Synergy: International Journal of Multidisciplinary Studies
Vol. 2. **Issue** 1, 2025. Pp. 48-56
ISSN: 3048-7005

Journal homepage: https://sijmds.com/index.php/pub



Article

Enhancing ICT Integration: Addressing Teachers' Perspectives and Institutional Challenges in Schools

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Article History

Received:	28-08-2024
Revised:	15-01-2025
Accepted:	12-02-2025
Published:	07-03-2025

DOI: 10.63960/synergyint.j.multidiscip.stud..v2i1.36

Abstract:

The integration of Information and Communication Technology (ICT) in education has transformed teaching and learning by introducing innovative tools for interactive, inclusive, and personalised instruction. Despite the widespread availability of ICT resources, resistance among educators to fully embrace these technologies remains a significant challenge. This study explores the factors contributing to self-imposed resistance to ICT, examines teachers' perceptions of technology adoption, and evaluates the role of professional development in shaping attitudes and behaviours toward ICT integration. The findings reveal that resistance to ICT adoption stems not only from technical or resource-based limitations but also from deeper concerns, such as perceived inefficiency, fear of losing control in the classroom, and discomfort with rapidly evolving technologies. Although teachers recognise the potential of ICT to enhance educational outcomes, barriers such as infrastructural inadequacies, inconsistent institutional support, and insufficient professional development hinder effective integration. Furthermore, teachers expressed a strong preference for practical, hands-on training, emphasising the importance of sustained and context-specific support for successful ICT adoption. This study highlights the need for a comprehensive approach to address both external and internal barriers to ICT integration in education. Improved infrastructure, targeted professional development, and robust administrative support are essential to fostering teacher confidence and reducing resistance. These findings contribute to the growing body of research on technology adoption in education, providing actionable recommendations to support educators in leveraging ICT effectively and advancing digital transformation in schools.

Keywords: ICT, Inclusion, Challenges, Digital, Perception

1. INTRODUCTION

The digital age has ushered in transformative advancements in Information and Communication Technology (ICT), revolutionising sectors such as education by enhancing learning outcomes, administrative efficiency, and collaborative opportunities (UNESCO, 2023). ICT tools, including digital learning management systems, cloud-based resources, and AI-driven assessments, have redefined modern pedagogy, enabling personalised, inclusive, and interactive learning environments (Zhao et al., 2021). Moreover, innovative pedagogical approaches such as blended and flipped learning have emerged as powerful strategies that leverage ICT to further increase student engagement and deepen learning outcomes. Blended learning, which combines online learning with traditional face-to-face instruction, enables students to access learning materials at their own pace, fostering greater autonomy and flexibility (Asagar, 2024b). Flipped learning, where direct instruction is moved outside of the classroom, allows for more interactive, hands-on learning experiences during class time, maximising student collaboration and problem-solving (Bergmann & Sams, 2021). These strategies are gaining increasing recognition for their ability to support

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diverse learning styles and create more dynamic educational experiences (Asagar, 2024a). For example, Asagar (2024a) highlights that flipped learning is particularly beneficial in promoting student-centred approaches, enabling learners to engage more actively with the material and enhancing their overall academic performance. Together, these strategies enhance the potential for a more dynamic and effective educational experience. Despite these opportunities, a paradoxical resistance persists among educators, who often underutilise accessible ICT tools, even as policymakers advocate for technology integration to foster digital literacy and prepare students for a tech-centric future (OECD, 2022). This resistance highlights a critical disconnect between ICT's potential and its practical adoption, necessitating an exploration of the institutional, psychological, and pedagogical barriers hindering its uptake.

The integration of ICT in education is frequently analysed through the Technology Acceptance Model (TAM), which posits that perceived usefulness and ease of use drive technology adoption (Davis, 1989). However, educational contexts introduce unique challenges, complicating TAM's applicability. Scholars distinguish between "first-order" barriers—such as inadequate infrastructure, financial constraints, and technical support—and "second-order" barriers, which encompass educators' beliefs, attitudes, and pedagogical concerns (Ertmer, 2005). While first-order barriers have diminished with improved ICT access in many regions, second-order barriers remain pervasive, reflecting deep-seated fears of obsolescence, loss of instructional control, and scepticism about ICT's efficacy compared to traditional methods. For instance, teachers may resist digital tools due to anxieties about increased workload, reduced autonomy in curriculum design, or the perceived threat of technology replacing their roles (Inan & Lowther, 2010).

