

# ISSUES AND CHALLENGES IN TEACHING WITH ICT TOOLS

## Abstract

In this pandemic COVID and digital era, ICT tools gives a lot of opportunities to utilise and learn the skills among students, student to teacher interaction etc. Therefore studying issues and challenges related to ICT tools in teaching and learning as become a major issues in this era and to overcome this ICT tools must be assist to teachers ,hence become successful technology users ..thus, the main key point is to study and analyse teachers perception of the challenges faced using ICT tools in classrooms. The major issues found by teachers were technical support, limited network and accessibility, training etc. thus this paper purpose to overcome the issues and challenges faced through ICT tools.

**Keywords:** ICT tools, teaching and learning, challenges and issues.

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## **I. INTRODUCTION**

The term Information and Communication Technology (ICT) refers to a broad range of communication devices and applications. This includes radio, television, cellular phones, computers, network hardware and software, satellite systems, and other related technologies. Additionally, ICT encompasses various services and applications associated with these technologies, such as videoconferencing and distance learning.

Information and Communication Technology (ICT) tools, such as software, programmes, and web2.0 applications, have become integral components of contemporary civilization. The adoption of this crucial trend is being observed in educational institutions across Europe; yet, the speed of implementation in several countries remains relatively sluggish. There are several factors contributing to this phenomenon, encompassing deficient infrastructure, apprehensions regarding security, and inadequate familiarity of teachers with integrating information and communication technology (ICT) into their instructional practises. The primary objective of this ICT Guide is to stimulate educators to contemplate the enhanced utilisation of information and communication technology (ICT) tools in pedagogy. Additionally, it aims to provide inspiration and guidance regarding the appropriate contexts and methodologies for incorporating these tools into instructional practises. In order to foster active participation in our contemporary knowledge society, which heavily relies on information and communication technology (ICT), it is imperative to cultivate students who possess a comprehensive education and a deep understanding of ICT. This includes proficiency in both the practical aspects of ICT operation and the critical ability to navigate and analyse media content.

The objective of this guide is to provide practical assistance to educators in effectively utilising information and communication technology (ICT) resources within the classroom setting. There is a particular emphasis on the integration of diverse tools in inquiry-based science education (IBSE). This pedagogical approach offers numerous possibilities for incorporating information and communication technology (ICT). Furthermore, the integration of ICT is a key aspect of the EU project IRRESISTIBLE, which served as the foundation for the development of this guide.

This guide represents an enhanced and revised iteration of the Web2.0 / App Guide that was initially released during the early stages of the IRRESISTIBLE project in March 2014. While the initial guide primarily emphasised the enumeration of specific tools suitable for integration in Inquiry-Based Science Education (IBSE) instruction, this subsequent guide takes a more comprehensive approach by examining the implementation of these tools within the context of IRRESISTIBLE teaching modules. Additionally, it provides numerous instances of practical integration of Information and Communication Technology (ICT) tools in instructional practises.

## **II. LITERATURE REVIEW**

Nowadays, the integration of information and communications technology (ICT) has become a crucial component inside the majority of organisations (Zhang & Aikman, 2007). The integration of computers into educational settings commenced during the early 1980s. Numerous scholars have posited that information and communication technology (ICT) will

play a significant role in the field of education for future generations (Bransford, Brown, & Cocking, 2000; Grimus, 2000; Yelland, 2001). Contemporary technology provides numerous approaches for augmenting instructional practises and facilitating educational experiences within the classroom (Ghavifekr et al., 2014; Lefebvre, Deaudelin & Loiselle, 2006). According to Dawes (2001), the utilisation of new technology has the capacity to enhance education across several subjects and facilitate effective communication between students and teachers in ways that were previously unattainable. Information and Communication Technology (ICT) has the capacity to revolutionise the field of education by significantly transforming the methods and approaches employed in teaching. Nevertheless, the realisation of this potential may encounter difficulties, as highlighted by Dawes (2001) who emphasised that "challenges arise when educators are tasked with implementing modifications under potentially unfavourable conditions" (p. 61). Given the significance of Information and Communication Technology (ICT) in both contemporary society and the future of education, it is imperative to ascertain the potential obstacles associated with the integration of these technologies in educational institutions. This endeavour is crucial for enhancing the overall efficacy of teaching and learning processes. According to Balanskat, Blamire, and Kefala (2006), educators demonstrate an awareness of the significance of information and communication technology (ICT) in educational settings. However, they face persistent challenges when attempting to integrate these technologies into their instructional practises and student learning experiences.

