

DIGITAL LEARNING ENVIRONMENT AND SCOPE FOR ONLINE HIGHER EDUCATION IN INDIA

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ABSTRACT

The increasing utilization of information and communication technology (ICT) is improving student teaching as well as learning. Online and virtual learning environments are progressively replacing more traditional ones. Incorporation of ICT into higher education creates a wealth of new options. E-learning is additionally made possible by incorporation of ICT in higher education courses. Utilization of ICT has greatly increased distance education. Thus, to efficiently incorporate ICT into classroom, higher education institutions must work together and provide funding from the government. Lack of funding, limited training opportunities, college administration, lack of sponsorship, inadequate ICT facilities at work, and unstable electrical supplies are some of these difficulties. The underutilization of ICT by academic staff can be attributed to various issues, such as inadequate comprehension of ICT, time constraints stemming from their workload, and disinterest in education and training. This essay examines the ways in which ICT and IoT are influencing classroom instruction along with student learning in Indian higher education institutions. The paper was based on relevant literature as well as secondary data.

KEYWORDS: Digital Learning, Environment, Online Education, Higher Education,

INTRODUCTION

Education reform proponents are placing a growing emphasis on utilization of ICT in teaching as well as learning. ICT might be viewed as a tool as well for adjusting to life in a globally connected environment. Regarding field of education, ICT is usually viewed as a game-changer. ICT is innovative not in its INTRODUCTION as well as implementation but rather in its capability to facilitate a student-centered method of education. The critical challenge of high-quality teaching as well as learning must be addressed immediately at all levels. ICTs have several potential advantages that could enhance education. ICTs are tools in addition to being able to facilitate and effect change. Students will remain interested in the information they are studying if they have access to a variety of reliable, thought-provoking, along with entertaining content. Multimedia software for computers, televisions, and movies that combines text, sound, and vibrant moving visuals can be employed. But the radio uses sound effects, music, satirical comedy, adaptations, and other groupings of acts to entice listeners to pay attention and participate in the instruction being presented. The use of computers by academics has been adopted far faster than prior audio-visual mediums. Because computers can alteration words as well as symbols, that has been essence of intellectual work, they are therefore extremely powerful.

Both on-campus along with remote learning courses are increasingly utilizing online, or e-learning. For example, there exist notable distinctions in terms of cost between e-learning and remote education, along with several other differences. Depending on situation, e-learning may result in cost savings or quality improvements. Higher education is now more accessible overall because of ICTs as well as e-learning in particular. Through lens of constructivism along with instruction, ICT can improve research, teaching, and learning. Because several observers implicitly accept technology as either autonomous and neutral, human-controlled as well as value-loaded, autonomous and value-loaded, or else neutral along with autonomous, there is rising confidence in technology's role in higher education. Under general heading of ICT, that comprises everything from television, computer networks, numerous services, mobile phones, radio, applications that go along them, are distance learning as well as videoconferencing, for instance. ICT could be categorized as a branch of educational technology if it is utilized for learning objectives, such as developing learning environments and assisting and enhancing student learning. ICTs have been employed in higher education for numerous purposes, that include as academic research, student enrollment, administrative support, communication among students, instructors, along with outside world, production, distribution of course materials, provision and sharing of information. At each

stage of higher education, utilization of ICT has changed as well as improved the teaching as well as learning quality. There is a growing trend in classroom technology to include virtual and online worlds. Numerous opportunities arise when ICT has been employed in classroom. E-learning is now feasible because of growing utilization of ICT in classroom. ICT utilization has improved distance education. Students may utilize a first-rate learning environment at any time as well as from any location, teaching community can extend out to remote regions. Encouraging educators, trainers to incorporate technology into their class plans is crucial for offering students pedagogical and educational advantages. Instead of acquiring computer skills and investing in hardware as well as software, it is more crucial to support, empower, and influence educators as they work with students. Over time, democratization of education will outcome from ICT-enabled learning.

