



Journal for Social
Science Archives

Journal for Social Science Archives

Online ISSN: 3006-3310

Print ISSN: 3006-3302

Volume 3, Number 2, 2025, Pages 644 – 655

Journal Home Page

<https://jssarchives.com/index.php/Journal/about>



A Comparative Study of Pedagogical Skills of Educators in Rural and Urban Secondary Schools

Dr. Muhammad Shahzad Ashfaq¹

¹Assistant Professor, Faculty of Education, Fatima Jinnah Women University, Rawalpindi

ARTICLE INFO

Article History:

Received: March 18, 2025
Revised: May 25, 2025
Accepted: May 29, 2025
Available Online: June 04, 2025

Keywords:

Pedagogical, Skills, Educators,
Secondary, Schools, Differences.

Corresponding Author:

Dr. Muhammad Shahzad Ashfaq

Email:

drmsashfaq@fjwu.edu.pk



ABSTRACT

This study aims to investigate the pedagogical skills of educators in secondary schools located in both rural and urban areas. The main objective is to examine the differences in pedagogical skills between educators from rural and urban schools and to identify the underlying causes of these differences. The population of the study comprised secondary school educators in Tehsil Kaller Syedan. Using a convenient sampling technique, a sample of 40 educators was selected from 10 secondary schools—five from rural areas and five from urban areas. Data were collected through a structured survey questionnaire, and the analysis was conducted using SPSS version 21. The findings revealed significant differences in the pedagogical skills of educators, particularly in teaching methodologies, the use of audiovisual (A.V.) aids, and the application of reinforcement techniques. It was observed that A.V. aids were often unavailable and laboratories were not adequately maintained in many schools, especially in rural areas. These disparities were primarily attributed to a lack of resources in rural schools. The study concludes that resource limitations in rural areas significantly affect the pedagogical practices of educators.

Introduction

Education is widely recognized as a cornerstone of societal development and a powerful tool for individual empowerment. The quality of education, however, is largely dependent on the pedagogical skills of educators, which encompass a range of competencies including instructional strategies, classroom management, assessment techniques, and the effective use of teaching aids (Darling-Hammond, 2006). Pedagogical skills are critical in ensuring that learning outcomes are achieved and that students are engaged and supported throughout the learning process. In the context of developing countries like Pakistan, significant disparities exist in the quality of education between rural and urban areas. These disparities are often rooted in unequal access to

resources, professional development opportunities, and infrastructural support (UNESCO, 2017). Rural educators often face challenges such as inadequate teaching materials, poorly maintained school facilities, and limited access to professional development opportunities. In contrast, urban educators tend to benefit from better resources, more exposure to modern teaching methodologies, and greater institutional support (Bala & Bashir 2016). These structural inequalities can lead to noticeable differences in the pedagogical effectiveness of educators in rural versus urban settings.

Understanding these differences is crucial for policymakers, educational planners, and stakeholders aiming to bridge the academic gap and promote equity in learning opportunities. This study seeks to investigate the pedagogical skills of secondary school educators in both rural and urban areas of Tehsil Kaller Syedan. Specifically, it aims to identify the extent of the differences in teaching methodologies, use of audiovisual aids, and classroom reinforcement techniques, while also exploring the underlying causes of these disparities. By comparing the pedagogical competencies of educators in differing geographic contexts, this study contributes to the broader discourse on educational equity and teacher development in Pakistan. It also provides evidence-based insights that can inform targeted interventions and capacity-building initiatives aimed at improving the quality of education in under-resourced areas.