Students with disabilities are entitled to receive an equal level of education as their peers. Consequently, they possess the right to utilise and benefit from mainstream educational resources, such as information and communication technology (ICT) based tools, also known as "e-learning tools".

These tools are widely recognised as effective means to promote learning (Hitchcock et al., 2003). However, it is widely acknowledged that the extensive use of technological tools can lead to the further marginalisation of disadvantaged or excluded groups, such as the unskilled, disabled, and elderly. The introduction of digital computers and their widespread adoption has posed significant challenges for disabled and elderly individuals in accessing computing devices. According to Stephanidis and Savidis (2001), According to Anderson (2006), the use of technologies in the realm of education has demonstrated its advantageous nature in facilitating educational tasks. However, the design and usability of these technologies present a significant concern.

Hence, this research endeavour is anticipated to yield insights into educators' perspectives and obstacles encountered while using information and communication technology (ICT) resources into the instructional and educational processes. In light of advancements in contemporary technologies, it is vital for learners to possess up-to-date knowledge that enables them to effectively navigate and adjust to the dynamic nature of the globe. The acquisition of such knowledge facilitates enhanced communication and the development of 21st century skills, which may be attributed to the growth of e-Commerce and the rise of self-employment within the ICT industry.

Numerous scholarly inquiries have been undertaken to examine the obstacles associated with the incorporation of technology in educational settings (Al-Alwani, 2005; Ghavifekr, Afshari & Amla, 2012; Gomes, 2005; Osborne & Hennessy, 2003; Özden,

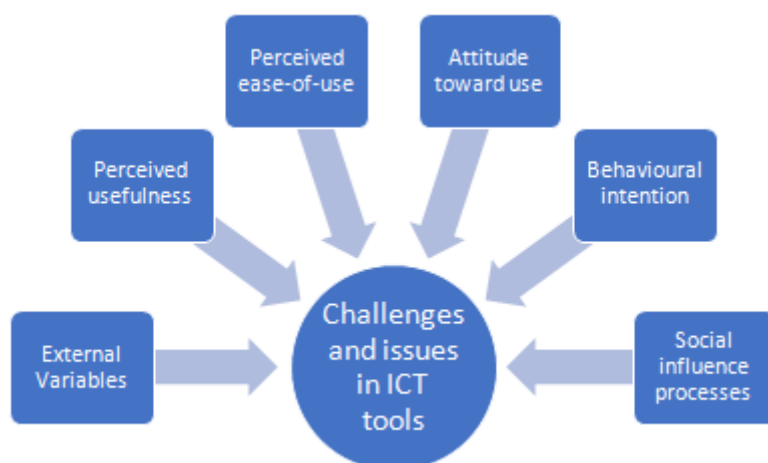
2007). This study examines the perceptions of teachers and the constraints they perceive in relation to the utilisation of digital tools in the teaching and learning process within classrooms. Thus, the primary aims of this study are as follows:

The objective of this study is to examine the attitudes of school teachers towards the implementation of information and communication technology (ICT) tools in the classroom for teaching and learning purposes.

II) This study aims to identify and analyse the obstacles faced by educators when incorporating ICT resources into their teaching and learning practises within the classroom setting.