USE OF ICT

ICTs have been employed in higher education for many different reasons, such as course development, e-learning delivery, communication among students, teachers, along with outside world, and creation, distribution of educational content. Student enrollment, administrative support, and academic research are also covered in this list. Mondal and Mete (2012) assert that there has been a notable shift in India with regard to higher education accessibility, equality, and quality. A wide range of ICT products, such as audiocassettes, DVDs, CD ROMs, teleconferencing, interactive radio counselling, interactive voice response systems, email, television classes, audio conferencing, and radio broadcasts, are utilized in the education (Bhattacharya and Sharma, 2007). Since knowledge and information have a shorter shelf life in the Information Age, there is an increase in the number of lifelong learners. To be informed about the most recent developments, people must use ICT to acquire knowledge (Plomp, Pelgrum, & Law, 2007). Various other intangible advantages are also present (Kozma, 2005). Over the years, a range of ICT products, including teleconferencing and email, radio and television commercials, audiocassettes and CD ROMs, and televised classes, are utilized in education for diversity of objectives (Sharma, 2003; Bhattacharya and Sharma, 2007). Restructuring a business model can have a number of advantages, including more transparency and responsiveness of government institutions and heightened participation in the democratic process (Kozma, 2005). Additionally, technology makes it possible to create digital resources like online library databases that academics, professionals, along with students can utilize to perform investigations whenever they want, from anywhere (Bhattacharya and Sharma, 2007). These kinds of facilities foster connections between researchers and academics, which leads to the sharing of intellectual information. Consequently, no

additional work is needed. Through the utilization of ICT in classroom, students might be capable of growing higher-order skills by collaborating over time, space as well as resolving challenging actual world restrictions (Bhattacharya and Sharma, 2007; Lim and Hang, 2003). It expands ability of student to perceive as well as comprehend their environment. The workforce can be prepared for upcoming global economy and information society by using ICT (Kozma, 2005). As per Juma et al. (2016), ICT substantially enhanced educational administrators' performance through enabling cross-level communication, offering media and boosting the accurateness of information, examining data quickly along with effectively, offering an effective way to collaborate with colleagues, motivating administrators by accessibility to novel data.

Higher education will inevitably include ICT (James & Hopkinson, 2009). ICT has altered how individuals work, communicate, and live in society in addition to how businesses and organizations function (Bhattacharya & Sharma, 2007; UNESCO, 2002). As stated by Kirkup and Kirkwood (2005), computers are now frequently found in homes, offices, along with educational institutions. As noted by McGorry (2002), utilization of ICT has risen exponentially. How rapidly a nation's economy along with society develop is directly impacted by quality of its human capital (Hassan, 2001; Purwadi, 2001). Regarding this, ICT is not a magic bullet for every issue that higher education institutions encounter. On the other hand, technology has power to enhance as well as expand conventional teaching and learning activities while also having a positive impact on learning. Research, scholarly community involvement, administration, and teaching and learning are among the other areas of higher education where ICT has been becoming more common (Balasubramaniam et al., 2009; Jaffer et al., 2007). Utilization of ICT in the higher education has been mentioned through academics in several terms, that includes web-based learning, hybrid learning, digital learning objects, learning technologies, online teaching as well as learning technologies, along with e-learning (Bandenhorst & de Beer, 2004), among others (Czerniewicz, 2005; Kirkup & Kirkwood, 2005). Various technological resources and techniques might be employed to create, exchange, communicate, as well as save information. In our opinion, ICT can be a crucial instrument in helping higher education overcome its problems with massification, diversity, internationalization, and marketization (International Association of Universities, 1998; Thune & Welle-Strand, 2005). ICT use in higher education studies has demonstrated that it may be utilized to reduce expenses per student in order to address these challenges (Ozdemir & Abrevaya, 2007), increase enrollments (Fluck, 2003), improve mobility (Thune & Welle-Strand, 2005), accommodate students from overseas (Bhattacharya and Sharma, 2007), increase accessibility to higher education (Ozdemir &

Abrevaya, 2007), along with change the way a course has been taught (Bhattacharya and Sharma, 2007). (Lim & Hang, 2003; Ozdemir and Abrevaya, 2007; Kozma, 2005). This ICT utilization have been therefore crucial to guaranteeing affordable, easily accessible, and excellent higher education.

