UNNATI
The Business Journal

Role of ICT in Indian Education System and How does it Impact the Student's Learning?

Dr. Jagdeep Singh
Proprietor, Recap Consultancy and General Supply, Dhoraji, Rajkot
Dr. Mamta Kumari
Subject Matter Specialist, Krishi Vigyan Kendra, JAU, Pipalia, Dhoraji, Rajkot

ABSTRACT

ICT has an encouraging effect on the wellbeing of underprivileged people by greatly enhancing their personal and social potential. ICTs have the power to boost the personal and collective activity of the poor, access to information, and assets. Access to diverse and growing technology is gradually transforming work and other activities. Being hurdles, integration of ICTs into education system has grown at all levels and offers solutions to many problems that might aid in the integration of ICTs into education for improving quality. ICTs are seen as catalysts for change, including information management and exchange, adjustments to working conditions, learning methodologies, educational techniques, and scientific research, among other things. Using ICT, a teacher may convey teaching to students at academic levels in a way that is engaging and simple to grasp. Hence, online training programs in India are becoming more beneficial and appealing. ICTs have positive as well as negative impacts on students learning & in education however those who really want to impart education using ICTs are beneficiaries in the digital era. Internet and interactive multimedia are two ICTs that are obviously a primary focus for future education and must be properly incorporated into formal teaching and learning system.

Keywords: ICT, ICT in Teaching, Technology in Education, ICT in Education, Roles of ICT, ICT & Education, Online Education, Virtual Trainings, Online Courses

Introduction

ICT stands for information and communication technologies, and includes computers, other helpful electronic devices, and internet connections used to manage and transmit information for instructional reasons. According (Ghosh, 2017) ICT has taken center stage in national and international discussions in the digital age. Simultaneously, ICT has become a vital aspect of practically all industries and segments, particularly those related to education. ICT is shaping the role of future education in India in terms of teaching, learning, and evaluation. E–learning refers to online learning at all levels, both official and informal, that takes place through an information network such as the Internet, a local area network (LAN), or an extranet (WAN). E-portfolios, cyber infrastructures, digital libraries, and online learning object repositories are among the components. The Indian ICT industry contributed 5.9% of the nation's GDP and export earnings in 2009 and employed a sizable portion of the tertiary sector. With 2.3 million people employed directly or indirectly, the sector is a major employer and pillar of the Indian

economy (AICTE, 2021). Lack of access to computers and software, insufficient time for course design, and insufficient technical and administrative assistance are the most typical external issues (Chen, 2008). The phrase "Information and Communication Technology," or ICT, refers to the extensive use of electronic delivery methods in the current educational system, such as radios, televisions, and projectors. Using information and communication technology (ICT) effectively is one strategy to raise educational standards and better connect classroom learning to real-world situations, according to several previous studies (Lowther, Inan, Strahl, & Ross, 2008); (Weert & Tatnall, 2005) define learning as an activity that occurs constantly throughout a person's life and entails the modification of the learner's expectations via the pursuit of knowledge that differs from more traditional ways. According to (Castro Sanchez & Aleman, 2011), integrating digital tools into the classroom helps to develop a classroom environment that is focused on the students' education. Because students in ICT classrooms actively participate in the learning process, the teacher allows them to make decisions, establish plans, and engage in other activities of this nature (Lu, Hou, & Huang, 2010).

Role of ICT in Teacher's Education

Teaching is a prestigious profession in society. ICT enables teachers to keep up to speed on new information and skills needed to utilize new digital tools and resources. Student instructors will become successful teachers by using and learning ICT. ICT is one of the key drivers of our society's fast transformation. It has the potential to alter the nature of education and the roles of students and teachers in the educational process. Teachers in India have begun to use technology into the classroom. Laptops, LCD projectors, desktop computers, EDUCOM, Smart classrooms, and memory sticks are all increasingly commonplace in teacher education. So, in the twenty-first century, we should integrate information and communication technology in teacher education since instructors are the only ones who can provide kids a bright future (Bhattacharjee & Deb, 2016).

Role and Use of ICT in Education

Information and communication technology (ICT) technologies can be used to search, explore, analyze, exchange, and present information in a responsible and nondiscriminatory manner. Users can gain instant access to ideas and experiences from a diverse range of individuals, communities, and cultures by utilizing information and communication technology (ICT) (aicte-india.org, 2022). Recognizing the importance of information and communication technology (ICT), the Ministry of Human Resource Development has identified ICT as a tool in education that can help increase the current enrolment rate in higher education from 15% to 30% by the end of the 11th Plan period, according to the Mission Document (aicte-india.org, 2022). The Ministry also launched a 'One Stop Education Portal' called Sakshat. It will be uploaded to SAKSHAT in all disciplines and subjects. Several initiatives are nearing completion and are likely to revolutionize Indian education (aicte -india .org, 2022).

Technology and educational progress cannot be separated, especially in this day and age. Various electronic gadgets have been spotted in the classroom throughout the previous three decades. The use of cellular phones and the internet demonstrates how technological devices have become an integral part of our lives. Digital technologies are recognized as important tools for the creation of meaningful education in the twenty-first century (Norhayati & Siew, 2004) (Peeraer & Van Petegem, 2011). The increased use of technology has resulted in competitive economies, knowledge-based societies, and an improved process of creative education (Nasab &

Aghaei, 2009) (Fong, 2009) (Poorfaraj, Samimi, & Keshavarz, 2011). Furthermore, the current generation is particularly familiar with a wide range of digital technology in their daily lives (Robertson, Fluck, & Webb, 2007). As a result, instructors are now required to educate themselves to teach these technologically proficient students (Smolin & Lawless, 2007); (Robertson, Fluck, & Webb, 2007). Teachers must now master "cutting-edge" technology and apply it into their teaching methods. It has previously been demonstrated that technology has a favorable impact on student activities and initiatives, as well as the teaching effect in English class (Szendeffy, 2005); (Lee, George, & Lai, 2005); (Towndrow, 2007). Other studies have concentrated on specific issues such as second language learning (Chapelle, 2001); communication (Warschauer & Kern, 2000), or language education for professionals (Arno, Soler, & Rueda, 2006), to name a few. However, despite the newest improvements in language teaching technology such as specialized websites, blogs, wikis, language teaching methodologies, journals, and so on, technology remains a cause of worry and uneasiness for many instructors throughout the world (Farooq & Soomro, 2018). Information and communication technology (ICT) in education refers to computers, communications facilities, and features that enable teaching, learning, and a variety of educational activities. ICT plays a vital role in streamlining the processes, reducing the lead times, collaborating with cross functional teams & organizations, live data & information sharing, improving visibility, bringing operational efficiency and transparency, helping in strategic supply chain decision making, enhancing the overall supply chains performances at all levels, and more (Singh, Sarupria, Kushwaha, & Kumari, 2019a); (Singh, Singh, & Kumari, 2020b). ICT practices are critical to teaching and education particularly in business communication in English language. Internationally, the (World Bank, 2019) report advised developing countries to invest in their citizens, particularly in education, to prepare them to cope with new technology and innovation and compete in the future economy. Education not only plays an important role in preparing people for the knowledge economy (Laurillard, Oliver, Wasson, & Hoppe, 2009), but in a fast-paced and knowledge-focused world, nations that can integrate dynamic information and communication technologies in all spheres of life are key players in economic development (United Nations, 2020).