Administrators also play a pivotal yet understudied role in shaping ICT adoption. Their decisions regarding resource allocation, professional development, and institutional culture significantly influence technology integration (Hew & Brush, 2007). Despite their centrality, limited research examines how administrators' perspectives—such as budget constraints or resistance to institutional change—compound educators' reluctance. Furthermore, the phenomenon of "self-imposed resistance," where educators consciously reject available technologies despite adequate training, remains underexplored (Tondeur et al., 2017). This gap underscores the need to investigate the interplay between subjective beliefs, institutional policies, and systemic challenges in ICT adoption.

Emerging evidence suggests that ineffective professional development exacerbates resistance by reinforcing negative attitudes rather than building technical and pedagogical competence (Laurillard, 2013). For example, short-term training programs often fail to address educators' concerns about ICT's alignment with curricular goals or its impact on student engagement (Voogt et al., 2013). Consequently, many educators default to familiar methods, perpetuating a cycle of underutilisation.

This study examines the multifaceted perspectives of teachers and administrators on ICT integration, alongside institutional challenges that sustain resistance. By synthesising insights from TAM and barrier frameworks, it aims to elucidate how internal beliefs, administrative decisions, and systemic inadequacies interact to hinder technology adoption. The findings will inform strategies to align ICT implementation with educators' needs, fostering a culture of innovation in schools.

2. RESEARCH OBJECTIVES

1. To study the factors contributing to self-imposed resistance to ICT among teachers with available technology resources.

2. To study schoolteachers' perceptions of technological adoption and their role in influencing classroom teachings by using ICT.

3. To study the availability and quality of professional development that influence teachers' attitudes toward technology adoption and resistance behaviours.

3. RESEARCH METHODOLOGY

The methodology for investigating factors contributing to resistance to ICT) adoption in education is designed to systematically capture comprehensive insights from participants by employing a structured questionnaire targeted at both teachers of three technology-equipped school districts.

3.1. Research Design:

The study adopts a descriptive research design to explore attitudes, challenges, and experiences related to ICT adoption. It will identify both external (infrastructure-related) and internal (personal or psychological) barriers to ICT integration. A convenience sampling was used by the researcher, intentionally selecting participants who are actively involved in the educational process in technology-equipped environments. Data were gathered from respondents directly affected by ICT adoption, maximising relevance and applicability.

3.2. Participants:

The sample included a convenience selection of 35 participants, consisting of teachers, drawn from three distinct school districts that are equipped with educational technology. The focus on teachers allowed for capturing a range of perspectives, which was critical in understanding both policy-level and classroom-level challenges in ICT adoption.

3.3. Tools and Techniques:

We structured the questionnaire to facilitate ease of response and ensure rich and detailed data collection. It consisted of both closed-ended questions and open-ended questions. The questionnaire was administered in both paper and digital formats (Google Form), allowing participants to select their preferred method.

3.4. Data Analysis:

The closed-ended responses were analysed in percentages using MS Excel, while the open-ended questions underwent thematic analysis to discover recurring themes and insights pertaining to subjective experiences, attitudes, and problems.

4. ANALYSIS AND INTERPRETATION

The analysis will be based on the objective wise:

4.1. Objective 1: Investigate the Factors Contributing to Self-Imposed Resistance to ICT Among Teachers with Available Technology Resources

4.1.1 Question 1.1: How Often Do You Get Access to ICT Equipment for the Teaching-Learning Process?

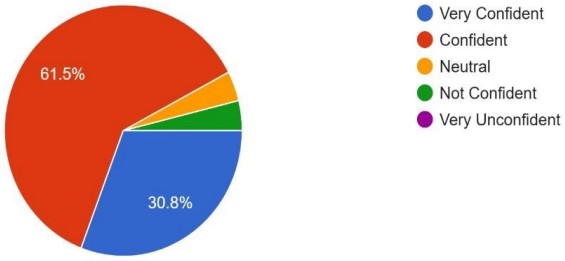


Fig. 1.1: *illustrates the availability of ICT equipment during the teaching-learning process.*

Figure 1.1 illustrates the availability of ICT equipment during the teaching-learning process. The data shows varied levels of access to ICT devices among teachers. A substantial majority of respondents (61.5%) reported regular access, with 42.3% stating they have access "always" and 19.2% indicating access "often." However, 30.8% only reported "sometimes" having access to ICT equipment. Notably, 7.7% of respondents reported facing substantial barriers in accessing ICT resources.

