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A Comparative Analysis and Impact of Digital Technologies on Education

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Abstract: - In developing countries modern education promise to provide meaning full skill development and employment for individuals and graduates. To make a contribution in economic growth and support easy way of learning to developing countries digital education and e learning is playing a major role. To promote digital education, e-learning, many non government organization, government and donors are taking interest from last few decades. Paper less economy is the demand of modern era for developing as well as developed countries. Developing countries encourages consumers and retailers to choose e-transactions, by plastic card, swipe machine, mobile valet and other chase lees transaction options that play an important role to improve the economy of country. This paper presents a comparative analysis of digital education technology and its impact on educational study and growth.

Keywords: - *Digital Education, Modern Learning Techniques, Technology for Education, QR Code, SWYAM.*

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I. INTRODUCTION

Over the past decade governments have invested significantly in digital education, creating a strong base in terms of technological infrastructure, digital resources and support for teachers' practice. In the meantime, the Digital Education Revolution (DER) [2] activity has cultivated school authority in the utilization of digital technology.

The challenge now facing schools is to build on this capacity, leveraging further improvements by shifting the focus away from obtaining the new advances utilization of these new tools as enablers of innovative, challenging and engaging ways of learning and teaching. By moving to the next stage, schools will equip learners and teachers to meet the difficulties of a quickly evolving world [12].

The Government recognizes the need to build on the DER to take the education sector through the 21st century and beyond.

Before writing review we examined a wide range of initiatives and research around the world. This analysis together with input and advice on high quality learning outcomes provided by a Panel of Experts on Learning in there literature.

The digital economy goals defined in the Government's National Digital Economy [2] Strategy are:

- Online cooperation by households.
- Online involvement by businesses and NGOs.
- Smart environment and infrastructure management.
- Health care.
- Online education expedition.
- Increased use of teleworking
- Online government service and delivery enhancement.

- More digital engagement in regional and rural areas.

Government of India Initiatives

Government of India is working towards making education digitalize and provide the contents all over the country free of cost and the must reach to every learning enthusiast. Poor students can also avail the benefits of these efforts. Ministry of Human Resource and Development of India started preparing the educational contents and books for schools and keep them online to get access to everybody free of cost and the same is also getting ready for the higher education for medical and engineering streams [17].

Government of India also launched the SWAYAM portal to provide several educational programs which covers certificate courses, diploma for undergraduate and post graduates courses with the collaboration with All India Council for Technical Education (AICTE) [17]. The courses hosted on SWAYAM will be in 4 quadrants – (1) video lecture, (2) especially ready reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online chat forum for clearing the doubts. Steps have been in use to enhance the learning practice by using audio-video and multi-media and state of the art pedagogy / technology. In order to guarantee best quality content are produced and delivered, seven National Coordinators have been appointed: They are NPTEL for engineering, UGC for post-graduation learning, CEC for under-graduate education, NCERT & NIOS for school education, IGNOU for out of the school students and IIMB for management studies [17].

For higher educational content for engineering students MHRD also offering video lectures covering all the branches created by eminent faculties of IITs and NITs.

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Information And Communications Technology (ICT) [16] is advanced version of the information technologies which collaborate the different technologies to provide digital educational contents like wireless as well as wired platforms of information sharing [15].

To serve the contents it also integrates with the enterprise software's, middleware and storage servers.

II.   LITERATURE REVIEW

In year 2016 S. Goyal, S. Yadav and M. Mathuria, [1] worked on "Exploring concept of QR code and its benefits in digital education system," where their exploration focuses on the idea of Digital Authentication utilizing QR Code as a part of Digital Education System. This planned to give a superior answer for the Digital Security. There are two difficulties of the work i.e. initial one is to investigate the ease of use of QR Code when all is said in done life and second is to consolidate QR Code innovation with an instructive report for security to maintain a strategic distance from guile. The writing survey is done to union advanced encoding and interpreting method and additionally rudiments of Bar Code and QR Code. The execution of QRC (Quick Response Code) for confirmation is introduced where web environment, programming rationales, and URL inserting are talked about. The outcome examination and testing of analysis are done in the sense to get best nature of QR Code however the data installed ought not influenced and the QR Code should effortlessly be decoded the implanted data from regular devices. The objective of this examination paper is to investigate and break down the best picture under the testing of Error Correction Level and Matrix Point Size parameters by ascertaining the PSNR and MSE values for QR Code pictures with various picture record designs (PNG and JPG). The figured qualities are thought about and the last finish of the work discovered which express that the PNG picture with Error Correction Level-L and Matrix Point Size 1 are the best to produce quality QR Code. The testing and result are exhibited which express that the QR Code is the most ideal approach to make the indistinguishable data out of any substance to rapidly make sense of the creativity.

