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RESEARCH PAPER

21st Century Era and Usage of ICT in Secondary Schools in Sialkot: Analysis of Prospective Teachers' Perspectives

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ABSTRACT

The study aimed to examine the 21st century skills and the use of ICT resources among prospective teachers, assess the significance of these skills and ICT for prospective teachers, and recognize how they integrate both aspects into their teaching. Research shows that the incorporation of computer technology and 21st-century skills has been a topic of discussion over an extended period, yet there is a lack of substantial information. Qualitative research was conducted using purposive sampling. Data was collected from 15 participants through semi-structured interviews and analyzed using thematic analysis. Findings indicated a significant variation in the use of ICT and 21st-century skills across educational institutions. While some institutions fully integrated these tools, others utilized them to a lesser extent. The research concluded that incorporating ICT and these skills increased student engagement and participation in the classroom, emphasizing the need for school administrations to guide the effective pedagogical use of digital tools.

| **KEYWORDS** | 21st Century, Information Communication Technology, Prospective Teachers |

Introduction

The field of education is experiencing significant change in a time characterized by swift technological progress and evolving societal expectations. Various educational institutions in today's world utilize ICTs and 21st-century skills to equip students with knowledge and competence. Employing ICTs as an instructional resource offers numerous benefits. ICTs along with 21st-century skills, facilitate students in finding reliable information and assist them in visualizing conceptual concepts. Information and Communication Technologies (ICTs), along with 21st-century skills, facilitate students in finding reliable information and assist them in visualizing conceptual concepts. Information and Communication Technologies (ICTs), along with 21st-century skills, facilitate students in finding reliable information and assist them in visualizing conceptual concepts (Qing, 2007).

ICT is defined by Ion and Andreea (2008) as computers, laptops, mobile devices, networks, software, and other devices for data processing and transmission. ICTs are seen as a means of bringing about changes in teaching methods, learner access, and learning techniques (Watson, 2005). Skills for the 21st century encompass a range of competencies that learners must acquire to thrive in the information era. These skills involve critical thinking, problem-solving, effective communication, teamwork, creativity, and proficiency in digital literacy (Trilling & Fadel, 2009).

The concept of "technology" in the 21st century is an important topic across various domains, particularly in education. This is because technological advancements have become the main avenue for information development in many nations. Today, the use of technology has advanced significantly, transforming our societal structures and fundamentally changing how individuals think, work, and live. Consequently, educational institutions should equip students to thrive in an "information society" by incorporating ICT support into their curricula (Ghavifekr & Sufean, 2010; Muzaffar & Javaid, 2018).

According to Olakulehin (2007), ICTs quickly take on the role of fundamental building blocks in modern society. ICTs have an impact on the educational area, and this impact on teaching and learning is undeniable (Yusuf, 2005). According to Sanchez and Aleman (2011), learners become more receptive to the implications of using ICTs. When they access, select, arrange, and interpret data, they create new information. Students are more capable of evaluating the online course materials using ICTs. ICTs and 21st-century skills help students develop fresh ideas in various subject areas. With ICTs and 21st-century skills, students can collaborate, share knowledge, and communicate at any time or place (Mustafa, 2005).

Martinovic and Zhang (2012) conducted a study to find out how pre-service teachers felt about the availability and use of ICT. It was discovered that prospective instructors only partially utilized ICTs in classrooms and that pre-service teachers lacked adequate confidence with their use. ICT integration for lifelong learning was highlighted in the 2009 Pakistan report. Education Policy and the 2009 National Professional Standards for Teachers. Considering this, the researchers designed a study to ascertain how ICTs are used in Sialkot, Pakistani schools fulfill the demands of the 21st century, and individuals must go beyond the basic issues. Individuals should learn to utilize their knowledge and abilities by engaging in critical thinking, applying their insights to current circumstances, evaluating information, creating innovative concepts, communicating efficiently, working together, addressing challenges, and making well-informed choices. These abilities ensure both adaptability and stability in an era of continuous change. (Davies S. and Pittard V. 2009).