4.1.2 Question 1.2: How Useful Do You Believe ICT Tools Are for Improving Educational Outcomes in Your Classroom?

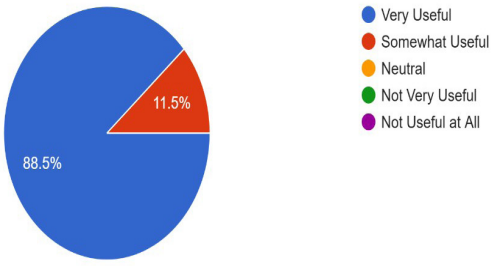


Fig. 1.2: *ICT tools are for improving educational outcomes in your classroom.*

Figure 1.2 reflects teachers' perceptions of the utility of ICT tools in improving educational outcomes. The data suggests a strong consensus on the beneficial role of ICT tools in the classroom. A large majority (88.5%) view ICT tools as "extremely beneficial," while 11.5% consider them "somewhat useful." All respondents acknowledge the significance of ICT tools, both in their professional practices and personal lives, indicating broad recognition of their educational potential.

4.1.3 Question 1.3: Rate Your Confidence Level in Using ICT Tools Independently

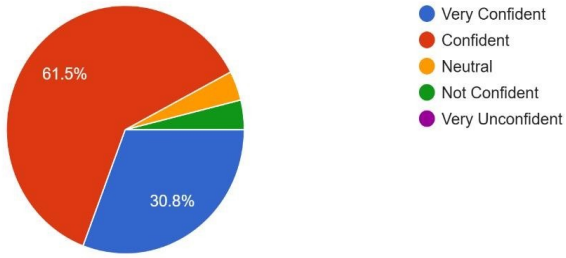


Fig. 1.3: *illustrates the level of confidence in using ICT tools independently.*

Figure 1.3 assesses teachers' confidence in using ICT tools independently. A significant majority of respondents exhibit high confidence in utilising ICT tools. Specifically, 61.5% of respondents consider themselves "confident," while 30.8% consider themselves "very confident," resulting in over 90% of participants feeling at ease with these technologies. A small minority (4.3%) were neutral, and only 4.4% reported lacking confidence. Notably, no respondents identified as "very unconfident," indicating a generally positive attitude toward ICT competency.

4.1.4 Question 1.4: How Often Do You Choose Traditional Teaching Methods Over Digital Methods, Even When ICT Tools Are Available?

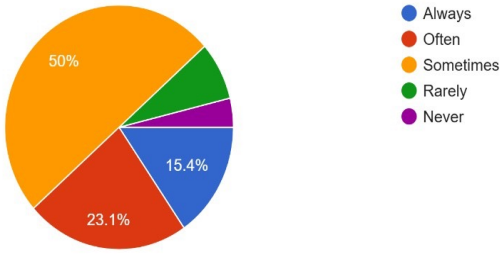


Fig. 1.4: *Traditional teaching methods over digital methods, even when ICT tools are available.*

Figure 1.4 provides insights into the tendency of teachers to rely on traditional teaching methods despite having access to ICT tools. The data reveals a mixed approach. Half of the respondents (50%) reported using traditional methods "sometimes," and 23.1% used them "often." Only 15.4% consistently preferred traditional methods over digital ones, while 11.5% regularly chose digital methods instead. This suggests a balanced approach, with many teachers opting for traditional methods when appropriate.