In year 2016 J. Ribeiro and H. Gil, [2] worked on "The use of DER-Digital Education Resources Teaching supervised practice," and analyzed present entry level position report was suffocated up to satisfy the essential prerequisites to get the de level of ace in nursery and elementary school training. Research was directed in a first year class of the first Basic training cycle, contained 27 understudies, of the "Quinta da Granja" school where the managed rehearse occurred. The goal of the present research is to discover the potential commitments of a corresponding computerized asset alongside the customary paper asset as to better inspire and include the understudies, advancing more noteworthy and better learning. The beginning inquiry that guided this commonsense intercession is as per the following: "To what degree does the

utilization of DER-Digital Education Resources, better the instructing and learning process?" From this beginning stage the goals are: 1-Promote the utilization of data and correspondence advancements in the training procedure; 2-Put into setting the utilization of DER-Digital Education Resources in the instructing/learning process; 3-Look into the capability of DER in advancing huge learning; 4-Implementing the expansion of instructive assets in the classroom: paper arrange (textbook) and computerized organize (DER). Identifying with the sort of research, the received strategy was of a subjective sort, in view of dynamic research. The information accumulation procedures utilized where, field notes member perception, semi organized meetings, poll studies and photographic records. This information accumulation checked with the immediate investment of understudies, of collaborating instructor, the "academic combine" and the head educators of "Quinta da Granja EB1" School. The outcomes got, taking after the examination and treatment of information, reasoned that the utilization of DER drove the understudies to a more top to bottom learning, by the way that they advance more elevated amounts of premium, duty inspiration, association and activity over the span of the proposed exercises.

In year 2016 S. Cheng and L. Haiyan, [3] reasearched on "Digital Education Resource Configuration Mode Transformation - From the Co-construction and Sharing to the Public to be Shared,". Authors explored under the foundation of the present developing the change of the far reaching instruction, change setup mode, extending the extent of the arrangement is beat need to the development of computerized training assets. In this paper, through the examination of computerized training asset setup mode change prepare in our nation, set forward the current ought to set up open sharing mode, in particular people in general rights by the legislature for capital speculation and the general population overall from the principle obligation of the general population media, assemble sharing created in view of assets sharing, administration administrations, push channel Shared interests and criticism Shared assets of maintainable development component, viably take care of the issue of assets to produce and administration execution, make the advanced instruction assets turn into a part of the instruction of open administration.

In year 2016 Q. Jiang and X. Xu, [4] given some theory as "Strategy of Digital Education Resources Construction in Cloud-Computing Environment," and shows cloud computing is another computation technique in light of Internet, through investigating the application estimation of distributed computing to the development of computerized training assets, this article advances the solid systems, clear and distinct the establishment and supporting, the objectives and assignments, the methodologies and strategies for the development, with the trust of adding to the working of advanced instruction assets.

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In year 2016 C. Zhou, T. Y. Zhao and Z. L. Zhu, [5] also given some extensive theory on "The Application of Digital Technology in the Design of Landscape Architecture and Education Reform," where Landscape engineering is committed to congruous advancement amongst man and nature. With the presentation of contemporary reasonable logical innovation, as the "craft of science", landscape engineering will undoubtedly enter another phase of advancement. These days, advanced innovation has been generally utilized as a part of the world and different businesses. Utilizing the procedure that computerized innovation has help the advancement of landscape engineering industry as connections, this article elucidates the application protest, capacity and fundamental working programming of advanced innovation in the landscape engineering arranging and outline, which set off the present circumstance of landscape design training in computerized innovation.

In year 2008 S. Liu and Z. Yang, [6] work out some architecture as "Digital Education Service Chain: Model and Architecture," where Digital Education Service (DES) or Digital Education Service Chain (DESC) is likewise a fresh out of the plastic new field of the cutting edge benefit industry. This paper intends to plan hypothetical establishment and mechanical reason for DES and DESC. In this paper, the idea of DESC is talked about. From the point of view of administration chain, an assortment of DESCpsilas models are given and broke down in figure and formal mode. As indicated by SaaS (Software-as-a-Service), the administration design of DESC is made sense of. In the meantime, the IT engineering for DESC is planned in light of SOA. At last, the further research bearings are advanced.