It is possible to employ ICT to improve academic performance, as stated by Toro and Joshi (2012). From student administration to resource management, technology might be utilized in educational environments (Christiana Maki 2008). Students can refine, improve their teaching skills through lectures, tutorials, presentations, along with homework provided by their teachers (Oliver, 2002). Students in these educational programs must have access to a variety of sources along with types of knowledge that allow them to function to the best of their abilities. Confidence in one's ability to understand, reflect, communicate, and solve problems is necessary for learning (Forde, 2007). Utilization of ICT has resulted in a shift in higher education from teacher-centered delivery as well as transmission to student-centered teaching along with learning. ICT empowers pupils to take responsibility for their own education (Jonassen & Reeves, 1996). Hattangdi and Ghosh (2005) utilized phrases informing, situating, as well as constructive instruments to elaborate on potential of ICT. Real-world situations in classroom encourage inquiry along with problem-solving. In their capacities as instructors, coaches, mentors, lecturers utilized technology to improve learning environment (Oliver, 2000). Because of growing popularity of ICT as learning tool, instructors in higher education are realizing that behaviorist learning theories need to give way. Ideas for student-centered instruction and constructivist theory have been acquiring traction. Instead of providing knowledge, constructivism considers teaching to guide students in developing their own knowledge. As stated by Vygotsky (1978), learning and cognition have been actively produced within the context of social interactions. According to Hattangdi and Ghosh (2005), synchronous and asynchronous communication systems can facilitate both real-time along with delayed participation in communicative activities in today's mobile as well as seamless communication environments. Present paradigm has been outdated due to growth of "lifelong learner" brought about by the spread of information and knowledge. Individuals no longer anticipate working at one position for the entirety of their careers, and continuing education and training are typical (Forde, 2007). To stay informed about most recent developments, people have been relying more and more on ICT (Plomp, Pelgrum, and Law, 2007). Higher education, that has consistently been vital to a country's economic as well as social advancement, acquires a further importance in current context. People with greater education have been able to be more productive and be more productive. Better health as well as social contact are just two of

many tangible and intangible advantages when utilizing internet (Kozma, 2005).

Mondal and Mete (2012) assert that there has been a notable shift in India with regard to higher education accessibility, equality, and quality. Several ICT products possess the probable to improve education (Bhattacharya and Sharma, 2007). Inability to resist need to utilise internet is known as internet addiction, and it can cause problems in a person's social, academic, professional, and/or personal life (Chov and Hsiao, 2000; Spada, 2014). McGorry (2002) asserts that there has been an exponential rise in utilization of ICT. Every country's capacity to thrive economically and socially is reliant on the educational attainment of its workforce (Mehta & Kalra, 2006; Hassan, 2001; Purwadi, 2001). ICT is spreading throughout higher education in addition to assisting with instruction and learning. It has aided in administration, scholarly community participation, along with investigation (Balasubramaniam et al., 2009; Jaffer et al., 2007). Utilization of ICTs in higher education has been mentioned through academics by several terms, that includes hybrid learning, web-based learning, online teaching and learning technologies, digital learning objects, along with e-learning (Bandenhorst & de Beer, 2004). Kirkwood and Kirkup (2005). There are plenty of distinct technological methods and tools available for generating, distributing, communicating, and storing information. It is possible to employ ICT to improve academic performance, as stated by Toro and Joshi (2012). Since the turn of the century, the administrative structure has undergone a substantial transformation, according to Krishnaveni and Meenakumari (2010). Resource management and student administration are just a few of the uses of technology in educational environments (Christiana Maki 2008).

HIGHER EDUCATION IN INDIA

India had 1113 universities as of 2020–21. Two hundred thirty-five Central Government institutions, four hundred twenty-two State Government institutions, ten government-aided deemed universities, along with four hundred fourth-six privately managed (unaided) institutions made up this group. In the country, there are eleven (3) universities: one Central Open University (OU); fourteen State OU (in the states of Assam, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Rajasthan, Telangana, Tamil Nadu, Uttarakhand, Uttar Pradesh, as well as West Bengal); one State Private OU; along with three OU. There have been 314 colleges associated with 314 institutions overall. There are 475 universities in remote areas among the 1099 that answered. There are seventeen universities that only admit female students; two of them are in Haryana; there are also universities in Assam, Andhra Pradesh, Himachal Pradesh,

Delhi, Odisha, Uttarakhand, Maharashtra; there are also universities in Tamil Nadu, Rajasthan, Karnataka, along with West Bengal. Of the universities that replied, 56% focused on general subjects, followed by technical subjects (17%), agricultural subjects (6%), medical subjects (6%), and management subjects (5%). Madhya Pradesh, Kerala, Gujarat, Andhra Pradesh, Uttar Pradesh, Telangana, Karnataka, Maharashtra, Rajasthan, Tamil Nadu, along with Andhra Pradesh are top 10 Indian states in terms of number of colleges per lakhs of people. Number of universities and colleges rose by approximately 28.8percent, from 864 in 2016–17 to 1113 in 2020–21. The number of colleges rose 9.4percent from 40,026 in 2016–17 to 43,796 in 2020–21. It is anticipated that between 2020-2021, number of state public universities, state private universities, as well as institutes of national importance will rise dramatically.