4.1.5 Question 1.5: What Are Your Primary Concerns About Incorporating ICT into Your Teaching?

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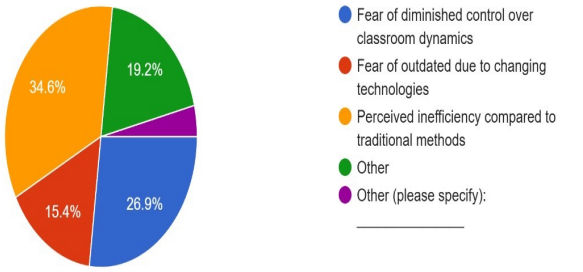


Fig. 1.5: *Primary concerns about incorporating ICT into your teaching.*

Figure 1.5 highlights the primary concerns that teachers have regarding the integration of ICT tools into their teaching practices. The most frequently cited concern is the perceived inefficiency of ICT compared to traditional methods, mentioned by 34.6% of respondents. Fear of losing control over classroom dynamics is another significant worry, affecting 26.9% of teachers, with concerns related to student engagement and discipline in a technology-driven environment. A smaller group (15.4%) expressed worries about becoming outdated due to rapid technological advancements. Additionally, 23.3% identified other concerns, including the need for training, access to updated technologies, resource limitations, time constraints, and high student-to-teacher ratios. These findings underline the need for targeted support to address these concerns and facilitate seamless ICT integration.

4.1.6 Question 1.6: What Factors Would Make You More Comfortable Using ICT Tools in Your Teaching Practice?

The data collected on factors that could enhance teachers' comfort with using ICT tools suggests several key areas for improvement. The most frequently mentioned factor is the need for comprehensive training and professional development. Teachers emphasized the importance of acquiring hands-on experience with ICT tools to enhance their competence. Another important factor is the support from school administration, including technical assistance, reliable infrastructure, and access to online resources and tutorials. A well-maintained environment, including stable electrical systems and a manageable student-teacher ratio, is seen as essential for the effective use of ICT. Furthermore, teachers highlighted that ICT tools could lead to greater engagement and productivity, with the potential to cater to diverse learning styles. The availability of real-world content, digital tools, and collaborative opportunities also emerged as crucial for effective ICT integration. Teachers recommended regular training sessions, access to a variety of digital content, and adequate scheduling for ICT access to improve its integration into the teaching process. These insights indicate that holistic support is essential for ensuring the successful and sustainable adoption of ICT tools in education.

4.2. Objective 2: Examine Schoolteachers' Perceptions of Technology Adoption and Their Role in Influencing Classroom Teaching Using ICT

4.2.1 Question 2.1: How Strongly Do You Believe That School Policies Encourage ICT Adoption Among Teachers?

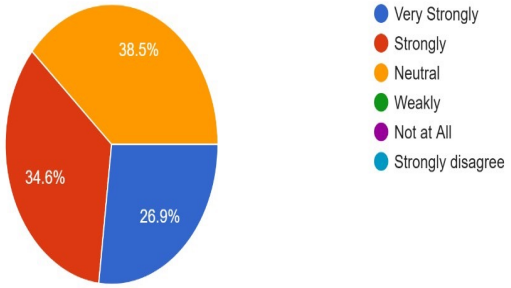


Fig. 2.1: *Policies encourage ICT adoption among teachers.*

Figure 2.1 presents teachers' perceptions of how school policies encourage ICT adoption. A significant majority of respondents (61.5%) perceive that school policies strongly support ICT integration in teaching. Specifically, 34.6% strongly agree, while 26.9% believe the policies encourage ICT adoption very strongly. Conversely, 38.5% of respondents remain neutral, suggesting that they neither agree nor disagree with the effectiveness of these policies in promoting ICT adoption. Notably, there were no respondents who disagreed or strongly disagreed with the statement, indicating a generally positive or neutral outlook on the role of school policies in fostering technology integration.