Table 1: Summary of Literature Survey

Ref. NO	TITLE	AUTHORS	YEAR	OBJECTIVE OF ARTICLE
[1]	Exploring concept of QR code and its benefits in digital education system	S. Goyal, S. Yadav, M. Mathuria	2016	This exploration focuses on the idea of Digital Authentication utilizing QR Code as a part of Digital Education System. This planned to give a superior answer for the Digital Security
[2]	The use of DER-Digital Education Resources Teaching supervised practice	J. Ribeiro, H. Gil	2016	An entry level position report was suffocated up to satisfy the essential prerequisites to get the de level of ace in nursery and elementary school training.
[3]	Digital Education Resource Configuration Mode Transformation - From the Co-construction and Sharing to the Public to be Shared,"	S. Cheng, L. Haiyan	2016	The change of the far reaching instruction, change setup mode, extending the extent of the arrangement is beat need to the development of computerized training assets
[4]	Strategy of Digital Education Resources Construction in Cloud-Computing Environment	Q. Jiang, X. Xu	2016	The enhanced solid systems, clear and distinct the establishment and supporting, the objectives and assignments, the methodologies and strategies for the development,
[5]	The Application of Digital Technology in the Design of Landscape Architecture and Education Reform	C. Zhou, T. Y. Zhao, Z. L. Zhu	2016	With the presentation of contemporary reasonable logical innovation, as the "craft of science", landscape engineering will undoubtedly enter another phase of advancement
[6]	Digital Education Service Chain: Model and Architecture	S. Liu, Z. Yang	2008	This exploration intends to plan hypothetical establishment and mechanical reason for DES and DESC. In this paper, the idea of DESC is talked about

In year 2013 F. Gao, M. Hope and T. Fan, [7] given theories on "Research on mobile collaborative working environments for digital media technology education," where the principle point of the exploration exhibited in this research was to examine `how can communitarian middleware based CWE (Collaborative Working Environments), joined with Bluetooth innovation, improve the correspondences of versatile clients for digital media innovation education.' This examination action diagrams a collective middleware that has been produced on Smartphone innovation and empowers the making of a multi-client shared workplace by means of a Bluetooth remote interchanges arrange. This work gives two key regions of commitment. Firstly it gives a developmental stride to the formation of new shared applications. Also, it has enhanced the utilization of Bluetooth past the usefulness for which it was initially outlined.

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In year 2013 Y. J. Hsu, C. H. Lin and J. L. Shih, [8] together attached game and motion sensing as "Developing Multi-player Digital Adventure Education Game with Motion Sensing Technologies" to facilitates enterprise education exercises are courses that underscore on direct experience learning in arranged environment with helpful gatherings. In this exploration, Xbox Kinect and Unity 3D diversion motor are utilized to build up the two enterprise education amusements. Digital diversions can tackle a portion of the issues physical experience education exercises face, for example, space restrictions and perils. With the reenactments, players can encounter the unattainable exercises, all things considered, submerge in the collective exercises, and investigate the estimation of experience education. From the post-amusement reflections, players can see their parts in the gathering, comprehend the component of authority, and take care of issues. Members' community oriented gaming procedure will be recorded by PCs and perceptions directed by scientists to comprehend members' social practices. Surveys and tests will be utilized to examine members' coordinated effort designs. It is trusted that the investigation comes about offer some inside and out points of view to the field for the future research.

In year 2011 Y. Zhang, [9] "Research on the application of digital image technology in school education,". In the period of data, digital image innovation is generally connected to different fields. This paper contrasts the digital picture innovation and the customary picture innovation, gives a brief prologue to the advancement of picture innovation, delineates the application and patterns of it in today's school education, and acknowledges the significance of digital picture innovation in school education, and advances the earnestness of preparing the educators' and understudies' capacities to utilize the digital picture innovation effectively.

In the year 2009 M. Wu and W. Zhou, [10] given "Application and research on digital technology in architecture education," . Several people understands the Digital technology has been generally utilized as a part of many fields, particularly in structural planning field. The happening to digital age makes the design education confront challenges. We discover the utilization of digital innovation brings vitality and strike on conventional compositional during the time spent reconsider of building education. Along these lines, with a specific end goal to lead the engineering education into digital age, Authors should reestablish compositional education idea; enhance showing model, revolute design education component.