Moreover, there has been a significant improvement in the annual enrollment growth rate over time. The enrollment growth between 2019–20 and 2020–21 is 7.3%, the largest rise over the 5years prior. Deemed Universities-Private, Deemed Universities-Government, as well as Deemed Universities (Government Aided) are among the university classifications where the proportion of female students has risen substantially. Proportion of women pursuing an M. Com. degree is rather high and has risen dramatically in last 5years. Even still, proportion of women enrolled in undergraduate programs, such as LLB, BBA, B. Tech/BE, BCA, as well as BBA, has been still surprisingly low. Over previous five years, there has been an increase in GER (Gross Enrollment Ratio), that had been 24.1 in the year 2016–17 as well as 27.3 in the year 2020–21. Women experience a higher increase in GER than men. Values for the Gender Parity Index (GPI) are rising everywhere. Between 2016 and 2017, it increased to 0.94, and between 2020 and 2021, it increased to 1.05 (ASHER, 2022). According to India's Higher Education Vision 2047, higher education shall meet the highest standards and be equitable, accessible, and inclusive. Ecosystem should implement a student-centered techniques that encourages lifelong learning to take full advantage of vast human resource potential of India along with rest of world. According to us five crucial areas of the Indian higher education system require substantial changes and infrastructure expansion: faculty development, international mobility, student centricity, research and innovation, as well as digital learning, to fulfil objectives specified in Vision 2047's 5year plans (FICCI-EY, 2022). In 2020, 38.5million students had been registered in India's higher education system. 80percent of students enrolled are pursuing a bachelor's degree. By 2035, NEP 2020 aims to raise number of students enrolled in India's higher education system by 34million, improving country's higher education gross enrollment ratio from 27percent to 50percent. Therefore, in

addition to adding 34 million additional students to its capacity by 2035, higher education system of India should also improve staff and infrastructure.

DIGITAL ENVIRONMENT

The rapid advancement of digital technologies is causing major changes in the educational system. Many Indian universities are expected to get financing by year's end, either for the construction of digital university centres inside already-existing traditional universities or for new, independent institutions. Due to the inability of pupils to acquire a decent education, one of the fields most affected by the COVID-19 lockdown is education. The pandemic has made things worse because there aren't many universities in India, giving prospective students limited options. The PM e-Vidya launched by finance Minister Nirmala Sitharaman i.e., one nation, one digital platform program, which incorporates several online learning initiatives, with the goal of giving kids an excellent education. The NEP (National Education Policy) 2020 frameworks a thorough plan for bringing India's educational system back to life. Approach places a lot of focus on how the development of digital technology has made us modify the way we teach and learn. If digital education is to reach economies of scale needed in India, universities must reorganize their operations to offer flexible educational institutions employing a combination of digital media as well as data technology. It had been announced in the 2022-2023 budget that a digital university would be established in accordance with the NEP's objective.

Creation of a central digital university has been mentioned in the announcement about Budget 2022–2023. A digital university will support goals of the National Education Policy 2020 through providing excellent higher education in several Indian languages. Following modernization of the Indian Institute of Information Technology and Management, Kerala (IIITM-K), Kerala University of Digital Sciences, Innovation and Technology had been founded on January 18, 2020, becoming country's 1st digital university. This state university has been located in Thiruvananthapuram, Kerala (The Hindu, 2021: "Digital university comes into being"). The construction of the second digital university, the Rajiv Gandhi Fintech Digital Institute, in Jodhpur has received approval from the Rajasthan government. India's educational system has seen numerous changes, from antiquated gurukul system to contemporary digital education system. A step in the right direction, proposed Digital University would position India as a leader in digital education worldwide. Therefore, it would be foolish to believe that India will gain popularity through digital universities. Together, the government and nonprofit organizations need to bridge the nation's digital divide. The most sensible course of action is to integrate digital technology into the current classroom setup.

One project that may be effortlessly included in digital university has been PM e-Vidya, which aims to unify all digital education-related projects, that includes National Digital Library, Swayam Prabha, e-PG pathshala, Diksha, E-yantra, Swayam, as well as Virtual Labs. This method has been called hybrid or else blended learning. Only then will India's higher education system be high-quality and egalitarian.