Importance of the Study

The classroom environment is evolving however there is a technical gap between social development and teacher-led classroom education. In current classrooms, information is conveyed by the instructor in an antiquated manner, a teacher-centric style that is often dull and fails to pique the student's attention. However, education in the twenty-first century is student-centered. Students learn from a variety of sources, which is why ICT and multimedia are so important in the educational area, and instructor understanding of ICT and multimedia is also necessary. As a result, the current research is critical and important since it demonstrates the need of ICT teacher education (Bhattacharjee & Deb, 2016). It talks about the value of ICT within the framework of the value of school culture in terms of using ICT. In this review, we identify the gaps in the literature and suggest prospective directions for future research to explore in order to close those gaps (Fu, 2013).

Based on the literature understanding, the research objective was framed as to understand the "Roles of ICT in Indian Education System and how does it impact the student's learning?"

Literature Review

ICT has touched many areas of our lives, and as a result, we now live in a world where consumer-driven technology rules. Regardless of how we

view it, technology is undeniably a necessary component of our life and is here to stay. Regardless of whether it was a computer, plasma TV, or cell phone, everyone has utilized ICT in some capacity. As ICT users, everybody in today's society share the aspiration of leading a connected life. ICT becomes a lifestyle choice for a sizable segment of the population as a result. Additionally, this lifestyle choice is accelerating the rate of consumption and changing how we interact with and gather information.

(Ratheeswari, 2018). The term "blended approach of education" describes instructional strategies that combine online and traditional classroom instruction. For instance, a teacher may support learning in the classroom while also using the paradigm (modular object-oriented dynamic learning environment) to facilitate learning outside of the classroom. To address the need of today's teachers who wish to learn how to utilize ICT successfully in their teaching, a well-designed teacher training program is required. Specific roles of ICT in providing multimedia simulations of good teaching practices, delivering individualized training courses, assisting teachers in overcoming isolation, connecting individual teachers to a larger teaching community on a continuous basis, and promoting teacher to teacher collaboration should be given more attention. The planned and unforeseen consequences of adopting ICT for teacher professional development must be investigated (Ratheeswari, 2018).

Assist students in efficiently and effectively obtaining digital information ICT is utilized as a tool for students to explore learning subjects, solve difficulties, and propose answers to problems in the learning process, according to (Brush, Glazewski, & Hew, 2008). ICT makes knowledge acquisition more accessible and ideas in learning areas are grasped. Students are increasingly involved in meaningful computer use (Castro Sanchez & Aleman, 2011). They generate new knowledge by accessing, choosing, arranging, and analyzing facts and information. Students who learn using ICT are better able to use knowledge and data from a variety of sources, as well as critically evaluate the quality of learning resources. ICT helps students have a better comprehension of their subjects (Chai, Koh, & Tsai, 2010). Different forms of learning queries may be addressed more creatively using ICT. In a reading class, for example, e-books are frequently utilized in reading aloud exercises. According to (Koc, 2005), students not only gain information together, but also share a variety of learning experiences in order to express them and reflect on what they have learned.

ICT, when used in conjunction with a constructive learning method, allows students to concentrate on higher-level concepts rather than less important chores (Levin & Wadmany, 2006). According to (Mcmahon, 2009) there were statistically significant associations between using ICT to study and developing critical thinking abilities. Longer exposure to ICT can help children develop stronger critical thinking abilities. According to (Lowther, Inan, Strahl, & Ross, 2008), three crucial traits are required to establish high-quality ICT-based teaching and learning: autonomy, capacity, and creativity. Students who utilize ICT to take charge of their learning are said to be autonomous. As a result, kids grow more capable of functioning independently and collaboratively. ICT promotes autonomy by allowing educators to produce their own materials, giving them greater control over course content than is available in a traditional classroom. Students feel more confident and improve their creativity (Serhan, 2009); (Watts-Taffe, Gwinn, & Horn, 2003). They may discover new multimedia tools and create products in the styles that are easily available to them through games, CDs, and television(Gee, 2007a);(Gee J. , 2011b).

(Reid, 2002) Pointed-out that ICT allows students to spend more time exploring topics outside the mechanics of course content. The link between teaching and learning is also altered by the usage of ICT. Although earlier study has established the benefits of utilizing ICT in the classroom, there are still limitations or problems connected with its adoption. The primary problems connected with ICT use, according to (Frederick, Schweizer, & Lowe, 2006), are student mobility, special needs, and anxiety about standardized test outcomes. More authentic group and problem-based learning activities, as well as proper learning support, can address these issues (Whelan, 2008). From a student's perspective, (Whelan, 2008) noted other limitations, including: poor technical abilities that limit access to ICT in the classroom. (Castro Sanchez & Aleman, 2011) Also advise students to develop specialized technical skills to help them study in ICT contexts. According to (Tezci, 2011a), instructors should learn not only how to utilize technology to enhance conventional teaching or boost productivity, but also how to incorporate ICT into classroom activities in order to encourage student learning from a student-centered viewpoint. This implies that instructors must be more innovative and productive in their use of ICT in order to produce more interesting and rewarding activities and classes (Birch & Irvine, 2009); (Honan, 2008). As a result, (Castro Sanchez & Aleman, 2011) recommended that instructors retain an open mind when it comes to incorporating ICT into the classroom. When teaching using technology, it is critical that teachers master new teaching practices in order to adapt to the new instruments.

(Yildirim, 2007) discovered that instructors utilize ICT more often to prepare handouts and assessments than to stimulate critical thinking. Similarly, (Palak & Walls, 2009) discovered that teachers mostly employ technology to reinforce their present teaching methods, rather than to promote student-centered learning. One probable cause, according to the authors, is a lack of models for how to utilize technology to aid learning, as well as constraints due to contextual factors such as class size and student aptitude. (Brush, Glazewski, & Hew, 2008) Also discovered that preserves teacher preparation does not give enough ICT knowledge to enable technology-based education, nor does it adequately show acceptable strategies for integrating technology into a curriculum. In order to incorporate successful technological tactics, more training should be offered in pre-service teachers' curriculum, and ICT skills must be implemented in the classroom (Supon & Ruffini, 2009). (Chen, 2008) Proposed that, rather than only offering education theories, ICT researchers should also chronicle instances of how instructors achieve meaningful and successful technology integration to satisfy their pedagogical objectives and needs to assist teachers cope with these challenges.

In addition to the difficulties students and teachers have in adopting ICT, there are other hurdles in terms of administrative and ICT infrastructures. A lack of appropriate administrative support for effective ICT use (Lim, 2007); administrative mandates to improve examination results, which shifts the focus away from using ICT to engage students in higher-order thinking activities (Yildirim, 2007); (Goktas, Yildirim, & Yildirim, 2009). Schools provide appropriate technical access to address these barriers (Yildirim, 2007). In addition, new policies in schools and associated institutional structures must be created to incorporate teachers in ICT decision-making and planning processes. The results indicated that having access to ICT resources, developing disciplinary and educational principles and procedures, and distributing labor among instructors, teaching assistants, and students are all essential components of building a well-managed ICT-integrated class (Lim, 2007), however, a strong link between theory and execution is necessary to aid teachers in

overcoming the problems of technology integration (Keengwe & Onchwari, 2009). Successful technology integration planning, according to (Staples, Pugach, & Himes, 2005), requires a detailed understanding of the curriculum's particular hardware and software.

