Journal of Social & Organizational Matters

Vol 3 No 1 (2024): 239-258

Usage of ICT and its impacts on Teachers Teaching Performance in Classroom at Secondary School Level in Model Colony Malir, Karachi

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Keywords: *ICT, Teaching Performance, Secondary Schools, Karachi, Teacher Training*

DOI No:
https://doi.org/10.56976/jsom.v4i1.314

This study investigates the impact of Information and Communication Technology (ICT) on teachers' classroom performance at secondary schools in Model Colony, Karachi. The primary objective was to explore how ICT usage influences teaching effectiveness. Key factors such as teachers' awareness, access to resources, and professional development were examined. A quantitative research design was employed, with a purposive sampling technique to select 141 secondary school teachers. Data was collected using a structured questionnaire, which was analyzed through SPSS. Descriptive statistics, including frequency, percentage, and mean distribution, were used to interpret the results. Findings revealed that ICT tools significantly enhance teaching practices, with a majority of teachers expressing positive views about ICT's role in improving performance. However, challenges such as inadequate training and access to resources were noted. Based on these findings, it is recommended that continuous training programs be implemented and ICT resources be made more accessible to teachers. This would facilitate the effective integration of ICT in the classroom, ultimately improving educational outcomes.

1. Introduction

Technology fluency has become increasingly important in education around the world in recent years (Ahmad et al., 2024; Pittman k, 2004). Innovations and advances in education have become more frequent in the last 50 years. If you think back 20 years ago, computers were not even secure in the classroom, let alone at home (Kolachi et al., 2024). Having a computer in every home and every school ensures that students are aware of innovations and broadens their perspective on the world economy (Ahmad et al., 2024). Nowadays, students use mobile phones that can do almost everything they need, such as getting organized financial statements, downloading information from the internet, watching television and movies! Imagine our daily lives without computers to guide us. Lack of ICT skills and human capital has been identified as one of the main barriers to the success, management or use of ICT (Adam & Urquhart, 2007) Students' knowledge of the basic level of connectivity between ICT and educational models (Khoso et al., 2024; Sultana & Imran, 2024; Ahmad et al., 2023). Study at a school that is particularly successful in integrating ICT into the curriculum.

The advantage of involving teachers in the research design is that it makes it easier to recall specific educational situations; this is useful for understanding the teaching of children at this age (Goodson, 2002). While most teachers focus on developing ICT technology skills, ICT courses focus on the wider use of ICT in learning and teaching. The potential value of the school ICT curriculum is to “translate” the national curriculum on ICT into ICT plans as part of the whole school policy (Tondeur et al., 2006). Despite the efforts made for information and communication technology (ICT) as the principle of teaching in schools and education, the fact remains that many school students and teachers use only computer technology (Selwyn, 2006). Decision shows how new technologies are changing teaching, learning and collaboration between colleagues (Akram et al., 2024). Changes in roles due to the potential of ICT raise questions about the importance of ICT processes in teacher education (Yazidi & Rana, 2024; Feng et al., 2023). Many newly qualified teachers wish they had more knowledge about ICT and other technologies (Andersson, 2006). The relationship between changes in ICT capital and changes in local education policy (LEA) education (Huang et al., 2025; Doan & Huynh, 2024; Hsu et al., 2024). Contrary to most previous studies in the knowledge industry, evidence shows that ICT investment has a positive impact on primary education. This provides an interesting comparison with existing studies that show no benefit to students and business studies that prove that ICT investment can improve business efficiency (Machin et al., 2007).