According to Peeraer and Van Petegem (2011), educators mostly substituted conventional teaching techniques with minimal integration of ICTs in their instruction. According to Alazam, Bakar, Hamzah, and Asmiran (2013) most educators exhibited a moderate degree of ICT usage, and their skills related to 21st-century technology were similarly moderate. Despite their limited integration of ICTs into their educational practices, teachers expressed positive views regarding their use. Studies show that in Pakistan, several challenges are associated with using information and communication technology and 21st-century skills in educational settings, such as insufficient electricity, limited human resources, a lack of infrastructure development, and high expenses (Al-Zaidiyeen, Mei, & Fook, 2010).

Studies show that discussions regarding Information Communication Technology and the 21st century skills have been ongoing for an extended time, yet there has been a lack of substantial information. This research aims to investigate the application of 21st century skills in information and communication technology and seeks to address the existing gap in literature. Studies show that in Pakistan, several challenges are associated with using information and communication technology and 21st-century skills in educational settings, such as insufficient electricity, limited human resources, a lack of infrastructure development, and high expenses (Al-Zaidiyeen, Mei, & Fook, 2010).

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Literature Review

The research was conducted on the 21st-century influence of computer technology (ICT) on education. This research has been conducted in Indonesia. This investigation analyses and evaluates the outcomes of actual studies on computer technology (ICT), the worth of ICT, and the most appropriate methods to employ Technology in learning. The period of research is from the year 2018. This research use literature as primary data source. As stated in the analysis, ICT is an instrument that produces, archives, manages, and transfers information. ICT encompasses novel and fascinating methods of supporting perpetual learning with international availability of expertise, instruction, and assistance (Supiandi, 2018).

The study conducted on learning in the 21st century is not simply about ICT. The aim of this paper is to emphasize the reality that 21st century is not constrained by technology solely. The period of research is from the year 2019. The investigation had used a qualitative research methodology. Indirect interviews were used for collecting data. This investigation clearly illustrates that 21st is not an unusual idea in the discipline of learning, as a significant number of instructors, parents, pupils, and other members of the general population are conscious of its execution; However, some continue uninformed of it wholly. They think that the application of Technology in education and instruction has relevance to 21st century (Yusof, 2019).

This study was conducted on application of ICT resources by prospective teachers. This research has been conducted in Sialkot. The investigation primary objective was to figure out how future educators use IT tools, the role that Technology serves in their lives, and the way they integrate technological advances. The period of research is from the year 2025. A qualitative research methodology had been employed in the study. Purposive sampling methods have been utilized for the investigation. The future educators were the research's participant. Semi-structured interviews were employed for collecting data from seven respondents. Theme analysis was used to examine the data. The investigation concluded that there were variations between the ways Technology was implemented in classrooms. It had been used by a large number of official institutions and to a smaller extent by another important group (Yasmeen, Yasmeen, & Akbar, 2025).

This study was conducted on holistic overview of the content on techno-pedagogical abilities for 21st century electronic learning environments. This research has been conducted in Sukkur. While there are multiple pros to implementing innovations in school settings, the study additionally showed that there are still difficulties connected to its application. The appropriate literature for this study was compiled from trustworthy educational databases. The period of research is from the year 2021. The data was gathered from online platform. This investigation comprises research papers which are combined, quantitative, and qualitative. Conclusions indicate that both science instructors and instructors of art who utilize technology in their classrooms are not substantially different in their techno-pedagogical competence (Aftab & Sherwani, 2021).

The research was conducted on the significance of computer technology in secondary school in the modern era. Many uses for digital technology (ICTs) for instructional purposes have been stated; include improving academic results, promoting the fundamental principle of instruction and education, and providing learners and citizens needed in a society characterized by information. This research is conducted in Nigeria. This research was conducted in 2013. Based to the investigation, the main purpose of Technology is to supply alternative approaches that can be adopted in dealing with the significant educational hurdles that historical educators and pupils suffer in the twenty-first century. Therefore, the study draws an agreement that successful utilization of computer technologies may affect and shift conventional approaches to historical directions, assuring excellent education (Adesote & Fatoki, 2013).