ICT plays an important part in all sectors of modern civilization. ICT has altered how we communicate with one another, find needed information, work, do business, connect with government authorities, and manage our social lives. Because ICT has an impact on people's daily lives, it also has an impact on macroeconomic growth, which in turn has an impact on society by enabling infrastructure and standard of life improvements (Roztocki, Soja, & Weistroffer, 2019). ICT played a critical role in the development and integration of global economies, as well as the development of global products for purchase and sale in foreign marketplaces. Organizations rely on information and communication technology (ICT) for speedy communications, data processing, and market intelligence (Singh, Sarupria, Kushwaha, & Kumari, 2019a); (Singh, Singh, & Kumari, 2020b); (Roztocki, Soja, & Weistroffer, 2019); (Pourhossein Gilakjani, 2013). ICT has also played an important role in every industry, assisting firms in optimizing business operations, achieving cost reductions, driving profit development, and maintaining a competitive advantage in both domestic and international markets (Singh, Sarupria, Kushwaha, & Kumari, 2019a); (Singh, Singh, & Kumari, 2020b).

ICTs are used in almost every area now days such as communication, e-learning (digital education), e-meetings (virtual meetings), governance, technological advancement, strengthening human rights, agricultural & medicinal development, SCM & logistics, and making human lives easy (Singh, Singh, & Kumari, 2020); (Roztocki, Soja, & Weistroffer, 2019). The greatest benefit of ICT has been the creation of new and fascinating jobs in IT areas and a degree can be earned online from the comfort of one's own home (Roztocki, Soja, & Weistroffer, 2019); (Singh, Singh, & Kumari, 2020).

According to (Nadim Ahmad, 2004), ICT has become the bedrock of every sector of every economy, all over the world. ICT lowers transaction costs and thus increases productivity. It provides instant connectivity, whether visual or voice. It also improves efficiency, transparency, and accuracy throughout the system. (Nadim Ahmad, 2004); (Leonard Waverman, 2005) The optimistic and notable impact on GDP of investment in mobile & telecommunications and information technology has been exposed, and this optimistic impact is not limited to developed countries but also to developing countries. (Dherange, 2013) According to reports, ICT has a wide range of effects on human life, and as a result, the global 'economy and society' are undergoing a fundamental shift toward a 'knowledge society.' It encompasses any product that will electronically store, retrieve, manipulate, transmit, or receive information in digital form. (Bethapudi, 2013) It was concluded that ICT reduces costs, improves communication (two-way) with customers, instant feedback brings flexibility, improves efficiency, and reduces operational costs, among other things. (Nair, April-June 2019) ICT's functional roles have been described as transaction execution, collaboration and coordination, and decision support.

(Tri & Thi Nguyen, 2014) found that the frequency of ICT usage for non-educational purposes in a week, more than half of the participants (55%) claimed to have spent more than twenty hours, Nearly 30% reported working from six to fifteen hours each week, with 12.8 percent working between six and ten hours and 16.8 percent working between eleven and fifteen hours. The process of interactive teaching and learning begins

with a philosophy about educating with technology and ends with a new process of interactive teaching and learning. Teachers are in charge of designing, instructing, & implementing integrated sequences. Constructivism is a learning or knowledge creation philosophy that emphasizes learners as active participants in making sense of their environment and their experiences within it (Vygotsky, 1978); (Abdal - Haqq, 1998). There is a perception among the teachers that ICT enables the advanced types of learning.

The study found certain ICT integration methods; however, FMs were unable to comprehend the most recent breakthroughs in ICT in education. According to (Islam, Mok, Gu, Spector, & Hai-Leng, 2019), what the institution provides influences university instructors' intention to use ICT. Furthermore, (Tran, Phan, Le, & Nguyen, 2020) proposed that FMs' ICT skills are related to ICT integration possibilities provided by an institution, such as ICT infrastructure includes hardware, software, and instructional resources, technical assistance, and professional development. According to analysts, Saudi culture has undergone significant changes in recent years as a result of the expansion of modern technologies and education (ESTIMO JR., 2014). The telephone, radio, television, and internet are the four main types of communication technologies that have contributed to the convenience of sending communications (Novak, 2019).

Cave drawings, smoke signals, symbols, carrier pigeons, and the telegraph were among the earlier modes of communication. The most recent and current methods are more convenient and efficient. Television, cell phones, the internet, e-mail, social media, video-calling, online (virtual) meetings, and instant messaging are just a few examples. Technology has given us new options to modify the process of teaching and learning, which means that a teacher can design a different learning environment that encourages interactivity (Sessoms, 2008). Creating an interactive learning environment is critical as learners evolve and knowledge becomes more available to everybody (Farooq & Soomro, 2018). Teachers must now master "cutting-edge" technology and apply it into their teaching methods. It has previously been demonstrated that technology has a favorable impact on student activities and initiatives, as well as the teaching effect in English class (Brierley, 1991); (Sabourin, 1994); (Boswood, 1997); (Beatty, 2003); (Szendeffy, 2005); (Lee, George, & Lai, 2005); (Towndrow, 2007).

Research Methodology

Research Design

A research design is a technique for utilizing empirical data to answer research topic. Making judgments regarding general objectives and method is part of creating a study design. The type of research design it will employ for sampling methodology or subject selection criteria. Figure 1 depicts a summary of the research design. In this research, roles of ICT in Indian Education System, was a descriptive cum analytical research. It needs a comprehensible specification of who (University Going Students, Teaching Professionals, ICT experts), what (Roles of ICT), why (found gaps) and how (survey) of the research.