4.2.2 Question 2.2: Rate the Priority Given to ICT Resources and Support in Your School Budget

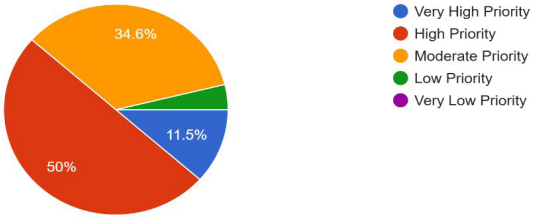


Fig. 2.2: *ICT resources and support in your school budget.*

Figure 2.2 examines the priority given to ICT resources and support within school budgets. The data reveals that 50% of respondents consider ICT resources and support to be a high priority in their school's budget, while 11.5% view it as a very high priority. This reflects a strong emphasis on ICT investment in their respective schools. On the other hand, 34.6% rated ICT resources as a moderate priority, suggesting that while they are recognised, ICT may not be the top funding priority. Only 3.9% considered ICT a low priority, and none viewed it as a very low priority. These findings suggest that while ICT funding is seen as important, there is still room for improvement in prioritising ICT resources across educational institutions.

4.2.3 Question 2.3: How Influential Do You Feel Your Stance on ICT Adoption Is in Shaping Other Teachers' Attitudes Toward Technology Use?

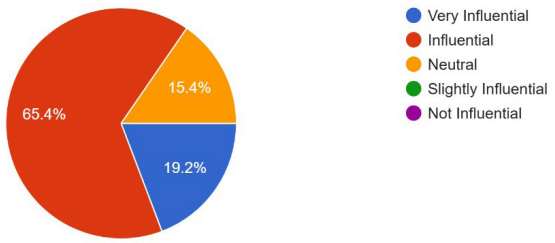


Fig. 2.3: *ICT adoption is shaping other teachers' attitudes toward technology use.*

Figure 2.3 explores how teachers perceive their influence in encouraging their peers to adopt ICT. The data reveals that 65.4% of respondents believe they have a positive influence on shaping colleagues' attitudes toward ICT adoption. Additionally, 19.2% feel their influence is strong, suggesting that many teachers actively encourage ICT integration in their schools. Only 15.4% of respondents were neutral, with no respondents indicating that their influence was minimal or nonexistent. This suggests that most teachers view themselves as influential agents in promoting ICT adoption, reflecting a strong sense of responsibility in fostering technology use among peers.

4.2.4 Question 2.4: What Are the Main Barriers to Enforcing ICT Policies in Your Institution?

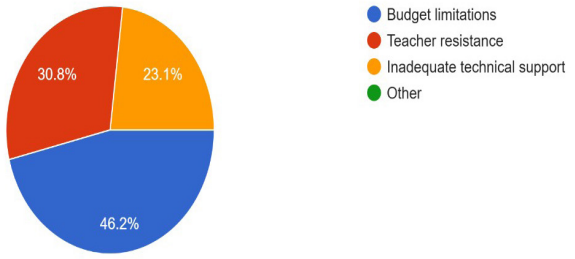


Fig. 2.4: *Main barriers to enforcing ICT policies in your institution?*

Figure 2.4 identifies the primary barriers to enforcing ICT policies in schools. The most significant challenge, cited by 46.2% of respondents, is budget limitations. This reflects the financial constraints faced by schools, which can hinder the acquisition of necessary ICT resources and infrastructure. The resistance, which may stem from a lack of training, unfamiliarity with technology, or reluctance to change traditional teaching methods. A further 23% of respondents noted inadequate technical support as a barrier, highlighting the importance of proper IT assistance in ensuring successful ICT integration. Interestingly, no respondents identified "other" barriers, suggesting that the issues of budget, resistance, and technical support are seen as the most critical obstacles to enforcing ICT policies.

4.2.5 Question 2.5: Describe Any Specific Strategies You Have Implemented to Encourage ICT Adoption in Classroom Learning

The data highlights several strategies employed by teachers to encourage ICT adoption in the classroom. A common strategy involves integrating ICT tools into lesson plans, with teachers incorporating multimedia content such as videos, animations, and virtual reality to enhance student engagement and learning. Some respondents emphasised interactive, student-centered approaches, such as encouraging students to create presentations, participate in online quizzes, and use educational games like Kahoot for both learning and assessment. Others suggested providing supplementary resources such as videos, puzzles, and links to external materials to support learning beyond the classroom. Additionally, teachers highlighted the value of hands-on workshops, peer mentoring, and incentives to encourage ICT adoption among colleagues. However, challenges remain, particularly related to a lack of resources, such as smart classrooms, and dependence on government budgets and initiatives, which restrict the full implementation of ICT strategies. Despite these obstacles, there is a clear commitment among teachers to use ICT to make learning more interactive and effective, enhancing both teaching practices and student participation.