PowerPoint and other visual aids may continue to be used in schools. Although research into their use is new, adoption of these technologies is considered essential, or at least educationally necessary (Reedy, 2008). Teachers using computer-mediated communication (CMC) can only succeed when the link between CMC competencies and teacher practice becomes clearer. Although language teachers appear to be beginning to use CMC, there is no evidence that these teachers possess new technology-related skills (Kayani et al., 2023; Khan et al., 2021; Naseer et al., 2021; Khan & Khan, 2020). The challenge for teachers is to use CMC not only for support but also for learning. However, computer connectivity poses serious

challenges in terms of teaching and learning (Braak, 2000). We provide students with rich content and creative activities in a dynamic learning environment. Many teachers use a variety of active learning environments in their classrooms (Saher et al., 2021; Hewawitharana et al., 2020; Masih et al., 2020). If teachers create a strong learning environment for students and provide more computers, it is expected that there will be more opportunities to use open ICT applications and the learning environment will be enhanced. Teachers must also develop skills in using ICT to create a positive learning environment (Smeets, 2004).

Jordan's Ministry of Education emphasized the importance of social and vocational skills when launching computer literacy and literacy programs (Zhang et al., 2023; Rana et al., 2022; Rana et al., 2021; Rana, 2015). The school principal can solve problems related to hardware and software, supervision and teacher training through centralized and direct control of schools (Tawalbeh, 2001). Today's education supplements the classroom, meets the physically disabled needs of students, and the rural isolation of technical education gives them greater access and critique (Khan et al., 2024; Kousar et al., 2024; Khan et al., 2022). Thanks to the Internet, students and teachers are connected to the whole world. Although advances have been associated with basic programs, computers have opened up opportunities to streamline teaching and develop much-needed critical thinking skills (Nisar et al., 2024; Basharat et al., 2023; Naz et al., 2020). Science and technology literature has repeatedly demonstrated the relationship between business and academic progress (Malik et al., 2024; Zaheer et al., 2021). The rise and success of online courses in all aspects of preparation is just one more recent example of the importance of student and teacher development.

The advancement of education online for more and more students is constantly testing teachers, not only to “revolutionarily” update new classes, but to improve students’ knowledge of knowledge, taking into account all other Curriculums (Ahmed et al., 2024; Shah, et al., 2024). PC has the best ability to deliver activities in a blended environment and provide a pathway for students/teachers and exchange; which improves online orientation, but only focuses on the big problem of how to keep the movement going (Rasheed et al., 2024; Shahzadi et al., 2025; Naz et al., 2022). It is very important in the new century. Nowadays, teachers can use new technologies in their teaching (Khan & Haq, 2025; Haq & Khan, 2024). The Internet is a major development that offers students new avenues of research, allows teachers to experiment with different subjects, and provides the basis for open access to endless information (Hsu et al., 2024; Huang et al., 2025; Thu et al., 2024). Additionally, email can connect teachers and students around the world in seconds, so they can complete their studies with different teachers and students around the world. Similarly, Instinct the Whiteboard allows students to interact with screens and enjoy collaboration with teachers. In the field of education, the benefits of development continue to grow as college districts and even public-school districts implement their plans (Janjua et al., 2025; Faisal et al., 2024). If teachers are aware of the importance of planning improvement in their activities and achieve complete improvement in their environment, they will know how to use advanced technology; then students' learning and motivation will improve.

As KleynKennedy (2006) puts it, even if the controllers were not involved in the execution, they knew computers were getting started, and of course they devoted themselves to the ability to achieve satisfactory improvement (Akhtar & Kayani, 2024; Akhtar et al., 2020; Anwar et al., 2019). Unless we make it possible to overcome all the obstacles to students' new ways of living their lives and looking at them, current guidance models face duplication problems. To improve, they must have access to the educational process (Shah et al., 2024; Haq et al., 2024; Noor et al., 2024). Problem Statement Teachers need to know if they have the power to understand how to use advanced technologies such as white papers, email, the Internet, and tools to help students. Teachers need to be able to improve classroom performance and track positive trends such as increased test scores and student motivation (Ahmad et al., 2024). Some coaches are afraid of change, so it's still difficult for them to get promoted. However, the techniques presented in this research paper are simple and can bring many benefits to students in the classroom. Teachers don't need to worry about integrating design tools into their classrooms as long as they have general knowledge about planning and scheduling, input from different teachers who use the tool, teaching, and collaboration.