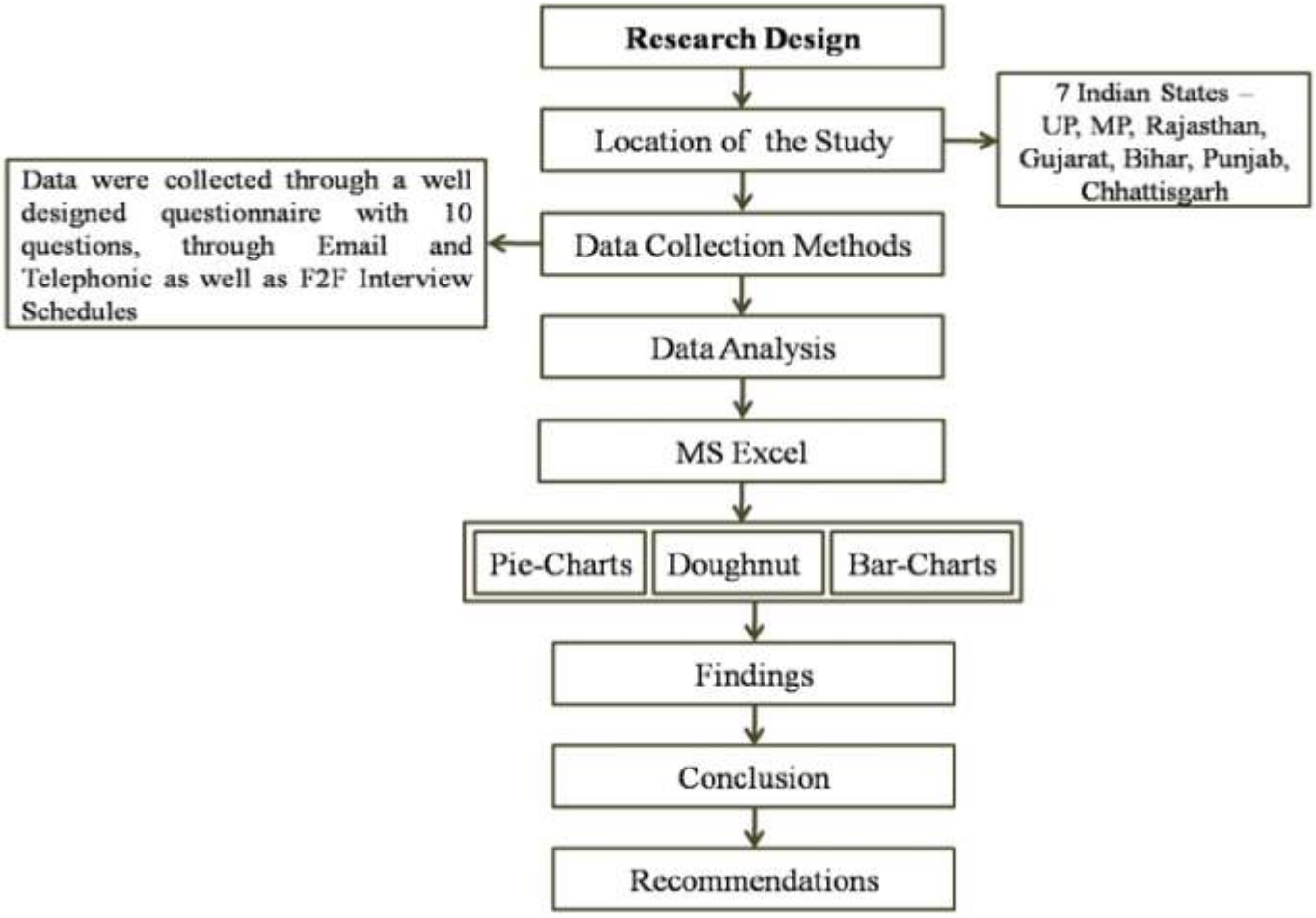

Figure-1: Research Design to evaluate the Roles of ICT in Indian Education System

Location of the Study

Location of the study was selected as Indian states namely Uttar Pradesh (UP), Madhya Pradesh (MP), Rajasthan, Gujarat, Bihar, Punjab, and Chhattisgarh.

Sampling Technique

Sampling technique used for this study was random sampling and it was chosen based on the convenience for the Researchers.

Data Collection

The data were collected through a well designed questionnaire in English language via interview schedule using various ICT tools. The survey was conducted for the role of ICT in Indian education system and the data were collected from 35 Universities, including central universities, government state universities, private universities includes deemed to be university. The target was to gather data from at least 500 participants but due to resource constraint, it had been stopped at 260 participants only (N=260). The geographic area covered under this research was 7 Indian states namely Uttar Pradesh (UP), Madhya Pradesh (MP), Rajasthan, Gujarat, Bihar, Punjab, and Chhattisgarh through a questionnaire.

Data Analysis

Data analysis is the process of dissecting, filtering, altering, and modeling data to find relevant information, make recommendations, and support decision-making. We can eliminate guessing and make educated decisions thanks to data analytics (Directionsmag, 2018). MS Excel was used to evaluate the raw data. The analysis's goal was to evaluate the existing state of roles of ICT in the Indian educational system. According to (Analyticsfordecisions.com) the importance of data analysis in research may be attributed to how easily and effectively it can be done. It makes it possible for researchers to easily comprehend data, ensuring that nothing is missed that may help them draw conclusions from it. Any data set analysis is highly important since it aids in decision-making. The analysis's ultimate goal is to determine whether the results are good or negative. The core of the technical report is the final result and its commentary. The purpose of this research is to statistically summarize the collected data and provide it in graphical, tabular, or other relevant forms. The findings were illustrated from the Table-1 as below:

Q. 1 - Do you think that ICT tools like Internet, Mobile, Laptop, Kindle, etc. can improve your English Communication?

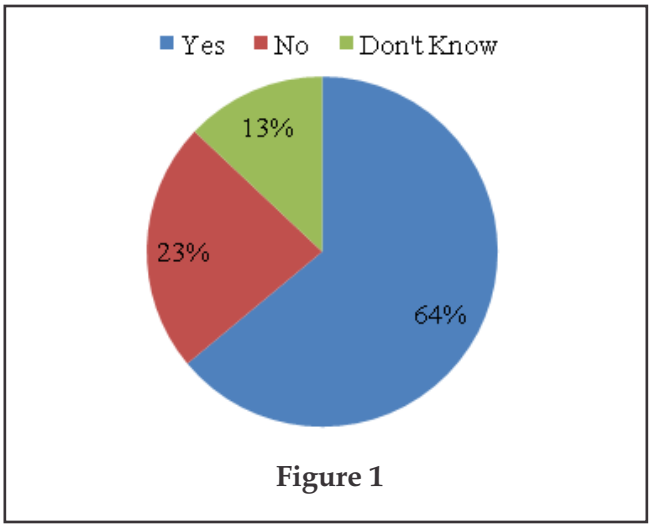

Figure 1

Please refer Figure-1, the analysis shows that majority (64%) students agree that ICT tools could improve English communication while 23% disagree to it. English communication can improve if the ICT tools are properly used and focused approach is adopted in learning activities (Hammond & Gamlo, April 2015); (Brierley, 1991); (Sabourin, 1994); (Boswood, 1997); (Beatty, 2003); (Szendeffy, 2005).

Q. 2 - Do you think that ICT tools has potential to improve your knowledge

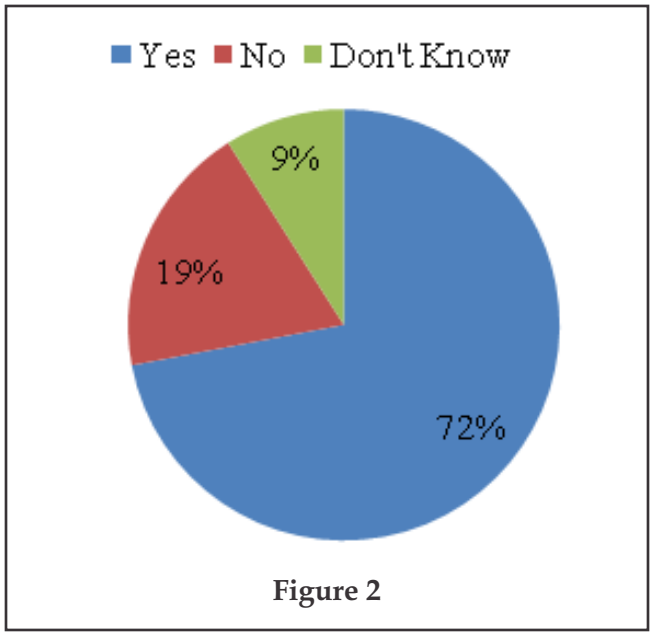

Figure 2

As per Figure-2, more than 70% students agree that ICT tools have potential to improve knowledge while only 19% disagree to it and remaining doesn't have any opinion. The increased use of technology has resulted in competitive economies, knowledge-based societies, and an improved process of creative education (Nasab & Aghaei, 2009) (Fong, 2009) (Poorfaraj, Samimi, & Keshavarz, 2011).

Q. 3 - Do you think that your teachers encourage for online learning or e-learning

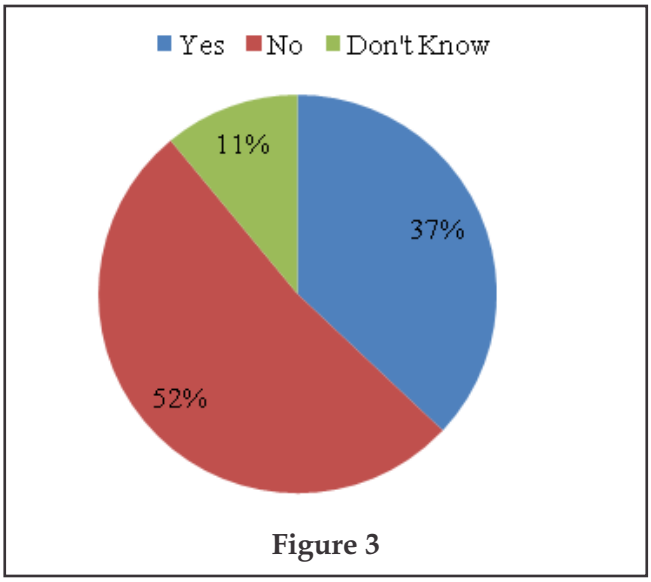

Figure 3

Please refer Figure-3, Almost 52% students disagree that their teachers encourage for online learning or e-learning while about 37% teachers encourage for online learning or e-learning and 11% students have no opinion. E-learning (digital education) is making human lives easy (Singh, Singh, & Kumari, 2020); (Roztocki, Soja, & Weistroffer, 2019) and hence it should be encouraged by everyone especially by the teachers in the class rooms and for assignments as well.