4.3. Objective 3: Evaluate How the Availability and Quality of Professional Development Influence Teachers' Attitudes Toward Technology Adoption and Resistance Behaviours

4.3.1 Question 3.1: How Often Does Your School Provide Professional Development Opportunities Focused on ICT?

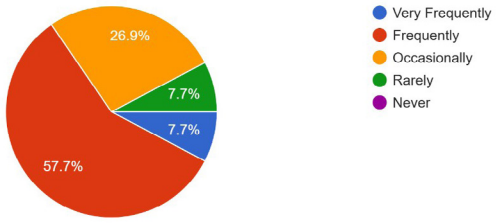


Fig. 3.1: *Professional development opportunities focused on ICT*

Figure 3.1 illustrates the frequency of professional development opportunities focused on ICT. The data indicates that a significant portion of respondents (57.7%) reported that such opportunities are provided often, highlighting the importance of ICT training within their schools. Additionally, 26.9% of participants indicated that ICT-related professional development is offered occasionally, suggesting that while ICT development is available, its consistency may vary. A smaller group (7.7%) reported that these opportunities are offered very frequently, while another 7.7% said they are rarely provided. Notably, no respondents indicated that ICT professional development is never offered, suggesting a generally positive trend toward the inclusion of ICT training in professional development, though there may still be a need for more regular and consistent opportunities.

4.3.2 Question 3.2: Rate the Quality of Professional Development in Preparing You to Use ICT Effectively

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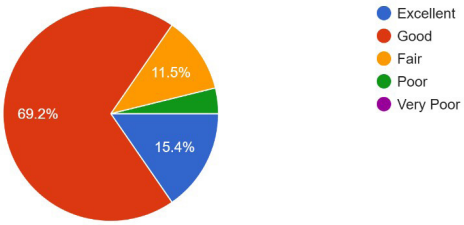


Fig. 3.2: *Illustrates the effectiveness of professional development in equipping you to use ICT effectively.*

Figure 3.2 presents respondents' evaluations of the quality of professional development in preparing them to use ICT effectively. The data shows that a majority (69.2%) rated the quality of professional development as "Good," indicating that most participants feel adequately prepared by the programs. A smaller percentage (15.4%) rated the quality as "Excellent," suggesting that some found the training to be highly effective. However, 11.5% rated it as "Fair," indicating room for improvement in the training programs for a subset of teachers. Only 3.9% rated the quality as "Poor," with no respondents giving a "Very Poor" rating. These findings reflect an overall positive perception of the quality of professional development but also suggest there is potential to further enhance its effectiveness for all participants.

4.3.3 Question 3.3: How Has Professional Development Impacted Your Confidence in Using ICT Tools?

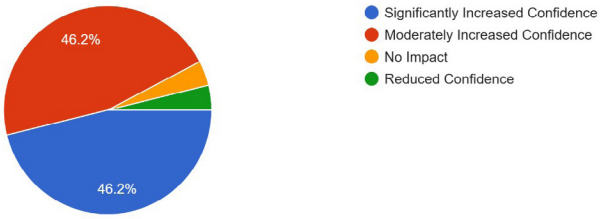


Fig. 3.3: *professional development impacted your confidence in using ICT tools*

Figure 3.3 examines the impact of professional development on teachers' confidence in using ICT tools. A significant 46.2% of respondents reported that professional development had significantly increased their confidence, indicating a strong positive effect. An equal percentage (46.2%) stated that their confidence had been moderately increased, further highlighting that most individuals feel more competent in using ICT tools as a result of the training. However, a small proportion (3.8%) reported no impact on their confidence, and an equal percentage (3.8%) indicated a reduction in confidence. While the overall trend is positive, these results suggest that a few individuals have not experienced the desired boost in confidence from the professional development programs.