III) The objective of this study is to determine the extent to which teachers utilise information and communication technology (ICT) resources in the instructional process within the classroom setting. In this study, the term ICT tools pertains to the prevalent technology-based instruments utilised in educational institutions, including computers, laptops, LCD screens, digital photocopy machines, digital audio and video devices, digital cameras, scanners, DVD players, and multimedia projectors.

### III. CHALLENGES IN USING ICT IN TEACHING AND LEARNING



**Figure 1:** Challenging Issues in Teaching with ICT Tools

External variables refer to the obstacles encountered by educators that originate from sources beyond their immediate influence while incorporating a novel technology into their instructional and educational practises. One of the issues that might be identified is the limitation in terms of accessibility and network connectivity.

- Schools that have a restricted availability of information and communication technology (ICT) resources.
- The absence of adequate training
- One constraint that needs to be considered is the limited amount of time available.
- The issue at hand pertains to the insufficient level of competence exhibited by teachers.

**1. Perceived Usefulness Refers:** to the extent to which individuals hold the belief that the utilisation of a specific technology would positively impact their overall job performance. According to research findings, instructors who exhibit a lack of inclination to question or modify their professional practise are less likely to embrace the integration of information and communication technology (ICT) technologies. Nevertheless, if educators regard information and communication technology (ICT) as beneficial for their teaching and their students' learning, their inclination towards utilising ICT in the classroom is more likely to be positive, as supported by empirical data from prior research (Cox, Preston & Cox, 1999). Several criteria have been recognised as crucial components in teachers' perception of the effectiveness of information and communication technology (ICT) technologies.

- Increase productivity b. Performance in the workplace
- The phenomenon of increased production is observed.
- The effectiveness of a given phenomenon or intervention.
- The information provided is deemed to be of practical value.

**2. Perceived Ease of Use:** It denotes the extent to which individuals perceive the utilisation of a specific system to be devoid of exertion. Prior research has revealed several characteristics that are associated with the perceived ease of use of information and communication technology (ICT) among experienced and practising ICT users. The Impact study conducted by Watson (1993) and subsequent studies have highlighted a diverse array of skills and competences that educators perceive as necessary for effectively utilising information and communication technology (ICT). Several of these are:

- Easy to learn
- Clear and understandable
- Easy to use
- Controllable
- Easy to remember

**3. Attitude toward Use:** The teacher's affective evaluation of engaging in the desired behaviour, such as utilising a system, can be categorised as either positive or negative. The attitudes of instructors towards these elements will largely rely on their personal perception of the ease of utilising ICT tools, both for personal use and for instructional purposes in the classroom.

**4. Behavioural Intention:** The extent to which the teacher has developed deliberate intentions to engage in or abstain from certain predetermined future actions.

The factors of perceived usefulness and usage intentions can be attributed to social influence processes, including subjective norm, voluntariness, and image, as well as cognitive instrumental processes, such as work relevance, output quality, outcome demonstrability, and perceived ease of use.

The revised iteration of TAM 2 encompasses supplementary factors, including the social influence process and cognitive instrumental processes of perceived usefulness and usage intentions.

The integration of information and communication technology (ICT) within the educational environment is a complex undertaking that might give rise to various obstacles. The aforementioned concerns are occasionally denoted as "challenges" (Schoepp, 2005). Based on the definition provided by WordNet (1997, as cited in Schoepp, 2005, p. 2), a challenge can be defined as a situation that imposes barriers or impedes progress towards a specific aim or target. The study has found a number of notable issues related to the implementation of ICT technologies by educators within the educational setting.

- The issue of limited accessibility and network connection The user's text does not provide any information to rewrite in an academic manner. Numerous research studies have demonstrated that a significant obstacle impeding teachers' integration of new technologies into education is the multifaceted difficulty of limited access to resources, including inadequate home access. Multiple research investigations have identified many factors contributing to the limited availability of technology.