BLENDED LEARNING

Fundamentally, IoT is a network of several objects linked by numerous electronics, software, along with network connectivity oriented in various ways. Its goal has been to exchange and assemble any kind of information. Numerous industries, that includes tourism, education, finance, as well as telecommunications, use IoT. Primary argument for IoT adoption in education sector is that it improves education as well as adds value to structures and surroundings (Ravindra, 2018). With the goal of increasing technology use nationwide, the Indian government is giving the Digital India program a lot of attention. Making most of India's much-discussed demographic dividend as well as improving connectivity are the goals of the endeavour. The nation should build broadband highways in order to significantly improve the digital learning environment. Access to content on the cloud or equivalent technologies could help overcome the scarcity of professors and educational institutions. IoT will keep bringing the previously unconnected people together, narrowing the achievement gap, as well as offering workable solutions which elevate bar for education for every child as more complex data becomes available as well as capabilities grow. IoT seeks to expand learning opportunities and provide educators and students greater freedom to travel the world. Education is gradually shifting in this new ecosystem from campus based learning to online or else blended learning, curriculum on internet or else cloud, mobile learning with secure Wi-Fi, video collaboration, online tool evaluation, along with combining all of this for Any Time Anywhere. Utilizing educational software such as LMS (learning management systems). India has to embrace technology as it has so numerous unique advantages.

With connected devices like interactive whiteboards and digital highlighters, students might now converse with mentors, peers, along with teachers from anywhere in globe though unwinding at home or in class. Digital scanners enhance learning by digitally transmitting text messages to mobile phones. Interactive boards help to speed up and improve learning in a similar way by allowing information to be received, acknowledged, and reciprocated (Hanan et al., 2017). Upgrades to Textbooks contain QR (Quick Response) codes these days. Students can obtain assignments, feedback, and additional learning tools quickly by using their smartphones to scan the QR

codes (Singh, 2019). In institutions, the usage of cloud based applications for automated data processing has started. Students enjoy a greater learning experience since they can gain firsthand understanding of topics they used to study only from textbooks (Carma, 2019). Increased collaboration in team projects: IoT (Internet of Things) has been utilized by educational institutions to form a collaborative environment. Students are encouraged to use their smartphones to scan QR codes or RFID tags when working in groups so that their data can be transferred to a collaborative workspace (Satu et al., 2018).

ICT is one element of a solution for satisfying changing educational needs of civilizations, as stated by Garrison and Anderson (2003). As per Feenberg (2003), people perceive technology as neutral as well as either instrumentalist (neutral and subject to human influence) or determinist (self-sufficient). On the other end of the spectrum, we have an image of technology that has been autonomous as well as value-laden (substantivism) or human-controlled, value-laden (criticist). It has been frequent to think of technology as nothing more than a tool or indifferent instrument when it is perceived as impartial along with autonomous. In ICT, this is the instrumentalist position (Feenberg, 2003). Diverse as well as speculative perspectives regarding impact, role of ICT in education have been revealed by recent research conducted in South Africa (Czerniewicz et al., 2005). Constructivists think, the learner must be at Centre of technology. Certain statements state that when technology has been employed suitably, it improves learning possibilities and education (Tinio, 2002; Muianga, 2004). Student is liberated from educational providers by its decentralized structure (Khan, 2000). E-learning systems must empower students to vigorously develop knowledge, rather than just allowing them to passively receive it (Muianga, 2004). It's possible that even some negative aspects of education, such as space, pace, along with time, won't be an issue anymore (Sekgwelea, 2004). Online technologies have been projected to entirely revolutionize distance learning, even according to Fox and Mills (1997). As stated by Brown (2002), e-learning and other kinds of technology will eventually transform all teaching and learning methods in 21st century. Subsequent section discusses these concepts' implications for online education.

A vast array of efficient online teaching resources are employed in higher education, all of which contribute to raising the bar for learning experiences. At the forefront of this technological mosaic, the LMS, that comprises industry mainstays, for example, Sakai, Canvas, D2L Bright Spot, Moodle, along with Blackboard - serve as digital command centers that orchestrate courses in an effortless manner. These platforms adeptly manage the administrative complexities, allowing instructors to focus on their main objective of advancing knowledge acquisition. Concurrently, Big Blue

