs presentation. Teachers are been second by online teaching assistance by way of online tutorials and teaching aids provided by a number of online learning applications such as BYJU'S, Cuemath, GuruQ.in, EPathshala, Google Classroom etc., which are providing on spot solutions to students. Text books are being replaced by e-books. The point to make is that we are moving far from physical way of teaching and learning towards virtual teaching and learning skills. This change in education system has produced vast advantage in terms of horning knowledge base of students and making them more confident to compete in the dynamic environment. However, there is a flip side of it as well, that most of the times students thinking that they can access the information on line are not focused enough on class lectures and in most cases they do not give expected regard to their teachers. The students of today are becoming rude as well. At the same time since loads of information is available to them easily, students are involving themselves in unwanted activities and they are exposed to information which is not meant for them at the current age. In this background the paper tries to find what the various electronic mediums available to students, what are the advantages of digitization of education and what adverse impact has been on students and society on over reliance on digital way of education based on adoption of ICT tools? The paper is based on secondary source of information gathered from various authentic websites, research papers, newspapers and magazine articles.*

**Key Words:** *Technology, Digitization of Education System, Smart Classes, Online Teaching Assistance.*

## INTRODUCTION

It's a dynamic world which does not accept static character rather encourages and supports a continuous change in all fields of life. Education which is the basic fundamental of creating knowledge resource and the base of better lifestyle and promoter of happiness has also undergone exemplary changes with the development of economy and society as per the varying needs to suit the given environment. In India, if we go back to Vedic era education was imparted through gurukul system where guru teaches the disciple in natural environment under the tree where students were under strict control, guidance and monitoring of guru and have to observe strict brahamcharya jeeven. Thereafter, came the era of class room teaching and learning where education was imparted in instructive mode based on black board explanation and text books for further readings. With the opening of Indian economy in 1991 and with the emergence of information technology revolution the way of teaching and learning has changed enormously, where black boards have been replaced by smart boards, connected with LCD projector and computer, explaining the concepts to students not through the basic medium chalk and talk but replacing it with Power Point Presentations and talk, audio recordings and visual clippings. We are digitizing our education system and moving gradually towards paperless society thus traditional books are being replaced by e-books, paper assignments are being replaced by e-assignments in soft copy and so on. Even teacher – taught relation is going the electronic way through various tutorial web sites and on-line learning applications. The digitization of education has made available huge loads of information just at the click of button and has resulted in boundless material available to the end user who can quench the thirst for knowledge easily.

## REVIEW OF LITERATURE

Jadhav, Vaibhav. (2011) produced a paper titled "ICT and Teacher Education," in which he emphasized the world is changing fast; new frontiers of knowledge are being added with passage of time. There have been technological advancements and developments in the field of energy, environment and communication. Since last few years' technology has become an important part of education. To enjoy benefits of technology

the time has come when the teacher educators will have to learn how to be co-learner with the trainees. The school curriculum has to gear up to face the challenges of ICT, and accordingly pre-service and in- service programmes should be aimed to train prospective teachers to use ICT competently and making teaching learning process a joy.

Kamble, Avishkar. D. ( 2013) in the paper titled “Digital classroom: The Future of the Current Generation,” examined in length the significance of digitization in education and stated that a modern classroom is basically an Information & Communication Technology based classroom. This aims at converting traditional classrooms into interactive sessions by combining best hardware with syllabus-compliant, multimedia content. In many colleges, computers are used by teachers and students for better communication and learning. The paper discusses how a digital classroom is basically an ICT-based classroom which helps to convert traditional classrooms into interactive sessions.