Q. 4 - Do you think that Smartphone is hindrence in productivity for average students in India?

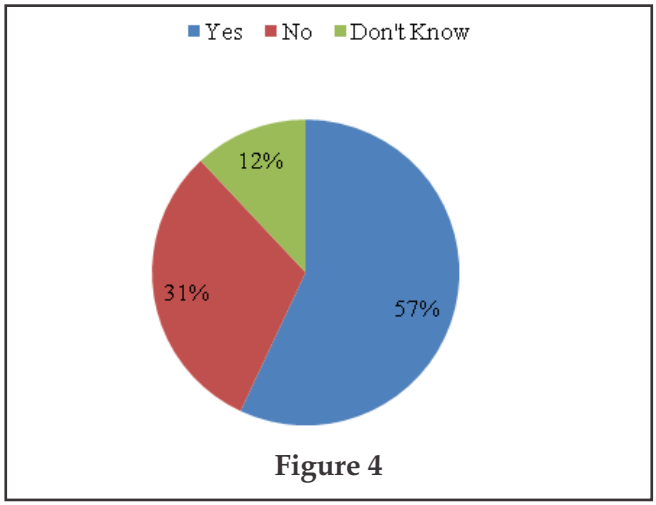

Figure 4

Q. 5 - What type of content you prefer using your smartphone on Social Media Platforms?

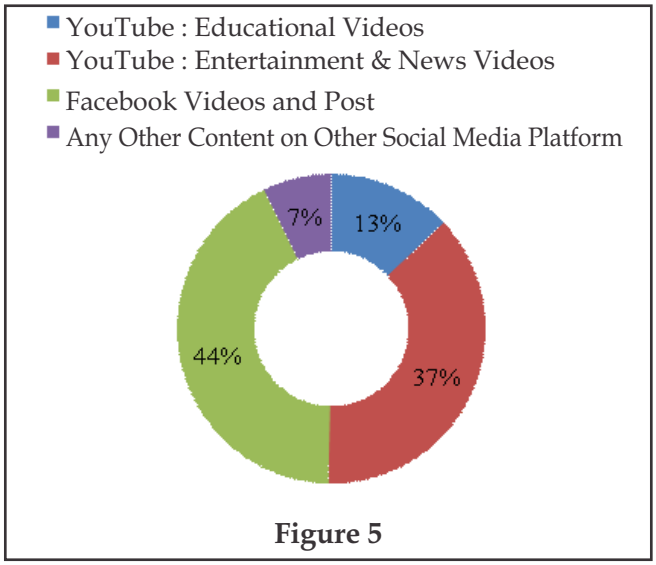

Figure 5

With reference to Figure-5, 81% students watch entertainment & news and Facebook videos & posts while only 13% students use Smartphone for educational purpose which is shocking and hence it should be controlled immediately. According to (Balachandran, 2017); (Duke & Montag, December 2017); (Hatun-Ataş & Çelik, 2019) the social media is waste of time as it consumes a lot of time which is unproductive. It may also create health hazards like eye problems and mental health etc. (News18, 2022)

Q. 6 - Howmuch time each day does your smartphone consume utilizing social media and other ICT tools?

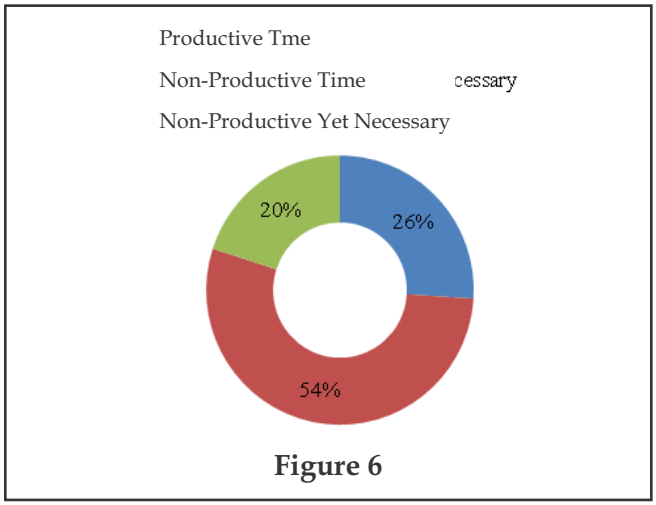

Figure 6

Q. 7 Are you imparting any kind of online education course other than regular course?

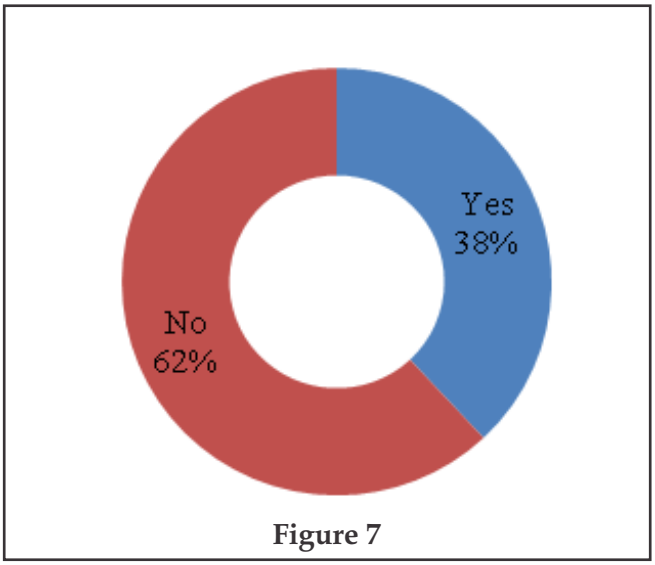

Figure 7

As per Figure-7, About 38% students attending online educational course other than their regular courses whereas 62% students are dependent on their regular courses. There is huge scope of online education in India as per this study. According to the recent studies (Muthuprasada, Aiswarya, Aditya, & Jha, 2021); (OECD, 2020) a great percentage of students enrolled themselves for online education and Indian government has also brought a new educational policy which supports online education system (Government of India, 2020)

Q. 8 Do you feel that you get som extra time for other activities while imparting online course?

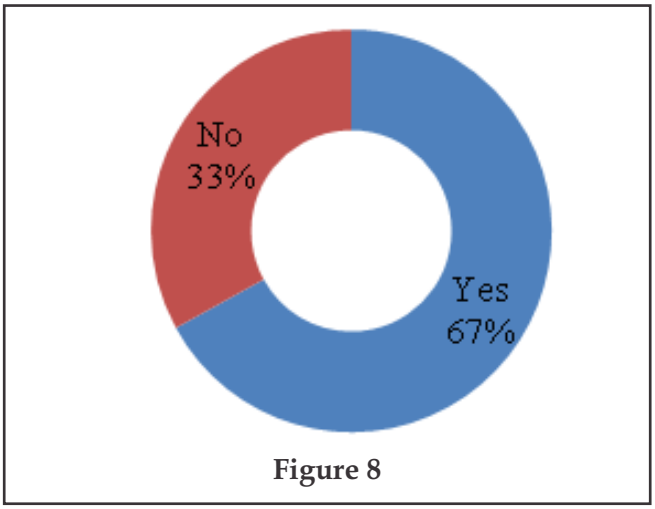

Figure 8

Please refer Figure-8, About 67% students feel that they get extra time for other activities while imparting education online whereas 33% students think that they do not get extra time for other activities. According to (Muthuprasada, Aiswarya, Aditya, & Jha, 2021); (OECD, 2020); In online learning environments where students have more time for extracurricular activities, enhancing performance depends heavily on positive attitudes toward learning, self-control, and intrinsic drive to study, however, For different courses and age groups, different online learning strategies are needed (Pokhrel & Chhetri, 2021).