Button, Zoom, Google Meet, Cisco Webex, Microsoft Teams, as well as Meet facilitate the dynamic exchange between educators and learners. These webinar and video conferencing tools that break down geographical borders transform virtual spaces into vibrant classrooms where ideas are freely shared and in-the-moment engagement thrives. The collaborative attitude breathes life into the creation and dissemination of instructional content. Microsoft Power Point, Google Slides, Adobe Spark, Padlet, and Flipgrid become the teachers' and students' collaborative artist's canvas, bringing concepts to life through multimedia-rich interactions. With the use of these platforms, a group narrative may be created that adds depth and diversity to the educational process. Under the surface, communication and collaboration flourish, fostering greater teamwork and knowledge sharing. The utilization of Microsoft One Drive, Slack, Trello, Google Drive, as well as Asana in virtual learning context, replicates seamless interactions that take place on a physical campus. With the advent of the digital revolution, we can now replicate first-hand experiences as we get closer to reality. Platforms that include as Labster, PhET Interactive Simulations, along with Chem Collective allow students to manipulate variables, examine data, along with make inferences in a realistic yet safe environment. Through practical learning, these virtual labs provide spaces for conducting scientific experiments.

CONCLUSION

Higher education's internationalization process is impacted by IT. An AI-based strategy was recommended by Pearson and UCL Knowledge Lab researchers as a way to improve teaching along with learning in the classroom. In Figure3, their conceptual design can be seen. How technology advances will affect higher education is demonstrated in the Horizon Report. It illustrates several paths that education and learning will take. Youth is far more knowledgeable about many aspects of technology than we are. Digital media is genuinely altering the nature of learning by moving it from passive knowledge intake to active knowledge generation. It is more vital what young kids learn than the way they learn it. Digital education has replaced the conventional pencil and paper mode of instruction. Presently, we witness young toddlers, ages 3 to 4, utilizing the gadgets and acquiring knowledge independently. In stark contrast to conventional techniques to teach, slightly older children have been left to rely on their computers for support as well as education. Now that children are aware of the topics, parents can watch and ask them questions to find out how well they're doing. In the era of digital technology, schooling has shifted from being the primary means of knowledge acquisition to becoming a phase in which kids acquire social skills. Enhancing instruction and making it more pertinent to students' needs require integrating technology into the classroom. Technology may be affecting young people's play, social relationships, problem-

solving skills, social organisation, critical thinking, problem-solving abilities, moral dilemma-solving abilities, and comprehension and evaluation of information. Advanced Collaborative Humanities, Arts, Science, and Technology is what Haystack stands for. Since its founding by David Feo Goldberg and Kathy Davidson, the organization has grown to become an international, multidisciplinary one that collaborates with numerous federal agencies and universities. The information year ends with the electronic tectonics event. The immense expansion along with cumulative influence of technology in every sector of life in the twenty-first century has made traditional along with classical techniques of instruction in classroom unappealing and ineffective for students. Tiny devices are part of the growing Internet of Things (IoT) trend. Students who employ wearable technology - which connects to learning systems via tiny sensors - will find this to be especially true. IoT sensors are feature of many contemporary interactive products. These sensors can establish a connection with the devices of end users as well as give them limited access so they can receive data based on accounts they use. The ability of IoT to connect objects to the Internet is transforming several features of everyday life.

Thanks to Internet, e-learning has evolved into a normal practice in most modern educational institutions, and it has solidified itself in our classrooms. However, there are a lot of educational uses for IoT, and it has a big influence on this disruption. It has numerous positive effects on the community and system, much to how prevalent mobile technology is now. The IoT also helps schools to become more secure by keeping an eye on valuable assets and making it easier for teachers to create "smart lesson plans" by enhancing information accessibility. With interactive programs that include built-in images along with simulations, students are rapidly abandoning paper books in favor of tablets, IPADs that enable them to learn at any time as well as from any location. This is especially true of students in colleges and universities. IoT offers several potential as well as challenges to higher education. The distinct emergence of IoT technologies that include analytics, big data, and cloud computing, along with unique growth of ubiquitous computing, is advantageous in cultivating a new digital culture and strengthening the core tenets of research and education. The Internet of Things gives digital impetus to higher education institutions by providing more chances for online degrees, convenient access to structured along with unstructured forms of educational content. IoT incorporates social science and other topics to increase the usefulness of the vast amounts of data collected via social media. This is a significant shift from the way education has traditionally been done.