4.3.4 Question 3.4: What Format of Training Would Be Most Beneficial for ICT Skill-Building?

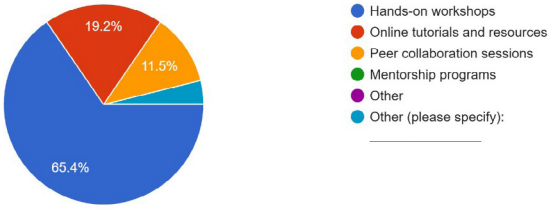


Fig. 3.4: *Most beneficial for ICT skill-building*

Figure 3.4 shows the preferred formats for ICT skill-building training. The data reveals a clear preference for hands-on workshops, with 65.4% of respondents selecting this as the most beneficial format. This suggests that teachers highly value interactive, practical learning experiences when acquiring ICT skills. A smaller proportion (19.2%) favored online tutorials and resources, which indicate that self-paced, digital learning tools are also seen as valuable. Peer collaboration sessions were selected by 11.5% of participants, suggesting some interest in collaborative learning environments. Notably, no respondents chose mentorship programs as a preferred training format, which may suggest that mentorship is not considered a priority for ICT skill development. A small percentage (3.9%) mentioned a blended approach combining different formats. Overall, these findings suggest that hands-on, interactive workshops are the most effective format for ICT skill-building, with online and collaborative formats serving as complementary options.

4.3.5 Question 3.5: What Improvements Would You Suggest for Professional Development to Better Address the Challenges of ICT Adoption?

The responses to this question highlight several key themes for improving professional development to better address the challenges of ICT adoption. The most prominent theme is the need for more hands-on training and workshops, with many respondents calling for practical, interactive learning experiences. There is also a strong demand for follow-up sessions to assess the effectiveness of previous workshops and reinforce knowledge retention. Additionally, ongoing support and mentorship are emphasized as critical components, with respondents advocating for continuous resources, check-ins, and helpdesks to ensure teachers can effectively use ICT tools.

Personalized training to cater to varying levels of technical proficiency was also highlighted, ensuring that all teachers, regardless of their experience, can benefit from the programs. Moreover, the need for updated resources and better access to tools, such as improved internet connectivity, online tool subscriptions, and smartboards, was frequently mentioned. Respondents also called for real-life applications and collaborative learning through peer sharing and practical examples.

Finally, there was a call to formalize ICT training within professional development frameworks. Suggestions included mandating specific training hours and integrating ICT into lesson planning. These insights reflect a broad call for more comprehensive, accessible, and ongoing

professional development opportunities to support ICT adoption in education.

4.3.6 Question 3.6: Please Provide Any Other Comments or Suggestions You Have Regarding ICT Integration in Education

The additional comments and suggestions on ICT integration in education reveal several important themes focusing on infrastructure, practical applications, and broader strategies. Many respondents highlighted the need for infrastructure improvements, such as better access to ICT tools, a dedicated ICT budget, and improved software and applications for teaching. Resource allocation was another key concern, with respondents calling for increased funding and more teachers to support ICT integration.

Awareness and training were also prominent themes, with respondents emphasizing the importance of increasing understanding and effective use of ICT for both teachers and the public. Some participants suggested that ICT tools should be used selectively, according to the needs of specific subjects or topics, to avoid monotony and enhance student engagement.

Collaboration and skill development were frequently mentioned, with suggestions for using ICT to encourage student collaboration and build important skills. Finally, there was recognition of the importance of digital equity and cybersecurity, ensuring safe and equal access to technology for all students and teachers.

5. DISCUSSION

The results from this study provide valuable insights into how teachers perceive the role of ICT in their teaching practices, their attitudes towards ICT adoption, and the impact of professional development on their confidence and resistance to ICT integration. The findings reveal both positive trends and areas where improvements are needed to optimise ICT integration in education.

5.1. ICT Access and Use in the Classroom:

The majority of respondents report regular access to ICT tools, with 61.5% indicating consistent availability, which highlights a promising trend for technology adoption in schools. However, a considerable proportion (30.8%) still experiences limited access to ICT tools, and 7.7% face significant barriers, underscoring the need for schools to ensure more equitable access to technology. This variation in access may also contribute to differences in how frequently and effectively teachers integrate ICT into their teaching.