Q. 9 What is your preferred mode of learning

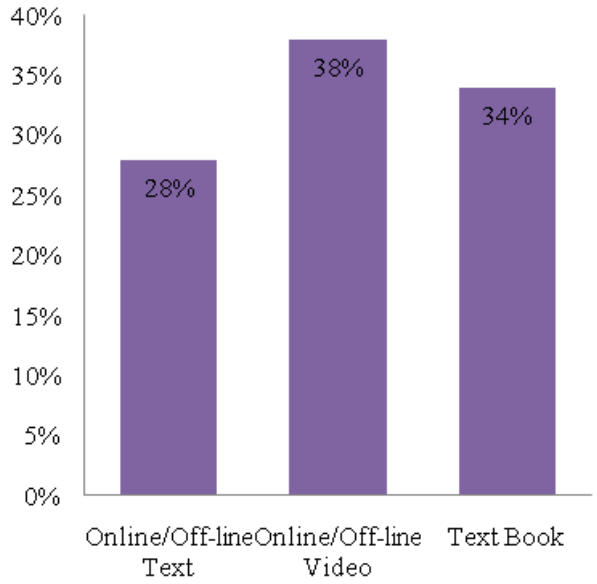

Figure 9

As shown in Figure-9, 28% students prefer online/off-line text, 38% students prefer online/off-line video, and 34% student prefers matters from text books while their studies. According to the findings, most students (70%) are prepared to choose online classes to handle the curriculum during this epidemic. The vast majority of students favored using their Smartphone for online study (Muthuprasada, Aiswarya, Aditya, & Jha, 2021); (Pechenkina & Aeschliman, 2017).

Q.10 Please provide teachers preferred mode of teaching in classroom in terms of percentage

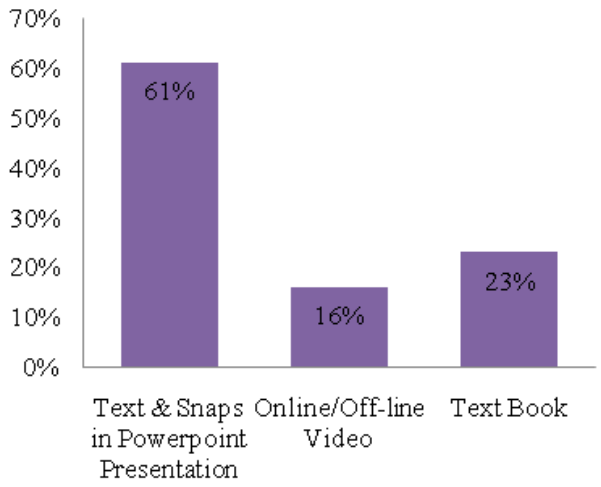

Figure 10

As indicated in Figure-10, 61% teachers prefer text & snaps in PowerPoint Presentation, 16% teachers prefer online/off-line video, and only 23% teachers prefer text books while teaching in the classrooms. According to (CITL, n.d.) In the classroom, PowerPoint may be a useful tool for presenting information and promoting student learning. PowerPoint may improve training when prepared and utilized properly. When used and planned properly, PowerPoint does provide useful techniques to improve education (Center for Teaching & Learning, n.d.).

Findings

Everyone has to accept the reality of information & communication technology in education as there are a lot of evidences that everyone is encouraging to adapt the technologies while imparting education whether online or off-line in class rooms. Majority of the students are focusing on their studies using ICTs in some form or other and the acceptability of ICTs has been increased among the society and at work places as well. Teachers prefer using ICTs (PowerPoint presentations) in classrooms & started encouraging for using ICTs in their daily studies & preparation for competitive exams, etc. Students use Smartphone with internet connectivity for watching education videos & live lectures for respective subjects and also read texts online or off-line, etc. Students also get spare time for other desired activities while imparting online education. Majority of students agreed that ICTs help in improving English communication as well. Point to be noted that 72% students told that Information & Communication Technology has potential to improve knowledge. In spite of enormous benefits, more than 50% students think that Smartphone is the hindrance while education as it consumes a lot of time if not used for learning but for social media surfing or other unproductive activities and hence Smartphone must be used with focused approach while imparting education using it. As every thing has pros and cons and hence ICTs too, therefore, if it utilized for benefits, it is very much useful.

Conclusion

ICTs are seen as change agents for a number of different things, including information management and exchange, adjustments to working conditions, educational techniques, scientific research, and more. In the workplace, in business, in education, and in leisure, ICTs are essential. Teachers must contribute to the creation of effective learning environments because ICT improves instruction and learning. Internet and interactive technology are two ICTs that must be appropriately integrated into formal teaching and learning systems as they are undoubtedly a main emphasis for future education. ICTs have the potential to increase the poor's individual and collective agency, access to knowledge, and present assets. Work and other activities are gradually changing as more diverse and advanced technology becomes available. Despite numerous

obstacles, the adoption of ICTs in education has advanced at all levels and presents answers to a wide range of issues that might facilitate the adoption of ICTs in education while also improving educational quality. ICTs are viewed as change agents for a variety of things, including information management and interchange, alterations to working circumstances, learning methodologies, educational approaches, and scientific research. A teacher may deliver instruction to pupils of all academic levels using ICT in a fun and understandable way. As a result, online training courses in India are getting better and more desirable. ICTs have both beneficial and negative effects on education, but those who genuinely wish to use ICTs to impart education are rewarded in the digital era.

Recommendation

It is seen that online education is cheaper than classroom education so most of the student who can not afford classroom education may complete their education through online mode. No one can deny the necessity of Information & Communication Technology (ICT) in digital age and hence this study recommends the use of ICT for educational as well as other purposes however, it should be used in controlled manner so that students do not distract from their educational goals.