1.1 Research Objective

This study intended to achieve the following objective:

- To find out impact of use of ICT on teachers teaching performance

1.2 Research question

Does usage of ICT have an Impact on teacher teaching performance?

2. Literature Review

2.1 Student – Centered Technology in the Classroom

Over the years, advancements have occurred in education, business, and everyday life (Andrews, 2003). More and more people are using email instead of composing messages and sending them by post. E-cards are usually sent for birthday celebrations and other special occasions other than writing. Moreover, 10 years ago, many universities, educational circles, professional circles, and working circles made more progress in the computer and network fields, but the road to development was arduous and schools were built according to national plans. I wanted it. Van Kraayenoord (2002), many schools in the country use technology to enhance student learning with technologies such as web access, camera log photos, e-mail. Most teachers have a basic understanding of how they use programming; for example, the word Ms, used on all school computers. Many teachers have helped their students use the Internet and other new resources and advanced technology to create new information technology to complete their research projects and projects (Yazidi & Rana, 2024; Feng et al., 2023). Additionally, question- based content is not a support tool that advisors and students use every day in the classroom. Learning tools are more accessible to instructors and students than ever before (Danish et al., 2025; Mankash et al., 2025; Hafeez et al., 2019). The requirements are as follows: Are there any changes to the production process? However, there has been no progress in implementing

various educational programs in schools across the country, and the cost of school improvement is high, so we plan to consider including these requirements in schools.

2.2 Student Learn with Technology

All students use high-quality applications to simulate real-world situations and create realistic situations for exams so students can perform real-world tasks like professionals. They can recognize and explore new situations, meet different people from different walks of life, and use technology to gather information and take action. This is a problem (Means et al., 2019 p. 43). These experiences often lead to student growth. Some studies of students and at-risk students participating in mentoring programs have shown changes in grades, GPA, and cooperation. Growth creates and changes classroom activities, especially because it gives students more freedom. Students generally use private tutoring to help, and teachers do more than teachers (Means, 1997). Computer adventure games allow students to create their own games as they wish. These students do not receive course credit. The Apple Classroom of the Whole (ACOT) study, initiated by Sandholz et al. (1997), demonstrated changes in teacher- student communication over a 10-year period. The teacher conducts the observation as a facilitator or coach, not as a teacher. The main changes observed in these trials were that teachers began to participate and work in administration and that schools were specifically designed to accommodate expanded classes for administrators and teachers. Teachers and students began working to demonstrate the benefits of development through activities and encourage different types of collaboration. Classes are a mix of general education and current education. When teachers change the physical structure of their classrooms, schedules are adjusted to accommodate more time for students (Sandholz et al., 2008). Motivation and accountability are sometimes thought to play an important role in the use of technology to facilitate learning (Andrews, 2003). The general consensus is that when students use computers, they are concerned not only with productivity but also with content discovery. They have little idea of when they encounter, analyze, interpret, and retrieve information. Why is this so attractive? Nowadays, creative products have become a part of our daily lives. The use of new technologies in teaching and learning therefore focuses directly on the realities of students. Van Kraajenoord (2002) argues that students with learning disabilities will quickly become isolated if classroom learning is not connected to their lives and if classroom learning is not embedded based on good grades and student inquiry (Ahmad et al., 2025; Akram et al., 2024). and what it means to them" (p. 398). Becker (2000) found that technology, particularly personal computers and Internet access, had increasingly transformed students' daily activities and that early and frequent use of personal computers was beneficial. Students can use the computer as a learning tool like a pen or pencil rather than an inappropriate gift (Masih et al., 2022; Masih et al., 2021). This article is the official source for the best and latest development tools released today. The important thing is to go one step further, and the tool will be "better than anyone expected."

