Opportunities and Barriers in ICT Integrated Education: A Critical Analysis

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ABSTRACT
With the growth of digital technologies, there has been an exemplar shift in pedagogy and educational content. The information and communications technology focused training specially helps with the better and effective learning for students and improves their knowledge competencies as well. It also has paved the way for permitting learner-targeted pedagogy in place of traditional teacher- centered pedagogy. This facilitates the learners to work higher and it additionally permits the teachers to adjust their teaching or content material-delivery alternatives. ICT- supported teaching helps in generating the powerful studying manner via collaborative, evaluative, innovative and integrative getting to know method. This article studies the impact of information and communications technology on the educational quality, the barriers and ways to overcome the presenting challenges. It is revealed that ICT integration is mediational and involves a developing process rather than a completed outcome. Successful technological integration requires collaboration from three parties: teachers, students, and school officials. This critical analysis examines the existing state of affairs, as well as the hurdles to and options for ICT integration in the classroom.
Keywords - Information and Communications Technology (ICT), Student-centred learning, Skill development, Opportunities, Challenges

1. Introduction
Information, Communication, and Technology (ICT) is a type of technology that aids in the accurate and efficient collection, storage, retrieval, use, transmission, manipulation, and dissemination of information. Its purpose is to broaden the user's knowledge while also improving communication, decision-making, and problem-solving skills. Information and communication technology (ICT), which includes computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors, is widely used in today's educational field. The school environment is important for students to participate in a wide range of computer activities, whereas the home serves as a complementary site for regular engagement in a narrower set of computer activities [1]. ICT is increasingly being used successfully in instruction, learning, and assessment. ICT is regarded as a potent tool for educational change, reform and increased access to education. Learning may take place at any time and from any location thanks to ICT. For example, online course materials may be accessed 24 hours a day, seven days a week. Teleconferencing classrooms enable both the learner and the instructor to engage with ease and comfort. Learning and teaching are no longer only dependent on printed materials because to advances in information and communication technology. There are numerous learning resources online, and information may be obtained through video clips, audio sounds, visual presentations, and so on. Since learners are actively participating in the learning processes in ICT classrooms, the instructor empowers them to make decisions, plans, and so on. As a result, ICT expands educational opportunities and possibilities for both students and teachers.

ICT and Education has often complemented each other on the forms of various learning mediums. One example is E-learning, which is often termed as digital and computer based learning. It is a blend of advanced learning by making use of multimedia, electronic media and online networking. It helps in overcoming numerous demanding situations which arise at some point of conventional strategies of gaining knowledge. For instance, it saves quite some time which in any other case may get wasted in travelling . Also, it enables improved intercommunication with wider participation. E-learning

removes the hurdles created by geographical limitations by expanding the reach of information. Another output of the integration between ICT and education is Distance learning, which is also known as open learning. It enables students to manipulate their study sessions according to their needs and convenience. They can avail the content online and can talk with teachers and their class-mates through digital sources of learning. Digital libraries are also emerging as integral components of distance learning.

2. Literature review

Palak and Walls (2009) conducted a study to see if instructors who often incorporate technology and work in technologically advanced schools move their views and actions toward a more student-centered paradigm. The findings revealed that neither student-centered nor teacher-centered views were significant predictor of practices. Teachers' attitudes toward technology, on the other hand, strongly predict teacher and student technology usage, as well as the use of various instructional techniques [2]. Sang et al. (2010) investigated the influence of gender, constructivist teaching views, teaching self-efficacy, computer self-efficacy, and computer attitudes on Chinese student teachers' projected ICT usage [3]. The findings corroborated the findings of Palak and Walls' (2009) study, which found that instructors' views toward ICT were the biggest predictor of future ICT use.

Preservice teachers with solid constructivist teaching foundations are more likely to integrate technology into their future teaching practices [3]. Furthermore, more self-assured pre-service teachers were more proficient and enthusiastic in using computers in real-world classrooms. Thus, while teachers' attitudes about ICT usage were shown to be the most powerful predictor of technology integration, the importance of their beliefs and confidence in utilising ICT should not be overlooked. Internal factors can explain a portion of the success of classroom technology integration. The impact of these characteristics, however, may vary following participation in technology preparation classes or programmes. Abbott and Faris (2000) investigated pre-service teachers' views regarding computer use before and after completing a semester-long technology literacy course. Positive views about computers improved as a result of the course's teaching methodologies, relevant tasks utilising technology, and supportive teachers [4]. Preservice teachers should be taught not just how to utilize hardware and software, but also how to incorporate computers into their teaching tactics and activities. When introducing new hardware and software, small groups and collaborative learning are best since higher skilled and experienced teachers can easily assist individuals who require more technological learning support.

Doering (2003) conducted a study examining pre-service teachers' attitudes on ICT in their future classrooms before and after participating in a teacher development programme. Teachers were skeptical about the value of ICT in the classroom prior to attending the preparatory courses, signaling that they would carefully evaluate and consider technology integration rather than mindlessly incorporating it into their teaching techniques [5]. After finishing the classes, their skepticism had given way to optimism. Teachers have a greater grasp of how to use ICT in the classroom. Despite dealing with other difficulties such as technology availability, accessibility, professional assistance, and classroom management, the teachers' perspectives of technology's role had shifted. They were more likely to believe that technology can assist in learning and to recognize its importance.