Nigam, Anushree. Srivastava, Jyoti. Lakshmi, Tanushree. Vaish, Anurika. (2015) in their combined paper titled “Digitizing Education: A Cost Benefit Analysis,” argued that Use of technology has become a common practice in today’s world. As the world is moving rapidly towards digital media, the role of IT in education has become increasingly important. Development of digitization can be outstanding if it can be utilized in education, research and extension activities which can be cost effective. The paper attempted to understand whether traditional approach of education can be replaced by digital mode of education or not? The paper focused upon three things Firstly; it exhibits the transition of education from a traditional educational approach to digitized approach. Secondly, it analyses the associated cost and benefits of digitized education in today’s society. Finally, it attempts to propose few mechanism for incorporating digitized education and its impact in higher education scenario towards building India as a Technoscape for future advancement.

Jha, Nivedita., Shenoy, Veena. (2016) in their research paper titled “Digitization of Indian education Process: A Hope or Hype,” stated that over a period of time many changes have occurred in different sectors of economy including the education system. Education sector unlike any other sector has seen many stages in its evolution. From Guru-Shishya system of conducting the class in open garden under the trees to closed class room lectures, presentation form of teaching with the aid of LCD touch-screen projector to online notes and now instant Whatsapp messages is the buzzword among the students. Whatsapp has gained the status of being authentic formal means of communication among the students and the academicians. The paper analyzed the introduction on electronic modes of imparting education and to analyze whether in the given state of Indian education it inspires hope or is just another hype created in the sector.

## OBJECTIVE

1. To have an insight regarding basic components required for promotion of digital education.
2. To know about the important online learning applications available to students
3. To understand the factors that have enabled the growth of digital education in India
4. To appraise oneself with the benefits of digital education over traditional way of imparting education.
5. To analyze the adverse impact of digitization of education on the students’ attitude and culture.

## BASIC COMPONENTS OF DIGITAL EDUCATION

Use of information and communication technology in education is based on certain pre-requisite and only after meeting out these basic infrastructural requirements we can move towards digitization of education. Some of the important peripheral components towards digital bound class rooms are expressed below:

### 1) Smart Boards

SMART Board is an interactive whiteboard developed by SMART Technologies. It is a large touch-sensitive whiteboard that uses a sensor for detecting user input (e.g. scrolling interaction) that are equivalent to normal PC input devices, such as mice or keyboards. A projector is used to display a computer's video output onto the whiteboard, which then acts as a huge touchscreen.

### 2) Class Room PC

Most classes require students to prepare lot of reports and assignments followed by presentations. Thus the basic requirement of digital class is availability of personal computers/ laptops/ tablets wherein large amount of educational information and data be stored and retrieves as and when required. This allows students to be more in tune with their learning by allowing them to have their own personal computers.

### 3) Projectors

Projectors are the basic requirement for digital class as it helps in displaying on board the presentations both be teachers and students for imparting broad based learning. Projectors are hooked with the laptop

and acts as a reflector of information from laptop to large screen on the whiteboard for visual presentation before class.

#### **4) Internet Connectivity**

For successful implementation of ICT in education uninterrupted internet connectivity is the basic requirement. Thus good internet connectivity should be ensured so that information can be shared with others without any delay and so also e-mails and browsing of study material, research reports, world bank and other national and international reports can easily be assessed.

### **ONLINE LEARNING APPLICATIONS INSTRUMENTAL IN DIGITIZATION OF EDUCATION**

Digital learning is replacing traditional educational methods more and more each day. The inclusion of digital learning in the classrooms can vary from simply using tablets instead of paper to using elaborate software programs and equipment as opposed to the simple pen. Add to it there has been increasing dependence on websites and study aids designed for at-home use. Even use of social networks and communications platforms to create and manage digital assignments is on the rise. Irrespective of the extent of technology integrated into the classroom, digital learning has come to play a crucial role in education. It empowers students by getting them to be more interested in learning and expanding their horizons. Below are the important online learning applications and tools which are prominently utilized as part of digitization of education in India.