Research by Sicilia (2005) shows that teachers are worried about the difficulties of providing widespread access to computers. The author claims (p. 50) that a number of causes have been discovered for the problems that arise with computer use in the classroom. One of these was the necessity to pre-book computers, which occasionally led to teachers not doing so or not being able to reserve them for consecutive periods when a variety of tasks were scheduled to keep students busy. To elaborate, it can be claimed that teachers may not have access to ICT materials because teachers frequently exchange such resources amongst themselves. According to a 2004 research by Becta, schools' limited access to ICT resources is not always the result of a shortage of hardware, software, or other resources. Poor resource management, outdated equipment, inappropriate programmes, and restricted access for educators are all possible causes of this problem (Becta, 2004).

There is a wide range of problems in how different countries handle the availability of new technologies for teachers. According to a European study conducted by Empirica (2006), a key impediment to the implementation of ICT in educational settings was the scarcity of available resources. The research also showed that educators faced challenges such a lack of accessible computers and instructional resources when attempting to use ICT in the classroom. Infrastructure issues, such as a lack of access to high-speed Internet, have been found by Korte and Hüsing (2007, p. 4). The study's authors concluded that despite progress, one-third of Europe's educational institutions still lack adequate access to high-speed Internet. According to Pelgrum's (2001) research, he surveyed professionals in 26 countries to learn about their experiences with implementing ICT in schools and found that the most common problems were from a lack of staff training and funding. The study's author concluded that easy access to modern forms of communication and information solved a number of the top ten problems. This research found that insufficient computer units, a lack of peripheral devices, a shortage of software copies, and a lack of immediate access to

the Internet were the most significant barriers. Toprakci (2006) found that the insufficient availability of computers, slow or antiquated ICT systems, and a lack of instructional software all impeded the efficient implementation of ICT in Turkish schools. A lack of Internet access during school hours and insufficient hardware resources were also found to be stumbling blocks to the integration of technology by Al-Alwani (2005) in Saudi Arabian schools. According to Albirini's (2006) research, the absence of sufficient computer resources was a major barrier to the inclusion of technology in Syrian schools.

- **A School Characterised by a Restricted Level of Technological Help:** Lewis (2003) says that teachers can't use ICT well because there isn't enough technical help in the classroom and not enough resources for the whole school. According to Pelgrum's (2001) research, elementary and secondary school teachers said that the lack of good technical help was a big problem when it came to integrating information and communication technology (ICT) into education.

According to the results of Sicilia's study from 2005, technology problems were found to be a big problem for teachers. There were problems with websites taking too long to load, not being able to link to the Internet, printers not working, computers not working, and professors having to use old computers. Technical problems, according to Sicilia (2005), made it hard to teach the lesson or move the classroom activity along in a natural way (p. 43). Korte and Hüsing (2007) say that having ICT support or repair contracts in educational institutions makes it easier for teachers to use ICT effectively in their teaching practises because they don't have to spend time fixing software and hardware problems. In a 2004 report by Becta, it was said that when schools don't have enough technical help, technical maintenance is less likely to be done regularly, which makes it more likely that technical problems will happen (Becta, 2004, p. 16). According to the results of a study done by Becta in 2004, a large number of volunteers were worried that technical problems could make them less likely to use ICT in their teaching practises. This fear came from the idea that something could go wrong with the equipment during a training session. In the area of education, many studies have shown that the lack of proper technical support is a big problem that makes it hard to use technology effectively. Gomes (2005) says that a technician is needed in order for information and communication technology (ICT) to be used well in education. If you don't have this kind of technical help, it can be a big problem. According to a study done by Toprakci (2006) in Turkey, the lack of technical help was one of the biggest problems with using information and communication technology (ICT) to teach science in schools. This barrier in particular was thought to be very important and could be seen as a cause for great worry. Almohaissin (2006) says that scientists who teach in Saudi Arabia say they are ready to use computers in their lessons. But they worry about problems that could come up, like problems with technical help and hardware. According to Sicilia (2005), technical problems can make it hard for teachers to give lessons smoothly, no matter how much technical help they have or how much experience they have (beginning teachers to teachers with twenty years of experience).