2.3 Use of Technological Tools to Support Reading Skill Development

Many researchers have published work to review the adequacy of e-books as specific examples of new tools to guide adequacy analysis. When using e-books, students should not be

able to study carefully to access the content. While the content of the topic is arranged from left to right, the narrator reads and develops understanding throughout the work. Reading lessons for diverse students often require careful analysis due to longer lessons and more detailed content. Rusch, Conley, and McCaughrin (1993) argued that e-books, like adults' printed books, can improve students' ability to understand printed books. E-books for children have changed the quality of reading. It is also necessary to investigate how students come together with the help of computers; The integration of integrated computers into the classroom needs further evaluation. Many checks on the adequacy of e-books are removed from the classroom (e.g. in monitoring centres) or the impact of the wider content on student understanding is not taken into account. VanKraayenoord (2002), talks about the huge space found by many scientists working there. There is a short article on "standard" classroom teachers using creative means to support censorship in "normal" situations. There is no equipment for students with special needs in standard classrooms.

2.4 Use of Technological Tools to Support Writing Skill Development

Dorman (1999) and Jaber (1997) state that although e-book searches have increased the computer industry and information and communication technology (ICT) studies have pioneered studies on the analysis of results that yield positive results. They describe the incredible array of tools required to enable students to access complex systems from being junior users of diagnostic groups to honest developers of writing. For example, according to Dorman (1999) a simple, intuitive media production package is introduced (Malik et al., 2025; Zaheer et al., 2021). The use of language processing means that students who are considered "at risk" of not graduating can be included in all extracurricular activities and can-do Volunteer writing that they would not normally be able to do. Incorporating writing review and grammar into PC programming are useful tools for students. In terms of assignments and assessments, students and teachers can focus on skills rather than academic ability when using this new technology. Although this is a threat, it follows the wisdom of "learning by writing" rather than "the curiosity of writing." According to Dorman (1999), "Teachers who use Microsoft Word essentially encourage the tedious task of typing back and forth, making it a boring way to teach children" (p. 25). Teachers should use these tools to help students complete the task, not the task itself. Again, projects must consciously engage students and respect their uniqueness.

2.5 Teacher Education

From now on, after identifying the direction goals and further insights to be gained from the innovation organization, it will be important to ensure satisfactory performance if teachers help them choose the most suitable innovations and show the way to achieve their main goals. Students cannot expect to benefit from the new organization and teachers cannot use it because it is not good for them or they do not agree with its use. Wenglinsky quotes Crowl (1993), who found that teachers have needed to improve their computer skills over the last five years and have long refused to do better than those who are not interested in Development in order to be successful. Fulton Yoon & lee 2005 cited in Honey, 2005, however, noted that teacher preparation often focuses on helping new teachers, but employees in engineering organizations

survive by being spent on many things for the first time without allowing them to prepare to enjoy these benefits (Ahmad et al., 2021; Ali et al., 2020; Ahmad, 2018). One of the instructor's final words in the world of educational production is: "Education is more about the tools than how to use the tools" (Baver et al., 2006, p. 22). Another teacher's testimony enables employees to achieve results in planning and implementing innovations (Baver et al., p. 23). The reality is that it takes longer and longer to integrate and see all the benefits of innovation being introduced into the classroom, and teachers often complain that they are not prepared for the new promotion they are given. (Yang, 2007). Where teachers are not properly trained, new organizations can realize their potential. In some classrooms, much of the new equipment purchased is unused, and teachers dedicated to teaching new and evolving subjects do not have the advanced equipment they need.

3. Methodology

The research utilized a quantitative approach to explore the perspectives of secondary school teachers in Model Colony, Karachi, with a sample size of 141 participants. A criterion sampling technique, also known as purposive sampling, was employed to select respondents based on predefined criteria, ensuring relevance to the study. Data was collected through survey questionnaire. While this approach is cost-effective and time-efficient, it carries the risk of researcher bias and may lead to respondents tailoring their answers due to the open discussion format. A questionnaire was used as the data collection tool, allowing the researcher to gather personal experiences from respondents. The data was subsequently analyzed using SPSS, providing a structured method for evaluating the results. Descriptive statistics, including frequency, percentage, and mean distribution of participants, were employed to analyze the data. A pilot test was conducted prior to data collection, and the results showed that the scale demonstrated reliability, with a Cronbach's Alpha of 0.705.