#### **1) Google Classroom**

Google Classroom is a free web service designed for schools to help them with drafting, mass distribution and grading assignments in a paperless form. With Google Classroom, the learning process becomes extremely easy and is streamlined by way of sharing files between teachers and students. Here the students can post their queries on the lessons taught in the classrooms and receive answers from teachers and other students. Teachers can also post study materials for students to review at home. Google Classroom combines Google Drive for assignment creation and distribution, Google Docs, Sheets and Slides for writing, Gmail for communication, and Google Calendar for scheduling.

#### **2) EPathshala**

EPathshala a portal initiated by the Ministry of Human Resource Development and National Council of Educational Research and Training was launched in November 2015 as one of the initiatives of digital India campaign. Epathshala is a gigantic educational reserve that hosts resources for teachers, students, parents, researchers and educators which is available on multiple platforms such as Web, Android, IOS and windows platforms. The students can get access of all the required material, including textbooks, audio, video, periodicals and a variety of other print and non-print materials through ePathshala and can be downloaded by the user for offline use with absolutely no limits on downloads. ePathshala also allows users to carry many books as their device supports. These books allow users to pinch, select, zoom, highlight, navigate, share and make notes digitally.

#### **3) Cuemath**

Cuemath is an interactive learning platform for math. The platform's focus is to enhance the quality and method of math learning and teaching. Its multi-format approach to math involves puzzle cards, workbooks, tabs and math boxes. The startup launched the first ever 'Mathematical Universe', where they developed a set of characters who embark on math-based adventures in stories. This comic book-style medium enables the student to interact with the possibilities of the mathematical universe.

#### **4) Khan Academy**

Khan Academy is a non-profit organization that was conceptualized with an aim of building a range of online tools that can help students understand various lessons and concepts in an easier way. The Khan Academy produces short lessons in the form of videos both on the Khan Academy's YouTube channel and on its hugely popular website [www.khanacademy.org](http://www.khanacademy.org). Its website also includes supplementary practice exercises and materials for educators. Lessons are presented by way of videos, interactive activities, and challenges. Hence teachers can make use of Khan Academy to supplement their teaching and also provide extra work to students and help them with all or difficult content.

#### **5) GuruQ.in**

Parents and students are usually faced with challenges of finding the right tutors, who can provide quality education, are reliable, have a good teaching background, and suit their budget. GuruQ.in is India's largest tutor community platform where one can pick quality-certified and user-rated tutors offering both online and offline tutoring options. By logging on to [www.guruq.in](http://www.guruq.in) they can use the platform to pick reliable 'GuruQ Certified' tutor options for primary, secondary, higher secondary and undergraduate courses. GuruQ's

unique dashboard helps students save valuable study time by allowing them to manage timetables, schedule classes and assess self-progress.

#### 6) **Kahoot**

It is a game-based learning platform where students can learn via games or, 'Kahoots,' which are multiple-choice quizzes. With this digital tool, which can be accessed via a web browser, teachers draft extra questionnaires, discussions online with academic lessons. The material can be then projected in the classrooms and questions are answered by students while playing and learning at the same time. This not only enhances student engagement but also creates a dynamic, social, and fun educational environment.

#### 7) **BYJU'S**

BYJU'S is one of India's leading edutech startups which uses a combination of gamification techniques to keep students engaged. At BYJU'S, technology offers teachers a combination of tools, mediums, and interactive formats to deliver concepts in the most personalized format. The app offers comprehensive learning programs in Math and Science for students between classes 4th-12th. It also has test prep courses for competitive exams like CAT, NEET & JEE, IAS, GRE & GMAT etc.

#### 8) **Seesaw**

Seesaw is a user friendly learning portfolio tool that empowers students to independently document what they are learning and perceiving at school. Students can use photos, videos, drawings, text notes, links and also Seesaw's built-in audio recording and drawing tools to showcase their knowledge imbibed, and also explain how they got their answers. Student's projects are stored securely in the cloud. Seesaw is made available on several different devices, such as Chromebooks, computers, iOS devices, Android devices as well as Kindle devices through which parents can access their wards work.