6. PERCEPTIONS OF ICT'S USEFULNESS:

The overwhelming majority (88.5%) of respondents perceive ICT tools as "extremely beneficial" for improving educational outcomes. This demonstrates strong recognition of the value that technology brings to the classroom. Teachers acknowledge the potential for ICT to enhance student engagement, facilitate differentiated learning, and provide interactive content. However, it is important to note that while the majority see ICT as beneficial, a small number of respondents still express concerns, particularly regarding inefficiencies and the perceived loss of control over classroom dynamics. This indicates that despite the recognition of ICT's potential, there are still reservations that need to be addressed.

6.1. Confidence in Using ICT:

The data indicates high levels of confidence among teachers in using ICT independently. Over 90% of respondents describe themselves as either confident or very confident, which reflects a positive attitude towards the use of technology. This high confidence level may be attributed to the professional development opportunities available to teachers. However, it is also clear that not all teachers feel the same level of confidence, with a small proportion expressing neutrality or a lack of confidence. This suggests that there may be varying levels of technical proficiency or comfort with ICT tools, which could impact the consistency of ICT integration in classrooms.

6.2. Barriers to ICT Adoption and Professional Development Needs:

One of the main barriers to adopting ICT is budget limitations, with nearly half of respondents identifying financial constraints as a significant obstacle. Inadequate technical support and teacher resistance also emerged as key barriers. These challenges are compounded by concerns regarding the quality and availability of professional development, though the majority of respondents rated their training as "good." Professional development was found to significantly boost teachers' confidence in using ICT tools, but there remains a need for more practical, hands-on training opportunities and ongoing support.

Teachers expressed a preference for interactive, hands-on workshops, indicating that more practical, experiential learning would be beneficial. While some teachers prefer online resources or peer collaboration, the preference for face-to-face, interactive sessions suggests that teachers value direct engagement when learning new ICT skills. Furthermore, there is a clear demand for training that is tailored to different levels of expertise, ensuring that all teachers, regardless of their starting point, can benefit from professional development.

6.3. Supportive School Policies and ICT Integration:

School policies are seen as generally supportive of ICT adoption, with 61.5% of respondents agreeing that school policies encourage the integration of ICT into teaching. However, only 50% of respondents feel that ICT resources and support are prioritised within the school budget, indicating a gap between policy intent and resource allocation. Teachers also believe they have a role in influencing their peers' attitudes toward ICT adoption, with 65.4% feeling that their stance on ICT adoption has a positive impact on their colleagues. This suggests that individual teachers are often key drivers of ICT integration in schools, but the broader institutional support is crucial for sustainable change.

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7. CONCLUSION

The findings from this study suggest that while teachers generally recognise the benefits of ICT in education and express confidence in using technology, several barriers hinder full ICT adoption in schools. These barriers include limited access to resources, inadequate technical support, and concerns about classroom management in technology-driven environments. However, professional development programs have a clear positive impact on teachers' confidence and attitudes towards ICT, with hands-on training and ongoing support identified as key factors for success.

To further enhance ICT adoption, schools should focus on increasing access to ICT resources, improving technical support, and addressing the concerns of teachers who may feel overwhelmed or unprepared for technology integration. There is also a need for more personalised and consistent professional development that accommodates varying levels of technical proficiency. By addressing these issues, schools can foster a more conducive environment for ICT adoption, ultimately improving teaching practices and educational outcomes for students.

Future research could explore the specific challenges faced by teachers in different subject areas or grade levels and investigate the impact of ICT integration on student learning outcomes. Additionally, examining the role of school leadership and community involvement in supporting ICT adoption could provide valuable insights into creating a more sustainable and widespread integration of technology in education.

DECLARATIONS

Author(s) Contribution

To the best of my knowledge, the content presented herein is authentic and does not infringe upon any copyright or intellectual property rights. All sources used in this research have been duly acknowledged and cited in accordance with academic standards. Any errors or omissions remain my sole responsibility.

Uses of AI Acknowledgement

Not Applicable

Funding Information

Not Applicable

Availability of Data and Materials

The data available at the request of the author.

Competing Interests

There is no competent of interest.

Clinical Trial Registration (if applicable)

Not Applicable

Human Ethics and Consent to Participate

The study did not involve any clinical interventions or experiments requiring formal ethical approval.

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