4. Data Analysis of Study

Following the completion of the screening process, the data that was gathered was entered into SPSS version 22 in order to determine the frequency, percentage, and mean distribution.

4.1 Demographics

The demographic information of the individuals who participated in the research is presented in Table 1, which comprises the various demographics. Among the teachers that participated in this study, the table reveals that just 25% of male and 75% of female instructors did so. Furthermore, a respectable number of teachers (46%) had between two years of experience in teaching, and the majority (45%) qualified for a master's degree.

Table No 1: Demographics

Demographics		Frequency	Percent
Gender	Male	35	25%
	Female	106	75%

	Total	141	100%
Experience	2 years	65	46.1%
	3 years	34	24.1%
	4 years	17	12.1%
	5 years	13	9.2%
	More than 6 years	12	8.5%
	Total	141	100%
Academic Qualification	Bachelor	35	24.8%
	Master	64	45.4%
	B.ED	13	9.2%
	M.ED	18	12.8%
	M. Phil/MS	11	7.8%
	Total	141	100%

4.2 Item Analysis

Table No 2: Teachers are well aware of ICT and they use ICT on regular basis for their performance in classroom teachers is well aware of ICT and they use ICT on regular basis for their performance in classroo.

S. No	Items	Frequency	Percent
1.	Strongly Disagree	1	.7
2.	Disagree	6	4.3
3.	No Opinion	10	7.1
4.	Agree	71	50.4
5.	Strongly Agree	53	37.6
6.	Total	141	100

Table 2 presents educators' perspectives regarding that most of the respondents strongly agreed or agreed that teachers are well aware of ICT and they use ICT on regular basis for their performance in classroom Teachers are well aware of ICT and they use ICT on regular basis for their performance in classroom. While 6respondent disagreed about awareness and usage of ICT.

Table No 3: Teachers actively seek out new ICT tools and technologies to incorporate for better performance

S. No	Items	Frequency	Percent
1.	Strongly Disagree	5	3.5
2.	Disagree	4	2.8
3.	Agree	96	68.1
4.	Strongly Agree	36	25.5
5.	Total	141	100

Table 3 shows teachers' perspectives regarding that most of the respondents strongly agreed or agreed that teachers actively seek out new ICT tools and technologies to incorporate for better performance. Only 5 disagreed with teacher's interest of seeking new ICT tools.

Table No 4: Teachers use ICT tools (smartphones, computers, etc.) throughout the Day

S. No	Items	Frequency	Percent
1.	Disagree	5	3.5
2.	no opinion	14	9.9
3.	Agree	61	43.3
4.	Strongly agree	61	43.3
5.	Total	141	100

Table 4 shows teachers' perspectives regarding that equally number of respondents were strongly agreed or agreed that teacher use ICT tools throughout the day. This table indicates the importance of ICT usage.

Table No 5: Use of ICT in Education requires Continuous Training and Professional Development for Teachers

S. No	Items	Frequency	Percent
1.	No Opinion	16	11.3
2.	Agree	54	38.3
3.	Strongly Agree	71	50.4
4.	Total	141	100

Table 5 reveal answers clearly show that training and professional development for teachers has a significant value for learning process.

Table No 6: ICT has led to Information for Teachers, Making It Easier to Filter Relevant Content

S. No	Items	Frequency	Percent
1.	no opinion	2	1.4
2.	agree	59	41.8
3.	Strongly agree	80	56.7
4.	Total	141	100

Table 6 shows that 80 respondents strongly agree about the role of ICT about the facilitation of easier process of education process. 59 students strongly agree that ICT has led to information for teacher, making it easier to filter relevant content.