It is worthwhile to investigate how ICT preparation courses or programmes affect instructors' intents and behaviours. Choy, Wong, and Gao (2009) performed a mixed-methods study to assess pre-service teachers' intentions before and after a technological preparation course. Their goals were then contrasted to their behaviours towards technology integration in the classroom [6]. Confirming prior findings from Doering, Hughes, and Huffman (2003), the data revealed that as pedagogical knowledge improved, their intentions were considerably more positive . Nonetheless, due to unfamiliar school surroundings, some teachers were unable to transfer their constructive intentions into practical instruction. The teacher education programmes should raise awareness of the benefits of incorporating technology into student-centered learning approaches, as well as provide pedagogical knowledge about student-centered learning and technology integration strategies [6].

3. The positive impact of ICT in modern classrooms

ICT can be used as a tool for students to discover learning topics, solve problems, and provide solutions to problems encountered during the learning process. While engaging students in the application of ICT, knowledge acquisition becomes accessible and convenient, while concepts in learning areas become easier to understand [7].

Students are increasingly engaging in meaningful computer use. They acquire new information and data by accessing, selecting, organising, and interpreting it [8]. ICT oriented learning tools allow students to extract wide variety of information from various sources, as well as critically assessing the quality of learning materials.

ICT fosters students' fresh understanding of their subject areas [16]. ICT allows for more creative responses to various types of learning queries. E-books are frequently utilised in reading aloud activities in a reading class. Learners can easily access all types of texts, from basic to sophisticated, using PCs, laptops, personal digital devices (PDAs), or iPads. These e-books may also have reading applications that include a reading-aloud interface, relevant vocabulary-building activities, games connected to reading abilities and vocabulary development, and other features. As a result, ICT includes apps that are specifically developed to satisfy a variety of learning demands.

Use of ICT allows students to interact, exchange, and collaborate from anywhere, at any time [9]. For example, a teleconferencing classroom could invite students from all over the world to participate in a topic debate at the same time. They may be given the opportunity to analyse problems, explore ideas, and build concepts. They may conduct additional evaluations of ICT learning systems. Students not only learn together but also share their varied learning experiences in order to express themselves and reflect on their learning.

ICT, when used in conjunction with a constructive learning strategy, assists students in focusing on higher-level topics rather than less important tasks [10]. Studies have found statistically significant associations between the use of ICT for learning and development of critical thinking skills. Longer exposure to the ICT and its associated learning materials can help students to develop stronger critical thinking skills [11]. As a result, schools are strongly recommended to integrate technology across all learning areas and levels. When this is done, students can use technology to achieve greater levels of cognition within specialized learning environments.

There are three crucial traits that are required to establish excellent quality teaching and learning with ICT: autonomy, capacity, and creativity. [14] Autonomy refers to students' ability to direct their own learning through the use of ICT. As a result, students grow more capable of functioning independently and collaboratively. Teachers can also give students permission to accomplish specific activities with their classmates or in groups. Students have more opportunities to add new information onto their existing knowledge through collaborative learning using ICT, and they become more confidence to take chances and learn from their failures [14].

Students have more opportunity to add new information onto their existing knowledge through collaborative learning using ICT, and they become more confident to take risks and learn from their failures. ICT supports autonomy by allowing educators to produce their own material, giving them greater control over course content than is available in a traditional classroom setting [15]. In terms of competence, as students gain confidence in their learning processes, they will be able to apply and transfer knowledge while employing new technology with efficiency and effectiveness. In an ESL listening and speaking lesson, students might be asked to improve their pronunciation using an online audio dictionary. Finding decent software to record their voice is also a requirement for these students. As a result, the entire learning process enriches and broadens students' learning skills and knowledge beyond what they currently know. Students' creativity can be enhanced by using ICT. They may discover new multimedia tools and create materials in styles familiar to them from games, CDs, and television [17]. The use of ICT can improve both teaching and learning quality by combining students' autonomy, capacity, and creativity.

Studies have also revealed that teachers can act as catalysts for technology integration through ICT. Developing an ICT class will be easier for teachers if the educational institution provide

encouragement, equipment, and essential technological assistance [12]. These teachers' main responsibility will be to change their course format, create and explain new assignments, and arrange for the computer lab through their technology learning specialists or assistants.

To summarize, ICT allows students additional time to investigate beyond the mechanics of course content, helping them to better understand concepts. The usage of ICT also alters the interaction between teaching and learning. [13] According to a study by Reid (2002), teachers claimed that the relationship between teacher and student is sometimes reversed when it comes to information technology. When students are able to assist teachers with technological challenges in the classroom, this relationship enhances their confidence. As a result, ICT disrupts the traditional teacher-centered approach, requiring teachers to be more creative in customizing and adapting their own material [16].