The research was conducted the influence of the COVID-19 epidemic on the adoption of digital learning in both public and private educational institutions. This investigation's key aim was to figure out how digital education affected the academic growth of pupils in context of pandemic-related digital learning practices, alterations to teaching strategies, abilities and qualifications, and the efficacy of learning. This research was conducted in Punjab. This research was conducted in 2022. Researcher use quantitative research methodology. For analysis SPSS were used. Conclusions validate the concept that digital learning may represent an advantageous instrument to strengthen instructor efficiency and pupil retention in classrooms (Akbar, Khan, & Farooq, 2022).

This research was conducted on assessing of ICT equipment and possibilities for academy-level the teaching process and instruction. This investigation's key aim was to figure out how Technology might be incorporated into methods of instruction. The goal of this research was to measure technology's possibilities for university-level education and instruction. This research was conducted in 2023. Researcher use quantitative research methodology. The research's significant findings were that each teacher had a personal computer and frequently utilizes it. The integration of Digital technologies is viewed constructively by university professors. Educators, who were proficient in using digital media, felt that Digital technologies did not have an enormous effect on learning and instruction because of the portable instability (Abbas et al., 2023).

Material and Methods

In examining earlier research, it was determined that a qualitative data collection approach would be most suitable for fulfilling the aims and objectives of this study. The researcher chose a qualitative research design for the study, considering both its characteristics and the intended purpose of the research. The participants in the study were prospective teachers. This refers to individuals who are currently enrolled in a teacher education program. The targeted group consists of prospective teachers from secondary schools located in the Sialkot district. The choice of the Sialkot region as the area of focus is based on convenience and the accessibility it provides for the researcher. The procedure for collecting data required around fifteen to twenty minutes. A consent form was provided to each participant before the interview, serving as proof that they had granted permission to the researchers to conduct the interview.

Results and Discussion

A notable portion of educational institutions either do not use ICT or only apply it minimally, while others have fully embraced it. Although most schools have adopted

21st-century skills and some levels of ICT, computer labs are not frequently utilized. Only a small number of future educators consistently employ tools such as projectors and mobile phones in their classrooms, usually favoring user-friendly devices like laptops and touchscreens. Nevertheless, the absence of essential resources and limited access to computer labs hinder effective ICT implementation, but teachers try to adopt 21st-century skills. At the secondary education level, the integration of ICT is considered vital for improving teaching and learning, fostering 21st-century competencies, and enhancing students' logical thinking skills.

The research was conducted on the topic entitled "21st Century Era and Usage of ICT in Secondary Schools in Sialkot, Analysis of Prospective Teachers' Perspectives". The objective of the study was to explore the use of 21st-century skills and ICT resources by prospective teachers, investigate the role of 21st-century skills and ICT by prospective teachers, and identify the integration of 21st-century skills and ICT by prospective teachers.

A recent research project examined the application of 21st-century skills information and communication technology (ICT) in educational institutions. The results indicated that although most schools utilize 21st-century skills and ICT to a certain degree, nearly half of them use it very little or not at all. A recent study involving future educators found that some individuals utilize 21st-century skills and ICT tools like projectors and mobile devices daily, while others only engage with them weekly or every other week. A recent analysis has brought to light the difficulties teachers face when trying to incorporate ICT into their lessons. These obstacles include a lack of resources, insufficient knowledge of ICT, and utilizing 21st-century skills and ICT primarily for classroom management purposes.

Conclusion

The researchers have drawn conclusions based on the analysis and interpretation of the data gathered from the respondents. The study was designed to be qualitative, with a focus on interviews. A study explored the utilization of Information Communication among individuals who aspire to become teachers. This study's main emphasis was on prospective teachers. The study also aimed to identify the difficulties encountered by these prospective teachers when incorporating 21st-century skills and ICT tools into their classroom practices. The study investigated the role of 21st-century skills and ICT by prospective teachers. Different sources can provide teachers with knowledge, but the most effective way for them to access teaching and learning materials and expand their pedagogical knowledge is by using ICTs. They expected that the usage of ICTs in teaching and learning would be more frequent and suitable.