Table No 7: ICT has Led to Information for Teachers, Making It Easier to Filter Relevant Content

S. No	Items	Frequency	Percent

1.	disagree	2	1.4
2.	no opinion	4	2.8
3.	agree	60	42.6
4.	Strongly agree	75	53.2
5.	Total	141	100

Table 7 shows that 75 respondents strongly agree about the role of ICT about the facilitation of easier process of education process. 60 students agree that ICT has increased teachers' motivation to learn

Table 8: Teachers are Adequately Effectively Trained to Utilize ICT Tools in The Classroom

S. No	Items	Frequency	Percent
1.	strongly disagree	1	.7
2.	disagree	5	3.5
3.	no opinion	5	3.5
4.	agree	60	42.6
5.	Strongly agree	70	49.6
6.	Total	141	100

Table 8 highlights that 70 respondents strongly agree about the role of ICT about the facilitation of easier process of education process. 60 students agree that ICT has led to information for teacher, making it easier to filter relevant content.

Table No 9: The Availability of ICT Resources Positively Impacts on the Performance Teachers

S. No	Items	Frequency	Percent
1.	Disagree	1	.7
2.	no opinion	12	8.5
3.	agree	63	44.7
4.	Strongly agree	65	46.1
5.	Total	141	100

Table 9 highlights that majority of respondents strongly agree or about impacts of on the performance teachers.

Table No 10: The availability of ICT Resources Positively Impacts on The Performance Teachers

S. No	Items	Frequency	Percent
1.	Disagree	1	.7
2.	no opinion	12	8.5
3.	agree	63	44.7

4.	Strongly agree	65	46.1
5.	Total	141	100

Table 10 highlights that majority of respondents strongly agree or about impacts of on the performance teachers.

Table 11: Teachers have Easy Access to The Necessary ICT Devices and Infrastructure

S. No	Items	Frequency	Percent
1.	strongly disagree	1	.7
2.	disagree	9	6.4
3.	no opinion	39	27.7
4.	agree	62	44.0
5.	Strongly agree	30	21.3
6.	Total	141	100

Table 11 highlights that 30 respondents strongly agree about the role of ICT about the facilitation of easy access of education process. 62 respondents agree about the access of ICT devices.

Table 12: ICT has significantly improved teacher's communication efficiency in the class room

S. No	Items	Frequency	Percent
1.	strongly disagree	1	.7
2.	Disagree	4	2.8
3.	no opinion	35	24.8
4.	Agree	49	34.8
5.	Strongly agree	52	36.9
6.	Total	141	100

Table 12 shows that it is cleared that ICT has played a significant efficiency in the Class room. 52 respondents were strongly agree with the significance of ICT.

Table No 13: ICT has Potential to The Enhance Learning Experiences for Teachers

S. No	Items	Frequency	Percent
1.	Disagree	3	2.1
2.	no opinion	4	2.8
3.	Agree	85	60.3

4.	Strongly agree	49	34.8
5.	Total	141	100

Table 13 reveals that ICT has potential to enhance learning experiences for teachers. 49 respondents were strongly agree with the potential of ICT.85 were agree about the potential of ICT in the classroom.

Table No 14: Teachers are Excited about The Potential Advancements In ICT and Their Impacts on Teachers Performance

S. No	Items	Frequency	Percent
1.	disagree	1	.7
2.	no opinion	7	5.0
3.	agree	53	37.6
4.	Strongly agree	80	56.7
5.	Total	141	100

Table 14 highlights that teachers are excited about the potential advancements in ICT and their impacts on teacher's performance. 80 respondents were strongly agree and 53 were agree about the potential advancement in ICT and its impact on their performance.

Table No 15: Overall a teacher believes that ICT has a positive impact on Society

S. No	Items	Frequency	Percent
1.	no opinion	9	6.4
2.	agree	63	44.7
3.	Strongly agree	69	48.9
4.	Total	141	100

Table 15 described that overall a teacher believes that ICT has a positive impact on Society. 69 respondents were strongly agree and 63 were agree about that overall a teacher believes that ICT has a positive impact on Society.