- **Lack of Effective Training:** Most scholarly papers point to a lack of proper training as the main problem (Albirini, 2006; Balanskat et al., 2006; Beggs, 2000; Ozden,

2007; Schoepp, 2005; Sicilia, 2005; Toprakci, 2006; Ghavifekr & Wan Athirah, 2015). Pelgrum (2001) found that teachers didn't get enough training on how to use information and communication technologies (ICTs) in the classroom. In a similar way, Beggs (2000) found that one of the biggest problems with teachers using ICT in their teaching was that they didn't have enough training. A study done in Turkey found that the main problem with using current information and communication technology (ICT) in education was that teachers didn't get enough training while they were already working (Ozden, 2007). Also, Toprakci (2006) found that the lack of ICT training for teachers in Turkish schools was a big problem. Becta (2004) says that training is a very complicated issue because there are so many things that need to be taken into account to make sure it works. During the above events, there were times set aside for training in pedagogical techniques, skill development, and the use of information and communication technology (ICT) as part of basic teacher training. In a similar way, a recent study by Gomes (2005) found that the lack of training in digital literacy, the lack of pedagogic and didactic training on how to use ICT in educational settings, and the lack of training on how to use technology in certain subject areas all make it hard to use new technologies effectively in the classroom. Several studies done in Saudi Arabia have found that the mistakes in putting educational technology to use have similar causes. (Alhamd, Alotaibi, Motwaly, and Zyadah, 2004; Sager, 2001) These reasons include a lack of training for teachers on how to use computers, a preference for traditional teaching methods over modern technology, and a lack of qualified teachers who are confident and skilled in using educational technology. It is important to teach teachers how to teach, not just how to use ICT tools (Becta, 2004). Cox et al. (1999a) say that if you want to convince teachers that bringing ICT into their teaching practises is effective, you have to put the pedagogical parts of their training first. The results of the study by Cox et al. (1999a) showed that teachers didn't know much about how to use information and communication technology (ICT) in their teaching practises, even though they had taken part in professional development courses that focused on ICT. Their computer skills were mostly limited to simple computer operations and setting up printers. They didn't know how to use ICT in the classroom in a wider sense. The reason given was that the courses mostly focused on helping teachers learn basic ICT skills and didn't do enough to address the pedagogical aspects of ICT growth. Cox et al. (1999a) and Balanskat et al. (2006) say that teachers don't have enough training to use information and communication technology (ICT) effectively in their classes and when planning lessons. According to their claim, this is because training courses put most of their attention on developing ICT skills instead of focusing on how teachers use ICT in the classroom.

- **Limited Time:** Several recent studies indicate that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they lack the time. A significant number of researchers identified time limitations and the difficulty in scheduling enough computer time for classes as a barrier to teachers' use of ICT in their teaching (Al- Alwani, 2005; Becta, 2004; Beggs, 2000; Schoepp, 2005; Sicilia, 2005). According to Sicilia (2005), the most common challenge reported by all the teachers was the lack of time they had to plan technology lessons, explore the different Internet sites, or look at various aspects of educational software. Becta's study (2004) found that the problem of lack of time



exists for teachers in many aspects of their work as it affects their ability to complete tasks, with some of the participant teachers specifically stating which aspects of ICT require more time. These include the time needed to locate Internet advice, prepare lessons, explore and practise using the technology, deal with technical problems, and receive adequate training.

- **Lack of Teachers** The word "competency" refers to a person's ability or ability to do something. The ability of teachers to use information and communication technology (ICT) in their teaching is also a problem (Becta, 2004). This problem is closely linked to teacher trust. In a study done by Newhouse (2002) in Australia, it was found that a lot of teachers didn't know much about computers or how to use them well. They also didn't seem excited about how technology was changing their jobs and how they needed to change with it. Recent studies have shown that the size of this problem varies from one country to the next.