ICT and 21st-century skills have significantly transformed the methods of teaching and learning. These technologies are causing significant changes in the strategies used for teaching and how students acquire, creating a conducive learning environment that can facilitate active, collaborative, creative, integrative, and evaluative learning among students. Teachers were able to make their classes more interactive and engaging by utilizing ICTs. With the help of 21st-century skills and ICTs, students became more involved in classroom activities, and their participation in various classwork has increased. New approaches to teaching should be explored, but the use of ICT alone cannot enhance classroom learning. Therefore, the government and school administration should provide training on how to incorporate ICT in teaching effectively.

Recommendations

Suitable suggestions are provided for policy and additional research aspects concerning the implications of pedagogy based on the results. The school should have an adequate supply of materials, including ICT tools and resources. The government should provide training to enhance 21st-century skills and sufficient equipment for the schools. The government should provide proper training to teachers regarding the use of ICT academically. The current research is qualitative, but future research will be either quantitative or mixed methods in design. The present study was limited by the sample size, population size, and data collection techniques.

References

Abbas, S. G., Ehsan, M., Akbar, G., Shah, F. A., Nasir, A. U. H., & Sian, Z. H. (2023). Assessment of ICT assets and potential for instruction and learning at university level: A case study of International Islamic University. *Journal of Positive School Psychology, 7*(2), 111–124.

Adesote, S. A., & Fatoki, O. R. (2013). Classroom instruction in history in the twenty-first century and its relevance of ICT. *Educational Research and Reviews, 8*(21), 2155.

Aftab, K., & Sherwani, F. (2021). Techno-pedagogical skills for 21st century digital classrooms: An extensive literature review. *Education Research International, 2021*, 1–12.

Akbar, G., Khan, T., & Farooq, U. (2022). Mainstreaming of e-learning in both public and private schools: Impact of COVID-19 pandemic. *Journal of Development and Social Sciences, 6*(3-IV), 268–276

Al-Zaidiyeen, N. J., Mei, L. L., & Fook, F. S. (2010). Jordanian schools' opinions on and deployment of modern technology in the educational setting. *International Education Studies, 3*(2), 211–218.

Davies, S., & Pittard, V. (2009). *Harnessing technology review 2009: The role of technology in learning and abilities.* British Educational Communications and Technology Agency (BECTA).

Ghavifekr, S., & Sufean, H. (2010). Administration as futuristic strategy for dealing with systemic transformation: A case of Malaysian open distance learning organization. *International Journal of Sustainable Development, 1*(4), 79–85.

Mustafa, K. O. Ç. (2005). Integrating Technology in Pre-Service Training Through the Lens of Learning Theories. *Journal of Turkish Science Education*, *2*(1), 2–18.

Muzaffar, M. & Javaid, M. A. (2018). Curriculum and Political Socialization: a Case Study of Secondary Schools in Pakistan**,** *Journal of Political Science and International Relations, 4*(2), 21-31

Qing, L. (2007). Digital perspectives between pupils and educators stories of two cities? *Journal of Research on Technology in Education,* 39(4), 377-397.

Shabbir, N., Ijaz, R., & Akbar, G. (2025). Exploring teachers' perspectives on usage of ScratchJR on creativity of students in Grade 4. *Pakistan Social Science Review, 9*(3), 320.

Supiandi, M. I. (2018). The modern-day influence of computer technology (ICT) on education. *International Journal of Academic Research and Development, 3*(2), 869-875.

Trilling, B., & Fadel, C. (2009). Contemporary talents: competencies for today's generation. *Jossey-Bass.* 1(4) 251-256.

Watson, D. M. (2005). The method of teaching before equipment: Reassessing how Technology and pedagogy connect. *Education and Information Technologies,* 6(4), 251-266.

Yasmeen, S., Yasmeen, M., & Akbar, G. (2025). A qualitative analysis of how future educators use ICT resources. *Journal of Development and Social Sciences, 6*(3), 268–276.

Yusuf, M. O. (2005). Learning and the Application of Information Technologies: Evaluating the Nigerian National Technology Agenda. *International Education Journal, 6*(3), 316–321.