Table No 16: The introduction of ICT has led to make easier for teachers to deliver their lecture which improve their Performance

S. No	Items	Frequency	Percent
1.	strongly disagree	1	.7
2.	disagree	1	.7
3.	no opinion	12	8.5
4.	agree	83	58.9
5.	Strongly agree	44	31.2

6.	Total	141	100

Table 16 showed that introduction of ICT has led to make easier for teachers to deliver their lecture which improve their Performance. 44 respondents were strongly agree and 83 were agree about that introduction of ICT has led to make easier for teachers to deliver their lecture which improve their Performance.

4.3 Discussion & Conclusion

The article explores the use of Information and Communication Technology (ICT) and its impact on teachers' performance in classrooms at the secondary school level in Model Colony, Malir, Karachi. The research emphasizes the increasing importance of technology in education, especially in enhancing teaching and learning experiences. With rapid advancements in ICT, the integration of these tools into educational settings has become critical, yet challenges remain, particularly in terms of teacher readiness, access to resources, and continuous professional development.

One of the consistent findings in the article is that teachers' awareness and use of ICT significantly impact their teaching performance. According to the study, the majority of respondents agreed or strongly agreed that ICT tools enhance their teaching practices. This is aligned with the work of authors such as Tondeur et al. (2006), who highlighted that ICT use in classrooms allows for more dynamic and collaborative teaching environments. The study also points out that technology offers new ways for teachers to create interactive and engaging learning experiences for students, helping to break away from traditional teaching methods. In this regard, the study supports the notion that ICT fosters a more student-centered learning environment, as students can engage with content in diverse and creative ways (Andrews, 2003; Van Kraayenoord, 2002).

However, there is a noticeable inconsistency between the findings and existing literature when it comes to the adequate training of teachers. While a substantial portion of the survey participants agreed that training and professional development were crucial for effectively integrating ICT into classrooms, a significant number of teachers reported that they were not adequately trained to use these technologies. This is consistent with previous research, such as that by Wenglinsky (2005), which showed that despite the widespread availability of technology in classrooms, many teachers lack the necessary skills to use these tools effectively. The gap between the desire to use technology and the actual capacity to use it efficiently remains a challenge for many educational institutions.

The study also raises concerns about the availability of ICT resources and infrastructure. While most respondents felt that ICT resources positively impacted their performance, some teachers still experienced difficulties accessing the necessary tools. This lack of adequate resources is a recurring issue in many developing countries and aligns with the findings of Tawalbeh (2001), who noted that lack of access to ICT infrastructure hampers the effectiveness of technology integration in classrooms. The discrepancy in access is particularly noticeable

between urban and rural schools, where infrastructure might be more developed in the former but less so in the latter.

Moreover, the study underscores the importance of continuous access to ICT tools and the need for teachers to actively seek out new technologies to improve their performance. The survey revealed that many teachers were proactive in searching for new ICT tools to incorporate into their lessons. This finding reflects the growing recognition of the role that ICT can play in enhancing teaching efficiency, a sentiment echoed by authors like Smeets (2004) and Reedy (2008), who argue that the use of ICT in classrooms is not only beneficial but also necessary to keep up with the evolving educational landscape.

One area that requires further exploration, as noted in the article, is the need for ongoing training programs. Despite the recognition of the importance of professional development, there remains a gap in teachers' ability to incorporate ICT tools into their teaching strategies. The study suggests that more comprehensive and sustained training programs should be introduced to ensure that teachers are equipped with the necessary skills to leverage ICT effectively.

The article highlights both the potential and challenges of integrating ICT into secondary education. While it is clear that ICT can enhance teaching performance by providing teachers with new tools for instruction, significant barriers related to training, resources, and infrastructure need to be addressed. Schools and educational policymakers must focus on providing continuous professional development opportunities and ensuring equitable access to ICT tools and resources. The findings of this study serve as a valuable contribution to understanding how ICT can be used to improve classroom performance, particularly in developing educational systems like those in Karachi.