REFERENCES

- ASHER (2022). Annual Survey of Higher Education Research. MoHRD, Govt. of India, New Delhi
- Badenhorst, JJC and de Beer, JK (2004). Blended Learning at the Central University of Technology, Free State. Paper presented in the emerge 2004 conference on 29 June – 8 July 2004
- Bhattacharya, I. & Sharma, K. (2007). India in the knowledge economy - an electronic paradigm, *International Journal of Educational Management* Vol. 21 No. 6, pp. 543–568
- Boeren, A. & Maltha, H. (2005). A changing landscape: Making support to higher education and research in developing countries more effective. Paper presented at the Nuffic Expert Meeting (Hague, May 24-25, 2005).
- Brown, D.G. (2002). Proven Strategies for Teaching and Learning. Presentation in the New Education Benefits of ICT in Higher Education Conference, Rotterdam, September 2002
- Carma, S. (2019, March 26). "IoT Data: How to Collect, Process, and Analyse them." Toolbox. <https://www.toolbox.com/tech/iot/blogs/iot-data-how-to-collect-process-and-analyze-them-032619>
- Chov, C, & Hsiao, M., (2000), Internet addiction, usage, gratifications, and pleasure experience; The Taiwan College student's case. *Computer, Edu.*35, 65-80.
- Christiana Maki (2008), "Information and Communication Technology for Administration and Management for secondary schools in Cyprus", *Journal of Online Learning and Teaching* Vol. 4 No. 3.
- Czerniewicz, L., Ravjee, N. & Mlitwa, N. (2005). *Information and communication technologies (ICTs) and South African higher education: Mapping the landscape*. Pretoria: Council of Higher Education. [verified 1 Dec 2011]
- Feenberg, Andrew (2003). What is Technology: Lecture for the Komaba under groutess, June, 2003, at (www.rohansdsu.edu/faculty/feenberg/komaba.htm), accessed on 17 Jthe 2006)
- FICCI- EY (2022) Higher Education in India: Vision 2047, FICCI and EY, New Delhi
- Fluck, A. E. (2003). Why isn't ICT as effective as it ought to be in school education? In *CRPIT03: Proceedings of the 3.1 and 3.3 Working Groups Conference on International Federation for Information Processing* (pp. 39-41). Darlinghurst, Australia: Australian Computer Society. <http://crpit.com/confpapers/CRPITV23Fluck.pdf>
- Forde, P. (2007). Learning trends in regional higher education. In *Leadership for Globalization in Higher Education: Lessons and Opportunities* (ASAIHL). Perth, 5-7 December (pp. 278-289. <http://asaihl.curtin.edu.au/local/docs/ASAIHLProceedingsPartI.pdf>)
- Fox, G. and Mills, K. (1997). Web Technologies and the Potential for Innovation in Distance Education, *International Journal of Modern Physics*, Volume 8 (1), p 107.
- Garrison, R. & Anderson, T. (2003). *E-Learning in the 21st Century: A Framework for Research and Practice*. Routledge Falmer, London.
- Hassan, A. (2001). Impact of the economic crisis on higher education in Malaysia. In N.V. Varghese (Ed.), *Impact of the economic crisis on higher education in East Asia: Country experiences* (pp. 103-145). Paris: UNESCO.
- James, P. & Hopkinson, L. (2009). Sustainable ICT in further and higher education. UK: JISC. <http://www.jisc.ac.uk/media/documents/publications/rptgreenictv1.pdf> [viewed 28 Oct 2011]
- Juma, Kayiwa Shafik et. al (2016) Role of ICT in Higher Educational Administration in Uganda, *World Journal of Educational Research*, Vol. 3, No. 1, 2016
- Khan, Y. (2000). Millennium 2000 educational psychology, guidance and counseling for B.Ed. Nishat Chowk, Mingora Swat: Shaheen Book Agency: Fawad Press, Mingora.Lim and Hemp 2003 ICT
- Kirkup, G., & Kirkwood, A. (2005). Information and communications technologies (ICT) in higher education teaching "a tale of gradualism rather than revolution. *Learning, Media, & Technology*, 30(2), 185-199.
- Kozma, R. (2005). National policies that connect ICT-based education reform to economic and social development. *Human Technology*, 1(2), 117-156. [verified 1 Dec 2011] <http://www.humantechnology.jyu.fi/archives/ABSTRACTs/kozma05.html>
- Krishnaveni, R. and J.Meenakumari (2010) Usage of ICT for Information Administration in Higher education Institutions – A study, *International Journal of Environmental Science and Development*, Vol. 1, No. 3, August
- Lim, C.P., & Tay, L.Y. (2003). Information and communication technologies (ICT) in an elementary school: Engagement in higher order thinking. *Journal of Educational Multimedia and Hypermedia*, 12(4), 425-451.
- McCausland, H., Wache, D. & Berk, M. (1999). Computer literacy: An orientation strategy, its implementation and