4. The Challenges of ICT integration in modern classrooms

Some of the he main problems connected with ICT use include student mobility, special needs, and anxiety over standardised test outcomes [18]. These issues can be addressed by offering authentic group and problem-based learning activities, as well as proper learning assistance [19]. Students face issues such as poor technical skills that limit access to ICT in the classroom; a lack of academic advisors and timely feedback from teachers; and less connection with peers and teachers. As a result, following techniques to help students learn more effectively: more induction, orientation, and training; a greater emphasis on the necessity of teachers access and effective administration; and the growth of podcasting and online conferencing [19]. In general, capacity building, curriculum development, infrastructure, policy, and government support are required in order to lower student barriers and improve the effectiveness of ICT use in the classroom. In addition , students should be encouraged and motivated to acquire new technical skills that will help them adjust and adapt to ICT environments [8].

Another issue that affects ICT adoption in classrooms is the lack of clear and precise goals for ICT [20]. Studies have shown that many teachers are not yet willing to trust ICT tools and techniques as a reliable means of imparting knowledge. Several teacher training schools still don't impart pedagogical training and practical experience for in-service teachers and trainee teachers [21]. This leads to teacher not being able to collaborate and cooperate with other teachers to make full use of ICT tools even when they are provided with everything they need[22]. Several teachers face problems allocating time for learning new teaching methods based around ICT. Apart from time being a factor, these teachers face problems learning these new teaching tools and adopting new teaching methods [18] [23].

Teachers should learn not just how to use technology to enhance traditional teaching or increase productivity, but also ways to integrate ICT teaching–learning methods in classroom activities to encourage students to learn from their perspective [24]. To make this a success, teachers must be more creative, proactive and productive in their use of ICT in order to provide more interesting and rewarding learning experience. Teachers must retain an open mind when it comes to ICT integration in the classroom. When teaching using technology, teachers must master new teaching practices in order to adapt to the new instruments [8].

Studies also found out that teachers utilize ICT mainly to prepare handouts and assessments than to stimulate critical thinking [21]. Teachers mostly employ technology to supplement their existing teaching methods rather than to promote student-centered learning. One probable cause is a lack of models for how to use technology to enhance learning, as well as restrictions relating to contextual factors such as class size and student ability. The preservice teacher training and in-service teacher training does not give enough ICT knowledge to support technology-based instruction, nor does it adequately demonstrate acceptable techniques for integrating technology into a curriculum [7]. More training in pre-service teacher curricula and ICT abilities should be provided.

From the administrative side, there has a lot to be desired in terms of actual effective implementation of ICT. Most schools and colleges focus more on quantity over quality and judge student quality based on test scores [21]. The emphasis on higher order thinking skills (HOTS) has

been downplayed in various prestigious institutions whose main focus is on getting students to score the highest marks possible [25]. It is the responsibility of the educational institutions' administration to provide ample training and learning opportunities for existing teachers so that these teachers can implement all the theoretical and pedagogical practices of ICT in their classrooms. However studies showed that several educational institutions failed to provide the adequate course content and instructional programs, appropriate hardware, software, and materials to enable the effective use of ICT in classroom [21].

Schools need to be provided with proper access to technology to solve these limitations. Furthermore, new policies must be implemented in schools and related institutional systems to involve teachers in decision-making and planning processes including ICT in their classrooms [20]. The construction of disciplinary and educational principles and processes, and the division of labour among teachers, teaching assistants, and students are all critical components of constructing a well-managed ICT-integrated class. By stressing these characteristics, a learning process that encourages students to participate in higher-order thinking can be promoted [26].

5. CONCLUSION

Quality education relies upon the development of technology in various ways such as enlarging the motivation of learner, enrichment of simple abilities and developing teacher education in technology. ICT is becoming extremely essential part of the schooling system. In the past thirty years, the usage of ICT has fundamentally modified the practices and processes of nearly all varieties of endeavor inside all types of educational institutions for supplying excellent education. According to previous studies, both external and internal factors influence ICT use in education [27]. The most common external issues are lack of access to computers and software, insufficient time for course development, and insufficient technical and administrative support [27]. Teachers' attitude, confidence, and belief in ICT use are frequently listed as internal determinants in the available literature [24][27]. Although the research appears to have identified all possible external and internal factors influencing ICT use [24][27], there has been little research into the possible relationships between external and internal variables, and how these relationships differ depending on the variables involved in ICT integration. Examining these connections could not only help teachers, students, and administrators better understand the obstacles of ICT use, but it could also help them discover new strategies to overcome current barriers based on the relationships between different variables.

While most prior studies focused on the influence of teachers' attitudes and beliefs on actual practice, no study has investigated the reciprocal relationship between teachers' attitudes and beliefs and their practice [15] [16]. Another thing to look into is whether the interaction alters between preservice and in-service teachers. What are their perspectives on their beliefs and their actual implementation of ICT integration? Comparative studies would be very useful in investigating this viewpoint. Furthermore, more research need to be conducted to understand the problems or hurdles to ICT integration.

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