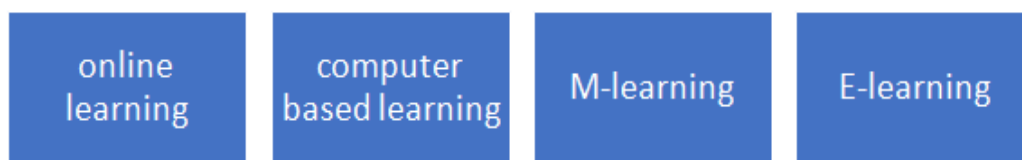
Research done in poor countries (Pelgrum, 2001; Al-Otawi, 2002) has shown that teachers' lack of technological skills is a big reason why they don't use information and communication technology (ICT) (Pelgrum, 2001; Al-Otawi, 2002). The main problem in Syria is that teachers don't know enough about how to use technology (Albirini, 2006). Studies (AlAlwani, 2005; Almohaissin, 2006) have shown that Saudi Arabia has a big problem with information and communication technology (ICT) skills, which makes it hard to integrate technology into science education. In 2006, Empirica did a study on how information and communication technology (ICT) was used in European schools. The Head Teachers and Classroom Teachers Survey, which was done in 27 European countries, provided the data that was used in the report. The data show that teachers who don't use computers in their lessons say that they don't have enough skills to use information and communication technology (ICT) in the classroom. In a study done by Pelgrum (2001), a global poll was done in 26 countries, and samples of schools from each country were used. The results showed that teachers' lack of understanding and skills is a big problem when it comes to using information and communication technology (ICT) in primary and secondary school settings. According to the results of a study by Balanskat et al. (2006), a lot of teachers in Denmark don't use information and communication technology (ICT) and media in their teaching practises because they don't have enough ICT skills, not because they don't think it's a good way to teach. In the Netherlands, on the other hand, the study found that teachers' lack of ICT understanding and skills is no longer seen as the main reason why ICT isn't used in schools (Balanskat et al., 2006, p. 50). So, teachers who don't know how to use technology could be a big problem when it comes to integrating technology into education. It could be seen as one of the things that contribute to a person's unwillingness to change.

#### IV. DIFFERENT E-LEARNING TOOLS FOR DIFFERENT VISUAL NEEDS

When selecting e-learning tools for visually impaired students in educational settings, it is crucial to evaluate the characteristics, functionalities, and nature of the available technological tools. Additionally, it is essential to consider the unique requirements of the potential users, which are directly linked to their visual impairments. In order to achieve this

objective, the succeeding section presents a comprehensive overview and a fundamental categorization of the primary instruments employed in the domain of e-learning. Following this, a brief examination is conducted on the distinct requirements of visually impaired students across several categories, as well as the primary challenges they may confront. What is the precise definition of the term "E-Learning Tools"?

According to Anohina (2005), the term "e-learning" refers to a form of education that occurs through the utilisation of electronic mediums. From a global standpoint, the term "technology-enhanced learning" encompasses educational practises that utilise electronic media and applications. These include web-based teaching materials, hypermedia, multimedia CDROMs, websites, discussion boards, collaborative software, email, blogs, wikis, computer aided assessment, educational animation, simulations, games, and learning management software. According to the online encyclopaedia, Wikipedia,



**Figure 2:** E-Learning Tools for Different Visual Needs

Online learning refers to educational materials that are accessible over interconnected computer networks. These resources include both synchronous and asynchronous communication methods, and are utilised within an educational context.

II) "Computer-based learning" refers to educational resources that are stored on the user's personal computer and can be accessed even when the machine is not connected to a network.