- outcomes. In *Proceedings of HERDSA Conference* (Melbourne, 12-15 July). NSW: HERDSA. <http://www.herdsa.org.au/wpcontent/uploads/conference/1999/pdf/mccausla.pdf>
- McGorry, S. Y. (2002). Online, but on target? Internet-based MBA courses: A case study. *The Internet and Higher Education*, 5(2), 167-175.
- Meelissen, M. R. M., & Drent, M. (2008). Gender differences in computer attitudes: Does the school matter? *Computers in Human Behavior*, 24(3), 969-985.
- Mehta, S. & Kalra, M. (2006). Information and communication technologies: A bridge for social equity and sustainable development in India. *The International Information and Library Review*, 38(3), 147-160.
- Mehta, S. & Kalra, M. (2006). Information and communication technologies: A bridge for social equity and sustainable development in India. *The International Information and Library Review*, 38(3), 147-160.
- Miebi S (2006). President Obasanjo explains government's localisation of ICT. Vanguard Online. Retrieved from <http://www.naijaear.com> on 21/10/2006.
- Mondal, Ajit and Jayanta Mete (2012) ICT in Higher Education: Opportunities and Challenges, Bhatler College Journal of Multidisciplinary Studies, Vol. II,
- Oliver, R. (2000). Creating meaningful contexts for learning in web-based settings. In the *Proceedings of Open Learning 2000* (pp 53-62). Brisbane: Learning Network, Queensland. <http://elrond.scam.ecu.edu.au/oliver/2000/ol.pdf> [viewed 28 October 2011] *Hong and Songan* 1289
- Ozdemir, Z. D. & Abrevaya, J. (2007). Adoption of technology-mediated distance education: A longitudinal analysis. *Information & Management*, 44(5), 467-479. <http://dx.doi.org/10.1016/j.im.2007.04.006>
- Plomp, T., Pelgrum, W. J. & Law, N. (2007). SITES2006: International comparative survey of pedagogical practices and ICT in education. *Education and Information Technologies*, 12(2), 83-92. <http://dx.doi.org/10.1007/s10639-007-9029-5>
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-2.
- Purwadi, A. (2001). Impact of the economic crisis on Indonesia. In N. V. Verghese (Ed.), *Implications of the economic crisis on higher education in East Asia: Country experiences* (pp. 61-79). Paris: IIEP/UNESCO.
- Ravindra, S. (2018, April 18). "Role of IoT in Education." Kdnuggets. <https://www.kdnuggets.com/2018/04/role-iot-education.html>
- Said, A., Lin, L., & Jim, P. (2009). Barriers to adopting technology for teaching and learning in Oman. *Computers and Education*, 53, 575-590.
- Satu, M., Roy, S., Sunny, F., Whaiduzzaman, M. (2018). "Intelligent of Learning Things : An IoT based Collaborative Blended Learning Platform in Higher Education." International Conference on Innovation in Engineering and Technology. <https://doi.org/10.1109/CIET.2018.8660931>
- Sekgwelea, SM (2004). A Dynamic Innovative Approach to the Application of ICTs for Flexible Learning within the Distance Education Institutions: Progress Report. Paper presented at the emerge2004 online conference, University of Cape Town, in <http://emerge2004.net/connect/site/UploadWSC/emerge2004/file26/emerge2004-ssekgwelea.pdf>, accessed on 27 April 2006
- Sharma, R. (2003), „Barriers in Using Technology for Education in Developing Countries“, IEEE 0-7803-7724-9103.
- Singh, R. (2019, June 14). "Internet Education sector & IoT: The benefits of evolution." World.edu. <https://world.edu/education-sector-iot-thebenefits-of-evolution>
- Smith, R. S. (2004). *Guidelines for authors of learning objects*. The New Media Consortium. <http://nmc.org/guidelines/NMC%20LO%20Guidelines.pdf> [viewed 28 Oct 2011]
- Spada M (2014). An Overview of Problematic Internet Use, *Addictive Behaviors* 39, 1, 3-6
- Spada M (2014). An Overview of Problematic Internet Use, *Addictive Behaviors* 39, 1, 3-6
- Thune, T. & Welle-Strand, A. (2005). ICT for and in internationalization processes: A business school case study. *Higher Education*, 50(4), 593-611.
- Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.