#### 9) **Toppr**

Toppr is one of India's fastest growing learning apps that provide personalized learning for students studying for various boards, Olympiads, engineering, Commerce and medical competitive exams. The platform enables students to learn comprehensively, improve their examination scores, and rise to their full potential. The platform also provides personalized, adaptive learning tests and practice packages that help students ascertain and improve their rank.

### **FACTORS PROMOTING DIGITAL EDUCATION IN INDIA**

Digitization has started from very tender age, child holds mobile and views and hears videos and songs even when in not one year old. Today, little children are watching their favorite cartoons and learning pictorial rhymes on the same device. Education is being imparted to them through flexible and non-intrusive formats. As a consequence, students across all age groups are discovering the joys of learning and having fun while at it. There has been a noticeable shift in the perception of parents and teachers too are supporting digital learning. Institutions are making efforts to shift the focus back on students to reinvent the way they learn right throughout their life. India might not have readily adopted education technology but it's heartening to see how a traditional sector like education is using technology as an enabler so far. Some of the factors that are enabling the growth of digital education can be cited below.

#### **1) Personalized and Adaptive Learning**

Learning platforms, softwares and digital devices are together creating countless new ways to modify education. This way, the academic potential, strengths, weaknesses, aptitude and learning pace of every single student is catered to. Precise, mobile and reliable applications are being created to teach students, help them practice their learning, take assignments and manage their schedules. Schools are now providing their students with digital devices like desktop computers, laptops and tablets. These devices are aiding them in the teaching process while also helping them understand how students learn and how to enhance their learning process.

#### **2) Two-way Conversations in E-Learning**

In the traditional classroom seating scenario, students are unable to get the individual attention they need due to time constraints. In contrast, the one-to-one context of learning in digital mediums currently students can learn through videos and chat with an expert.

The upcoming 'Learning Management System' will continue the two-way communication model between students and experts. More importantly, it will let students track their coursework progress, identify improvement areas and offer ways to make the most of them.

#### **3) Mobile-based Learning**

Over the past few years, mobile learning has picked up by the populace which has gradually assimilated it in their lives. It has offered students the flexibility to access educational content seamlessly across multiple

digital devices like desktops, laptops, tablets and smartphones. The smartphone user base in India continues to increase, in both urban and rural areas. The coming years will witness users accessing most of their educational content through internet powered smartphones in a massive way. Most educational content, including even online courses, will be optimized entirely for mobile devices.

#### **4) Video-based Learning**

Video learning has always appealed to students since it closely mirrors the traditional classroom teaching style. Earlier, students watched video lectures as a form of homework and then discussed them during the next class. Over time, this habit brought about a remarkable improvement in their performance, with a noticeable improvement in grades. Video lectures allowed students to learn subject syllabi at their own pace and dedicate time spent in class towards interactions. This will continue to be a trend in the future where students will have access to rich and interactive content, which will be useful for both formal training as well as performance enhancement. The increase in video-based learning on mobile devices will eventually account for 80 per cent of all internet traffic by 2019.

### **BENEFITS OF DIGITAL EDUCATION OVER TRADITIONAL EDUCATION SYSTEM**

Normally it was said that 'the more you read books the better it is' and we talk about 'learning by doing', this concept is undergoing change and new phrases are being developed such as the 'more you involve yourself digitally in education the better it is' and 'learning by seeing, listening and applying oneself to online tutorial and test examination exercises.' Today education is becoming digitized faster than expected the reason cited is that digital way of learning has a long lasting impact on the memory of the learner and makes him more smarter embodied with logical thinking and sharp reactions in a given situation that that being possessed when more reliance was on class room teaching and traditional methods of imparting education. Following are the important benefits of digital education over the traditional education system of education.