5. Conclusions

The study on the use of Information and Communication Technology (ICT) and its impact on teachers' performance in secondary schools in Model Colony, Karachi, offers valuable insights into the evolving role of technology in education. The research clearly shows that ICT is instrumental in improving teaching effectiveness, enhancing teacher-student interactions, and facilitating better learning outcomes. The findings indicate that most teachers are not only aware of ICT but actively seek to incorporate new tools and technologies into their teaching practices. This enthusiasm towards ICT adoption is also reflected in the positive correlation between ICT usage and increased teacher motivation, engagement, and communication efficiency in the classroom.

One of the key takeaways from the study is the strong belief among teachers that ICT can significantly improve classroom teaching by offering more opportunities for active learning. The study highlights that teachers frequently use ICT tools such as smartphones, computers, and the internet to enhance their performance. This widespread usage points to the growing recognition of the value that ICT brings to the educational process, as it provides teachers with the ability to access and filter relevant content quickly, streamlining lesson delivery and resource management. Moreover, the positive impact of ICT tools on teachers' ability to engage with students, track progress, and facilitate interactive learning environments is a major factor in its success.

However, despite the clear benefits, the study also underscores the importance of continuous professional development and training for teachers to maximize the potential of ICT in the classroom. Many teachers expressed the need for ongoing training to better utilize advanced ICT tools, ensuring they stay updated with the latest technological advancements. This aligns with the findings of previous research, which stresses the importance of professional development in ensuring the successful integration of technology into teaching practices. Without adequate training, teachers may not fully harness the potential of ICT, which could hinder its effectiveness in enhancing learning outcomes.

Furthermore, the research suggests that the availability and accessibility of ICT resources play a critical role in determining the success of ICT integration. Teachers who reported having easy access to ICT devices and infrastructure were more likely to use these tools effectively, enhancing their overall teaching performance. This highlights the importance of investing in the necessary infrastructure and resources to ensure that all teachers have the tools they need to succeed in the modern classroom. Ensuring that ICT resources are readily available and easily accessible can bridge the gap between those who are already proficient with technology and those who may need more support. This study confirms that ICT has a significant positive impact on teaching performance at the secondary school level in Karachi. The research not only highlights the benefits of ICT in improving teaching practices but also emphasizes the need for continuous training and access to resources. As the educational landscape continues to evolve, it is crucial for schools to prioritize ICT integration and provide teachers with the support and tools they need to effectively utilize these technologies. Moving forward, further research could explore the long-term effects of ICT integration on student learning outcomes and the broader implications for educational policy and practice.

5.1 Recommendations

The study's findings led to these recommendations:

- The government and authorities should organize regular education and training programs for teachers focused on integrating ICT, tailored to the level and needs of the faculty.
- The Ministry of Education and Media should ensure that schools have the necessary hardware, software, and high-speed connections for effective ICT use, with a constantly updated resource plan to minimize disruptions.
- Teachers should be encouraged to share successful ICT practices and collaborate on new projects, fostering a culture of collaboration and knowledge sharing within the teaching community.
- Surveys or interviews should be conducted to understand teacher preferences and address issues surrounding ICT use.
- Curriculum design should align with ICT integration objectives, ensuring the appropriate and effective use of technology to meet learning goals, and teachers should be encouraged to incorporate ICT tools into their curriculum planning.
- Support programs should be provided to assist teachers with issues they encounter when using ICT, along with open channels to report and resolve technical problems.

- The impact of ICT on teaching performance should be continuously assessed through data analysis, identifying and sharing best practices to inform other educators and administrators.
- Efforts should be made to cultivate a growth mindset among teachers, highlighting that challenges and mistakes during ICT integration are opportunities for learning and improvement.

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