III) The concept of "M-learning" refers to educational tools that are accessible through mobile devices, such palmtops, Personal Digital Assistants (PDAs), tablet PCs, and mobile or smart phones. These tools can also utilise wireless transmission to connect to the internet [Hoppe et al, 2003].

The notion of a "e-learning tool" is associated with both the hardware devices utilised and the software applications applied to facilitate the educational process. These software programmes can be broadly categorised into:

E-learning platforms refer to online environments designed specifically for the distribution of comprehensive electronic educational content and the facilitation of various educational activities with the purpose of achieving specified educational goals.

(Lin and Kuo, 2005) The collective term for the digital content accessible through various platforms is sometimes referred to as "learning objects."

1. Web-based applications refer to applications that are accessible through a web browser without the requirement for installation on the user's personal computer. These

applications can be built specifically for educational purposes and are utilised to achieve educational objectives.

2. Standalone applications refer to products, categorised as both "educational" and "used for education," that cannot be accessed directly through a web browser. Instead, these products require local installation on the user's machine. This category also encompasses products that are downloadable from the internet but still necessitate installation on the user's computer.

### The Utilisation of E-Learning Tools to Address the Educational Requirements of Visually Impaired Students

The subsequent section presents instances of accessibility and usability issues that can be encountered in various software application categories. It excludes any potential problems associated with the default computer settings and other specialised hardware devices, for the time being. When contemplating these challenges, it is crucial to acknowledge that they are intrinsically linked to the specific nature of the user's handicap. Blind and visually impaired students face various challenges when it comes to accessing educational content. Specifically, blind students heavily rely on screen readers to access information. On the other hand, low vision students have the advantage of using optical aids and customised settings, which enable them to access a broader range of software applications, including those with graphical interfaces. Dini et al. (2006) have observed that the diverse range of visual impairments among low vision pupils leads to notable variations in their individual demands.

E-learning platforms and the requirements of visually impaired students: illustrative instances. E-learning systems frequently present many challenges for visually impaired students, including issues such as small font sizes, congested layouts, pop-up windows, icon-based menus, and intricate form completion requirements. The provision of suitable customization choices may serve as a means to mitigate such issues. Blind persons are unable to utilise this platform due to its exclusive reliance on visual presentation, without any screen reading functionality. Contrarily, this platform offers several features that facilitate customisation, hence potentially benefiting more groups of visually impaired pupils.

## V. CONCLUSION

This study primarily focuses on the identification of perceptions on the implementation of information and communication technology (ICT) tools in classroom instruction among school instructors. Additionally, this study explores the difficulties associated with the utilisation of information and communication technology (ICT) tools in educational settings, specifically within the context of classroom instruction. Moreover, it acknowledges the efficacy of ICT tools in facilitating and enhancing teaching and learning activities within the classroom environment. The study's findings suggest that school teachers have an average level of perception when it comes to implementing ICT tools in the classroom for teaching and learning purposes. Additionally, they face significant challenges in using these tools effectively. However, they do recognise the extent to which ICT tools can support teaching and learning in the classroom. Despite the ongoing endeavours to incorporate

information and communication technology (ICT) in educational institutions, a significant number of households, particularly those residing in rural regions, continue to lack proficiency in utilising ICT tools as part of their routine activities. Parents were unaware of the procedures for accessing their children's academic records inside the current systems. Not all residential dwellings possess computer systems and access to internet services for regular utilisation. The primary obstacle in this context pertains to the efficient provision of suitable information and communication technology (ICT) tools to both urban and rural regions. This study will provide valuable insights to school administrators and educational policy makers regarding the impact of ICT on the teaching and learning process.

In future research, it is imperative to prioritise the examination of management methods and policies aimed at mitigating the obstacles encountered by educators while utilising information and communication technology (ICT) instruments in instructional practises. Overcoming the difficulties encountered by instructors represents a significant advancement towards improving the academic achievements of our children. Research conducted with an equal distribution of genders can provide a more suitable basis for analysing gender perceptions.

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