#### **1) Smarter Students**

Learning tools and technology enable students to develop effective self-directed learning skills. They are able to identify what they need to learn, find and use online resources, apply the information on the problem at hand, and even evaluate resultant feedback. This increases their efficiency and productivity. In addition to engaging students, digital learning tools and technology sharpen critical thinking skills, which are the basis for the development of analytic reasoning. Students who are exposed to open-ended questions with imagination and logic, learn how to make decisions, as opposed to just temporarily memorizing the textbook. Digital learning is based on gamification. Gamification is a great feature of interactive learning because it teaches children playing in a group to depend on and trust each other in order to win a game or achieve their goals. They also promote cooperation and teamwork which are very important skills, in every aspect of life.

#### **2) Self-Motivated and More Accountable**

Students using digital learning tools and technology become more engaged in the process and more interested in growing their knowledge base, they may not even realize that they're actively learning since they're learning through engaging methods such as peer education, teamwork, problem-solving, reverse teaching, concept maps, gamification, staging, role playing, and storytelling. Since digital learning is far more interactive and memorable than voluminous textbooks or one-sided lectures, they provide better context, a greater sense of perspective, and more engaging activities than traditional education methods. This allows students to better connect with the learning material. Further, they often offer a more interesting and involving way to digest information. This is reflected in their retention rates and test scores. Also, when students can track their own progress it can improve motivation and accountability.

#### **3) Greater Involvement Educators and Parents**

Learning tools and technologies like social learning platforms make it easy for teachers to create and manage groups. The shift to digital learning approximates the benefits of tutoring while freeing up time for teachers to address individual and small group needs. The opportunity to customize learning sequences for each student makes education more productive by closing learning gaps sooner and accelerating progress. Dynamic grouping, workshops, and project-based learning add lots of collaborative learning to the already present education model. Educators can also join online professional learning communities to ask questions and share tips and stay connected with a global educators' community. They can keep themselves updated with the most relevant content for their curriculum using digital learning tools and technology. This helps teachers teach better and students learn better through engagement and enjoyment. Apart from educators, parents can use interactive activities to encourage their child's interest in learning since gamification makes

the process much more enjoyable and interesting. Parents can also explore online learning activities with their child which can serve as an extension to what they are learning in their classrooms.

#### 4) Better Information Sharing

Shift from print to digital has impacted how we learn. Just as printing press did six centuries ago, this transition is transforming formal education and increasing learning opportunities. Digital learning is not only allowing students to access more and more information but also ensuring that the information in question is customizable and suited to their personal needs. The opportunity to help every student learn at the best pace and path for them is the most important benefit of digital learning. Digital learning tools and technology enable educators to rapidly share information with other educators in real-time. The explosion of free and open content and tools has created an environment of sharing economy. By embracing digital devices and connected learning, classrooms around the country and around the globe can not only coordinate with one another to share insights but also boost learning, experience, and communications skills. The practice also allows educators to enjoy a level playing field.

#### 5) Increasing Students' Employability

Equipping students with the requirements of higher education and holding a career at a young age has become one of the most crucial responsibilities of school education. Digital learning solutions based on problem-based learning emphasize on learning methods that are constructive, collaborative and calls the students' attention to a real-world approach to learning. Digital learning tools and technology in elementary, secondary, and high schools prepares students for higher education and modern careers by helping them acquire skills including problem-solving, familiarity with emerging technologies, and self-motivation.

#### 6) No Geographical Limitations

With the introduction of online degree programs there is hardly any need of being present physically in the class room. Even several foreign universities have started online degree courses that students can join. Distance learning and online education have become very important of education system now days. Thus digitization of education has crossed all boundaries for students who have thirst for knowledge.

### ADVERSE IMPACT OF DIGITIZATION OF EDUCATION ON STUDENTS

There is no doubt that the introduction of ICT in the field of education there digitizing it has helped students and teachers by promoting better flow of information any time at any place at the convenience of teacher and taught by just clicking a button. The digitization has also helped in availability of huge information related to any topic of interest thereby expanding the knowledge horizon and better learning. However, there is flip side of ICT enabled education system which is hampering the mental toughness and analytical skills of students and also has been resulting in attitudinal problems among the learners. Some of the important impacts of digitization of education on students are highlighted below.