References

- Abdal-Haqq, I. (1998). Constructivism in teacher education: Considerations for those who would link practice to theory. Washington DC: ERIC Digest.
- AICTE. (2021). ICT in Education. Retrieved August 20, 2022, from aicte-india.org: Information was extrated on 20 August 2022.
- Aicte- india .org. (2022). IT & ICT. Retrieved April 24, 2022, from aicte - india.org.
- Analytics for decisions .com, W. (n.d.). What is the Importance of Data Analysis in Research? Retrieved March 30, 2022, from analytics for decisions.com.
- Arno, M. E., Soler, C. A., & Rueda, R. C. (2006). Information Technology in Languages for Specific Purposes : Issues and Prospects. Berlin: Springer.
- Balachandran, K. (2017, June 3). Social media: a waste of time or a place for friendships? Retrieved August 30, 2022, from the hindu. com: https: //www. the hindu. com/sci-tech/technology/gadgets/social-media-a-waste - of - time - or - a - place - for-friendships/article18714711 .ece
- Beatty, K. (2003). Teaching and Researching Computer-Assisted Language Learning (Applied Linguistics in Action. New York: Pearson ESL.
- Bethapudi, A. (2013). The Role of ICT in Tourism Industry. Journal of Applied Economics and Business , 1 (4), 67-79.
- Bhattacharjee, B., & Deb, K. (2016). Role of ICT in 21st Century's Teacher Education. International Journal of Education and Information Studies , 6 (1), 1-6.
- Birch, A., & Irvine, V. (2009). Preservice teachers' acceptance of ICT integration in the classroom: Applying the UTAUT model. Educational Media International , 46, 295-315.
- Boswood, T. (1997). New Ways of Using Computers in Language Teaching (New Ways in Tesol Series II). California: Teachers of English to Speakers of Other Languages.
- Brierley, B. (1991). Computers as a Tool in Language Teaching (Ellis Horwood Series on Computers and Their Applications. New York: Ellis Horwood.

- Brush, T., Glazewski, K. D., & Hew, K. F. (2008). Development of an instrument to measure preservice teachers' technology skills, technology beliefs, and technology barriers. Computers in the Schools , 25, 112-125.
- Castro Sanchez, J. J., & Aleman, E. C. (2011). Teachers' opinion survey on the use of ICT tools to support attendance-based teaching. Journal Computers and Education , 56, 911-915.
- Center for Teaching & Learning. (n.d.). Using Slides in the Classroom. Retrieved August 31, 2022, from bu.edu: https:// www. bu. edu / ctl / using - slides - in - the - classroom.
- Chai, C. S., Koh, J. H., & Tsai, C. C. (2010). Facilitating preservice teachers' development of technological, pedagogical, and content knowledge (TPACK). Educational Technology and Society , 13, 63-73.
- Chapelle, C. A. (2001). Computer Applications in Second Language Acquisition. Cambridge, UK: Cambridge University Press.
- Chen, C. H. (2008). Why do teachers not practice what they believe regarding technology integration? Journal of Educational Research , 102, 65-75.
- CITL. (n.d.). Teaching with PowerPoint. Retrieved August 31, 2022, from niu.edu: https: // www. niu. edu / citl / resources / guides / instructional - guide / teaching - with - powerpoint. shtml
- Dherange, N. (2013). ICT and Performance of SMEs: A Study of Auto Component Manufacturing SMEs in Pune. ASM's International E-Journal of Ongoing Research in Management and IT .
- Directionsmag, W. (2018, May 13). What is Data Analysis and the Role of Data Analyst? Retrieved March 30, 2022, from directionsmag. com.
- Duke, E., & Montag, C. (December 2017). Smartphone addiction, daily interruptions and self-reported productivity. Addictive Behaviors Reports , 6, 90-95.
- Education Today. (2022, April 27). Influence of Media in Education. Retrieved August 30, 2022, from education today.org.in: https: // education today .org. in / 2022 / 04 / 07 / influence - of - media - in - education.
- Elgan, M. (2017, August 12). Smart phones make people distracted and unproductive. Retrieved August 30, 2022, from computer world.com.
- ESTIMO JR., R. (2014, October 24). Increasing use of modern technology making its impact on Saudi culture. Retrieved March 31, 2022, from arabnews .com: https:// www. arabnews .com/saudi-arabia /news /649351
- Farooq, M., & Soomro, A. (2018). Teachers and Technology: Trends in English Language Teaching in Saudi Arabia. International Journal of English Linguistics , 8 (5), 10-19.
- Fong, M. L. (2009). Digital divide: The case of developing countries. Issues in Informing Science and Information Technology , 1, 471-478.
- Frederick, G. R., Schweizer, H., & Lowe, R. (2006). After the inservice course: Challenges of technology integration. Computers in the Schools , 23, 73-84.
- Fu, J. S. (2013). ICT in Education: A Critical Literature Review and Its Implications. International Journal of Education and Development using Information and Communication Technology (IJEDICT) , 9 (1), 112-125.
- Gee, J. (2011b). Language and learning in the digital age. New York: Routledge.
- Gee, J. P. (2007a). What video games have to

teach!us!about!learning!and!literacy. New York: Palgrave Macmillan.

- Ghosh, R. (2017, November 2). ICT – Defining the Role of Future Education in India. Retrieved May 18, 2022, from digital learning. eletsonline. com : Information was retrieved on May 18, 2022 form https: // digital learning. eletson line .com/2017/11/ict-defining-the-role-of-future-education-in-india/
- Goktas, Y., Yildirim, S., & Yildirim, Z. (2009). Main barriers and possible enablers of ICT integration into pre-service teacher education programs. Educational Technology and Society, 12, 193-204.
- Government of India. (2020). National Education Policy 2020. Retrieved August 31, 2022, from education.gov.in.
- Hammond, M., & Gamlo, N. (April 2015). How and why do language teachers use ict in a university in saudi arabia? 2015 Global Conference on Learning and Technology "The Local Global Conference" (pp. 248-257). Berlin, Germany: Proceedings of Global Learn 2015.
- Hatun-Ataş, A., & Çelik, B. (2019). Smart phone Use of University Students : Patterns, Purposes, and Situations. Malaysian Online Journal of Educational Technology , 7 (2), 59-70.
- Honan, E. (2008). Barriers to teachers using digital texts in literacy classrooms. Literacy , 42, 6-43.
- Islam, A. Y., Mok, M. M., Gu, X., Spector, J., & Hai-Leng, C. (2019). ICT in Higher Education: An Exploration of Practices in Malaysian Universities. IEEE Access , 7, 16892–16908.
- Keengwe, J., & Onchwari, G. (2009). Technology and early childhood education: A technology integration professional development model for practicing teachers. Early Childhood Education Journal, 37, 209-218.
- Koc, M. (2005). Implications of learning theories for effective technology integration and preservice teacher training: A critical literature review. Journal of Turkish Science Education , 2, 2-18.
- Laurillard, D., Oliver, M., Wasson, B., & Hoppe, U. (2009). Implementing Technology-Enhanced Learning. In N. Balacheff, S. Ludvigsen, T. Jong, A. Lazonder, & S. Barnes, Technology-enhanced learning: principles and products (pp. 289-306). Dordrecht: Springer.
- Lee, C., George, J. G., & Lai, E. (2005). Web-based Teaching and English Language Teaching: A Hong Kong Experience. Hong Kong: The Chinese University Press.
- Leonard Waverman, M. M. (2005). The Impact of Telecoms on Economic Growth in Developing Countries: Policy Paper No. 3. London: Vodafone.
- Levin, T., & Wadmany, R. (2006). Teachers' beliefs and practices in technology-based classrooms: A developmental view. Journal of Research on Technology in Education , 39, 417-441.
- Lim, C. P. (2007). Effective integration of ICT in Singapore schools: Pedagogical and policy implications. Education Technology Research Development , 55, 83-116.
- Lowther, D. L., Inan, F. A., Strahl, J. D., & Ross, S. M. (2008). Does technology integration work Does technology integration work? Educational Media International , 45, 195-213.
- Lowther, D. L., Inan, F. A., Strahl, J. D., & Ross, S. M. (2008). Does technology integration work when key barriers are removed? Educational Media International , 45, 195-213.
- Lu, Z., Hou, L., & Huang, X. (2010). A research on a student-centered teaching model in an ICT based English audio-video speaking class.

International Journal of Education and Development using Information and Communication Technology , 6, 101-123.