In year 1978 M. E. Sloan, [11] wrote an article on "The impact of digital technology on electrical engineering education," which was discussing about digital technology has upset electrical building education. Understudies entering building schools have a solid foundation in discrete science that is regularly expanded by learning of programming and of microcomputers. The electrical designing educational programs have changed to incorporate digital procedures in every real field. Software engineering and designing, a teach that might be instructed in software engineering or electrical building divisions, keeps on developing. Programming building is increasing expanding stature. Digital innovation has influenced guideline in electrical designing and other college level subjects short of what it has influenced educational modules, yet huge PC helped or PC oversaw direction can be found. The act of electrical building has changed with its acknowledgment of the PC as a plan apparatus and the approach of the chip.

III.   GOAL OF DIGITAL EDUCATION

The goal of digital education is as following.

- All children are engaged in and benefiting from school
- Young people are meeting basic literacy and numeracy standards, and overall levels of literacy and numeracy are improving
- Students excel by international standards
- Young people make the successful transition from school to work and further study
- Schooling promotes social inclusion and reduces the educational disadvantage of children.
- Government of India working towards providing the contents free of cost to school students in collaboration with NCERT. For Engineering students NPTEL, CEC for under graduate students, IGNOU for students who willing to learn part time or while working and IIMB for management studies courses like MBA, BBA, Commerce etc. [17].

IV.   MODEL OF DIGITAL EDUCATION SYSTEM

The digital education technology system lies on following four pillars across the globe:

- Infrastructure
- Learning resources
- Teacher capability
- Leadership
- The educational contents are divided into two parts audios and videos. ICT helps to providing visual and audible contents [14].
- ICT completes the system of information sharing in full duplex mode for interactive sessions of learning and teaching [15].

In addition, state and region governments and the non-government school sector have made significant progress towards engaging with the reform potential of digital education through their own investments in ICT in the classroom, teacher practice and digital content

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Infrastructure

Access to computing devices and broadband connectivity is key to realizing the benefits of digital technologies in education. Apart from this power upgrades, electronic whiteboards, digital cameras, software, suitable furniture and redesign of learning spaces.

Learning and teaching resources

Digital learning resources including datasets, still and moving images, audio files, text files, assessment items. These resources are directly linked to the government Curriculum and accessed either through the online digital curriculum portal of school or education, through the websites.

Teacher capability

Improving student learning outcomes requires teachers and school leaders to have a deep understanding of the context, content and pedagogy of a rapidly increasing range of enabling technologies. They also need to understand the interplay between these factors. For example, the fact that technologies do not, of themselves, improves learning. Rather, it is the design of the learning experiences, making use of particular technologies that leads to improved learning outcomes.

Leadership

To foster leadership at the school level, national standards have to be developed for principals. Significant support has also been provided through national, system and local professional learning. Around the country, exemplar schools in which pedagogical change and high quality contemporary learning outcomes are well understood and pursued, have been recognized.

V. IMPACT OF DIGITAL TECHNOLOGY ON EDUCATION

Positive impact

Indeed the utilization of the tech-contraptions and services by the present era positively affects IT markets and in this way it is valuable for the economy. Tech-gadgets and gaming May affect exploring skills, vital deduction and innovativeness capability of the people. These tech gadgets and administrations are better hotspots for learning for the young and these are the wellsprings of fun and diversion which help them occupy from every day stress of life.

Negative impact

The digital exercises make the youth solid in specialized skills however make them frail in practice life, viable skills. It removes the youthful mass from the truth helping them to live in their imaginary word. Because of the time spent on the electronic gadgets like Smartphone tabulate etc. The adolescent are shunned some open air exercises with loved ones. The liberality in vicious diversions may make more

viciousness in their psyche. The more they utilize the contraptions, the more they are wild about it which may divert them from study.

VI. CONCLUSION

Governments and NGOs in developing countries understand the basic significance of instruction for monetary and social advancement. Numerous particularly in Africa are currently executing driven arrangements to quickly build the quantity of schools. This speculation is prompting to noteworthy advance in expanding the number of schools and understudies, and the following test is to redesign the educational programs and enhance the nature of instruction. Governments are attempt to turning to digital education technology in. Many universities collages have started e-learning programs and are putting computers into schools and colleges. This report has endeavored to provide an accumulation of research on digital education technology impacts and to examine promising practices to advise new and on-going digital education technology programs. Though the digital education technology has brought revolution in education and learning but apart from this it should not leg behind traditional education. Traditional and modern educational system together can make a good digital education system.

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