#### 1) Addiction

Due to continuous dependence on electronic modes like laptops, mobile phones and other gadgets for seeking information and completing of assignments, projects and even for preparing study notes and completing homework online and submitting to the evaluator in softcopy has proved to be harmful. As a result, young vulnerable teens often get attached to computers for several hours. This often leads to their health being impacted, especially their vision.

#### 2) Obesity

Obesity is a global killer and one of the main reasons for underage children to become obese at a young age happens to be the fact that they spend their maximum time on studies via computer devices and also in free times they stuck themselves to online games than engaging themselves to outdoor and physical activities. This lack of physical activity on their part leads them to obesity, fatness, heart disease, diabetes, repetitive strain injury or eyestrain, wrong posture/position, neck pain, physical and mental stress.

#### 3) Social Disconnect

Although the internet has reduced physical distances between people, but that doesn't means they brought all closer together and emotional distance is increased in some aspects. People always busy with their own virtual world and passing a day. They forget the real world with family and friends and they becoming a formality. Children too are spending more time in virtual world and they adopt wrong thoughts thus rising cyber-crimes and extra marital affairs with the use of ICT gadgets.

#### 4) Reduced Face-to-Face Interaction

In traditional teaching system there was direct face-to-face conversation between teacher and student which use to develop a web of understanding and confidence on each other. Now days, people mostly likes online communication rather than real conversations so people tend to become more individualistic and

introvert. Other limitation is that we are not able express our feeling or what we are actually want to say by the use of e-mail or social networking sites. Thus we required face to face communication with them to express our real feeling.

#### **5) Unwarranted Information at Tender Age**

Since the introduction of ICT and that too in education students are being provided with tablets, laptops, smart mobile phones with high speed internet connectivity so that they can browse the required information without delay. The dark side of this vast sweeping information technology is that students are viewing unwarranted websites and prohibited content at the tender age which pollutes their tender minds and forces them to unnecessary activities and sometimes even result in promotion of criminalization.

#### **6) Lack of Concentration**

SMS and text messaging has become a favorite pastime of many students. Students are seen playing with their cell phones day and night and also during lectures. Being over connected to the on-line world has resulted in lack of focus and concentration in academics and to some extent even in sports and extra-curricular activities.

#### **7) Declining Writing Skills**

Due to excessive usage of online chatting and use of keyboard for typing text along with use of shortcuts in texting the writing skills of today's young generation have declined quite tremendously. These days, students are relying more and more on digital communication that they have totally forgot about improving their writing skills. They don't know the spelling of different words, how to use grammar properly and how to do cursive writing.

#### **8) Increasing Incidents of Cheating**

Technological developments in the field of education such as introduction of graphical calculators, high tech smart watches, mini cameras and similar equipment have become a great source to cheat in examinations. It is easier for students to write formulas and notes on graphing calculators with little chance of being caught.

#### **9) Declining Mathematical Skills**

With the advent of ICT in education and promotion of high tech and scientific/programmed calculators in class rooms and examinations the calculative powers of students have declined enormously. Even, for simple additions and subtractions the find hard to make mental calculations and rely totally on calculators. This is not good in interest of student as it dents the capability to apply brain.

### **FOCUS AREAS FOR FUTURE**

To make ICT and digitization of education a success with more fruitful results in terms of knowledge and learning sharing following should be the focus areas for times to come in near future.