- Mcmahon, G. (2009). Critical thinking and ICT integration in a Western Australian secondary school. Educational Technology and Society , 12, 269–281.
- Muthuprasada, T., Aiswarya, S., Aditya, K., & Jha, G. (2021). Students' perception and preference for online education in India during COVID -19 pandemic. Social Sciences & Humanities , 3 (1).
- Nadim Ahmad, P. S. (2004). ICT Investment in OECD Countries and its Rconomic Impacts. Paris: Organisation for Economic Co-operation and Development.
- Nair, P. R. (April-June 2019). An Overview of ICT Tools for Supply Chain Management. IEEE India Info. , 14 (2), 107-111.
- Nasab, E. H., & Aghaei, M. (2009). The effect of ICT on economic growth: Further evidence. International Bulletin of Business Administration , 5, 46-56.
- Nasta, R. (2019, May). The Role of Social Media In Education. Retrieved August 30, 2022, from jbcnschool.edu.in.
- News18. (2022, March 5). Think Social Media Is Wasting Time? Here's How You Can Set Daily Time Reminder Alert on Facebook. Retrieved August 30, 2022, from news18.com: https://www.news18.com/news/tech/think-social-media-is-wasting-time-heres-how-you-can-set-daily-time-reminder-alert-on-facebook-4827980.html
- Norhayati, A. M., & Siew, P. H. (2004). Malaysian Perspective: Designing Interactive Multimedia Learning Environment for Moral Values Education. Educational Technology & Society , 7 (4), 143-152.
- Novak, M. (2019, April 11). Communication Technology: What is ICT and its Components. Retrieved March 31, 2022, from learn.g2.com: https://learn.g2.com/communication-technology
- OECD. (2020, September 24). Strengthening online learning when schools are closed: The role of families and teachers in supporting students during the COVID-19 crisis. Retrieved August 31, 2022.
- Palak, D., & Walls, R. T. (2009). Teachers' beliefs and technology practices: A mixed-methods approach. Journal of Research on Technology in Education , 41, 157-181.
- Pechenkina, E., & Aeschliman, C. (2017). What Do Students Want? Making Sense of Student Preferences in Technology-enhanced Learning. Contemporary educational technology , 8 (1), 26-39.
- Peeraer, J., & Van Petegem, P. (2011). ICT in teacher education in an emerging developing country: Vietnam's baseline situation at the start of The Year of ICT. Computers & Education , 56 (4), 974-982.
- Pokhrel, S., & Chhetri, R. (2021, January 21). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. Retrieved August 31, 2022.
- Poorfaraj, A., Samimi, A. J., & Keshavarz, H. (2011). Knowledge and economic growth: Evidence from some developing countries. Journal of Education and Vocational Research , 1 (1), 21-25.
- Pourhossein Gilakjani, A. (2013). Factors contributing to teachers' use of computer technology in the classroom. Universal Journal of Educational Research , 1 (3), 262-267.
- Preeti. (2014). Education and Role of Media in Education System. International Journal of

Scientific Engineering and Research (IJSER) , 2 (3), 174-177.

- PTI. (2020, June 13). About 56% of children have no access to smartphones for e-learning: study. Retrieved August 30, 2022, from indian express.com: https://indianexpress.com / article/ education/ about- 56- pc- of- children- have- no- access- to- smartphones- for- e- learning- study- 6457247/
- Ratheeswari, K. (2018). Information Communication Technology in Education. Recent Trend of Teaching Methods in Education (pp. S45-S47). Dindigul, Tamil Nadu: Journal of Applied and Advanced Research.
- Reid, S. (2002). The integration of ICT into classroom teaching. Alberta Journal of Educational Research , 48, 30-46.
- Robertson, M., Fluck, A., & Webb, I. (2007). Seven steps to success with ICTs: Whole school approaches to sustainable change. (F. Edition, Ed.) Camberwell: ACER Press.
- Sabourin, C. (1994). Computer assisted language teaching: Teaching vocabulary, grammar, spelling, writing, composition, listening, speaking, translation, foreign languages. Montreal, Canada: Infolingua.
- Serhan, D. (2009). Preparing preservice teachers for computer technology integration. International Journal of Instructional Media , 36, 439-447.
- Sessoms, D. (2008). Interactive instruction: Creating interactive learning environments through tomorrow's teachers. International Journal of Technology in Teaching and Learning , 4 (2), 86-96.
- Singh, J., Sarupria, A., Kushwaha, G. S., & Kumari, M. (2019a). Supply Chain Management Practices in Automobile Industry in India: ICT perspective. International Journal of Management, Technology And Engineering , 9 (6), 4303-4314,.
- Singh, J., Singh, S., & Kumari, M. (2020b). Role of ICT in Supply Chain Management. Journal of Interdisciplinary Cycle Research , 12 (10), 992-1007.
- Smolin, L., & Lawless, K. (2007). Technologies in schools: Stimulating a dialogue. In L. Smolin, K. Lawless, & N. C. Burbules (Eds.) (Vol. Vol 2). Massachusetts: Blackwell Publishing Malden.
- Staples, A., Pugach, M. C., & Himes, D. (2005). Rethinking the technology integration challenge: Cases from three urban elementary schools. Journal of Research on Technology in Education , 37, 285-311.
- Supon, V., & Ruffini, M. (2009). Technology integration during student teaching: a case study. College Student Journal , 43, 347-351.
- Szendeffy, J. (2005). A Practical Guide to Using Computers in Language Teaching. Retrieved March 30, 2022, from press.umich.edu: https://www.press.umich.edu/97662
- Tezci, E. (2011a). Factors that influence preservice teachers' ICT usage in education. European Journal of Teacher Education , 34, 483-499.
- Towndrow, P. A. (2007). Task Design, Implementation and Assessment: Integrating Information and Communication Technology in English Language Teaching and Learning. Hong Kong: McGraw-Hill Education.
- Tran, T., Phan, H. A., Le, H. V., & Nguyen, H. T. (2020). ICT Integration in Developing Competence for Pre-service Mathematics Teachers: A Case study From Six Universities in Vietnam. International Journal of Emerging Technologies in Learning (iJET) , 15 (14), 19–34.
- Tri, D., & Thi Nguyen, N. (2014). An exploratory study of ICT use in english

language learning among efl university students. Retrieved March 30, 2022, from files.eric.ed.gov: https://files. eric. ed. gov/ fulltext/ EJ1143398.pdf

- United Nations, U. (2020). Accelerating action through digital technologies: Strengthening digital skills and capacities for human wellbeing. Retrieved March 30, 2022.
- Vygotsky, L. S. (1978). Mind in Society: The development of higher psychological processes. Cambridge MA: Harvard University Press.
- Warschauer, M., & Kern, K. (2000). Network-based Language Teaching: Concepts and Practice. Cambridge: Cambridge University Press.
- Watts-Taffe, S., Gwinn, C. B., & Horn, M. L. (2003). Preparing preservice teachers to integrate technology with the elementary literacy program. The Reading Teacher , 57, 130-138.
- Weert, T. V., & Tatnall, A. (2005). Information and Communication Technologies and Real-Life Learning: New Education for the New Knowledge Society. New York: Springer.
- Whelan, R. (2008). Use of ICT in education in the South Pacific: findings of the Pacific eLearning Observator. Distance Education , 29, 53-70.
- World Bank, W. (2019). World development report 2019: The changing nature of work. Washington, DC: World Bank.
- Yildirim, S. (2007). Current utilization of ICT in Turkish basic education schools: A review of teachers' ICT use and barriers to integration. International Journal of Instructional Media , 34, 171-186.