- Modern educational technology is less effective when learning objectives are unclear and the focus of the technology use is diffused. The schools need to convene a technology planning team comprising administrators, teachers, technology coordinators, students, parents and representatives of the community (community-wide involvement) to determine the educational goals for students and types of technology that will support efforts to meet the goals. The team should also develop a vision of how technology can improve teaching and learning.
- Students cannot be expected to benefit from technology if their teachers are neither familiar nor comfortable with it. Many teachers fall behind their students when it comes to modern technology skills and competences, thus making it difficult to interest, motivate and engage children in conventional lessons. They need to have experience with the technology. Hence it is important to provide professional development to teachers to help them not only to learn how to use new technology, but also how to provide meaningful instruction and activities using technology in the classroom.
- Longer class periods and more allowance for team teaching should be built in the daily schedule. Students may need more than a daily 30- or 40-minute period to find, explore and synthesize material. Thus more time should be built into daily schedule allowing teachers time to collaborate and work with their students.
- With a potentially powerful effect of media and the growing empirical evidence for negative impact of technology on students, parents should take care to limit exposure to detrimental technology. They should keep a vigil on what content their wards are reading and viewing in the name of online education.

**CONCLUSION**

There is no disagreement over the fact that digitization of education is the requirement of the hour in order to match the educational environment and system prevailing all over the world, but at the same time it has to be analyzed as to how this system has to be adopted so as to nullify the adverse impact, of excessive dependence on electronic medium of information sharing, on the youth and protect them from behavioral and psychological imbalances. At the same time it is the need of hour that policy makers come up with such system which is a blend of traditional and modern ways of teaching that is protecting the teacher and taught relationship along with promotion of digital education system. Also measures be initiated that the students do not have access to information which is not meant for them and may misguide them to wrong direction propelling unsocial behavior and violence thinking in them. We have to tackle our youth asset very carefully so as to convert them into meaningful population full of capabilities and responsible natives.

**REFERENCES**

1. Bosamia, Mansi Prakashbhai. (2013): 'Positive and Negative Impacts of ICT in our Everyday Life,' accessed from <https://www.researchgate.net/publication/325570282>
2. Byker, Erik Jon. (2014): 'ICT in India's Elementary Schools: The Vision and Realities,' The International Education Journal: Comparative Perspectives, Vol. 13, No. 2, PP. 27 – 40.
3. Jadhav, Vaibhav. (2011): 'ICT and Teacher Education,' International Educational E-Journal, Vol. 1, Issue. 1, PP. 64 – 69.
4. Jha, Nivedita., Shenoy, Veena. (2016): 'Digitization of Indian Education Process: A Hope or Hype,' IOSR Journal of Business and Management, Vol. 18, Issue. 10, PP. 131 – 139.
5. Kamble, Avishkar D. (2013): 'Digital Classroom: The Future of the Current Generation,' International Journal of Education and Psychological Research, Vol. 2, issue 2, PP. 41 - 45
6. Nazarlou, Mortaza Mokhtari. (2013): 'Research on Negative Effect on E-Learning,' International Journal of Mobile Network Communications & Telematics, Vol. 3, No. 2, PP. 11 – 16.
7. Nigam, Anushree. Srivastava, Jyoti. Lakshmi, Tanushree. Vaish, Anurika. (2015): 'Digitizing Education: A Cost Benefit Analysis,' Asian Journal of Information Science and Technology, Vol. 5, no. 1, PP. 1 – 5.
8. Simuforosa, Magwa. (2013): 'The Impact of Modern Technology on the Educational Attainment of Adolescents,' International Journal of Education and Research, Vol. 1, No. 9, PP. 1 – 8.
9. <http://edtechreview.in/trends-insights/insights/3202-top-5-digital-tools-that-students-should-try-in-2018>
10. <http://www.panworldeducation.com/2017/03/23/benefits-of-digital-learning-over-traditional-education-methods/>
11. <https://ajahana.wordpress.com/2012/06/27/the-positive-and-negative-impacts-of-ict-5/>
12. <https://positivenegativeimpact.com/ict>
13. <https://www.educationworld.in/top-five-digital-learning-tools-for-students-and-teachers>
14. <https://www.indiatoday.in/education-today/featurephilia/story/digital-education-1027965-2017-08-08>
15. [www.slideshare.net/maninmax/impact-of-technology-on-education-34470659](http://www.slideshare.net/maninmax/impact-of-technology-on-education-34470659)