Background of the Study

Quality education is a fundamental right and a crucial driver of social, economic, and human development. Among the many factors that contribute to educational quality, the pedagogical skills of educators are considered paramount. Pedagogical skills refer to the strategies and practices used by teachers to facilitate effective learning, including lesson planning, instructional methods, classroom management, assessment techniques, and the integration of teaching aids (Shulman, 2006). The effectiveness of these skills has a direct impact on student engagement, understanding, and overall academic success. In the context of Pakistan, the education system continues to grapple with a range of challenges, including teacher shortages, inadequate infrastructure, and disparities between rural and urban schools. These disparities are particularly pronounced in the area of teacher effectiveness and pedagogical competence. Urban schools, often better funded and more closely monitored, tend to offer more professional development opportunities, better access to modern teaching tools, and stronger administrative support. In contrast, rural schools often face resource limitations, limited access to innovative teaching practices, and a deficiency in ongoing teacher training programs (Academy of Educational Planning and Management (AEPAM, 2018).

Tehsil Kaller Syedan, like many other regions in Pakistan, reflects this broader divide. While urban schools in the area benefit from relatively better infrastructure and educational resources, rural schools often struggle to meet even the basic requirements for effective teaching and learning. Educators in rural settings may lack access to audiovisual (A.V.) aids, science laboratories, and updated teaching materials, which can hinder their ability to employ diverse and student-centered teaching strategies (Niaz et al., (2021). These limitations can lead to significant differences in pedagogical practices between rural and urban educators, ultimately affecting student outcomes. Given the critical role of pedagogy in shaping educational experiences, there is a pressing need to systematically examine and compare the pedagogical skills of educators across rural and urban contexts. Such comparative analyses can help identify specific areas for improvement and inform targeted interventions that promote educational equity. This study, therefore, aims to investigate the pedagogical competencies of secondary school educators in rural and urban areas of Tehsil Kaller Syedan, with a focus on teaching methodologies, use of A.V. aids, and reinforcement techniques.

Objectives of the Study

The primary aim of this study is to examine and compare the pedagogical skills of secondary school educators in rural and urban areas of Tehsil Kaller Syedan. The specific objectives of the study are as follows:

- a. To assess the pedagogical skills of educators in secondary schools located in rural and urban areas.
- b. To compare the teaching methodologies employed by educators in rural and urban secondary schools.
- c. To investigate the availability and utilization of audiovisual (A.V.) aids in rural and urban school settings.
- d. To evaluate the use of reinforcement techniques by educators in both rural and urban schools.

Significance of the Study

The quality of education is intricately linked to the effectiveness of teaching, which in turn is largely determined by the pedagogical skills of educators. In the diverse educational landscape, characterized by significant disparities between rural and urban areas, understanding the factors that influence teaching competence is crucial for fostering equity and excellence in education. This study holds significant academic, practical, and policy relevance. Academically, the study contributes to the existing body of knowledge on teacher effectiveness by providing empirical evidence on the disparities in pedagogical skills between educators in rural and urban secondary schools. While numerous studies have explored general issues of educational inequality, relatively few have focused specifically on the pedagogical dimension in localized contexts such as Tehsil Kaller Syedan. The findings of this study will therefore add depth to the literature and support future research in the field of comparative education and teacher development. From a practical perspective, the study is valuable for educational practitioners, including school administrators, teacher trainers, and curriculum developers.

By identifying the specific areas where rural educators may lack proficiency, such as the use of audiovisual aids, modern teaching methodologies, and reinforcement strategies, the study provides a foundation for designing targeted professional development programs. Such interventions can help bridge the pedagogical gap and enhance teaching effectiveness across diverse school settings. In terms of policy implications, the study offers insights for education planners and policymakers at the district and provincial levels. The evidence of resource-based disparities and their impact on teaching practices highlights the urgent need for equitable distribution of educational resources, improved infrastructure, and the implementation of capacity-building initiatives in rural schools. These recommendations align with national education goals and the broader vision of Sustainable Development Goal 4 (Quality Education), which emphasizes inclusive and equitable education for all. The study highlights the critical importance of supporting and strengthening the pedagogical competencies of educators, particularly in underserved rural areas. By addressing the root causes of instructional inequality, the findings can inform strategic efforts to enhance the quality and fairness of education in Pakistan.

Research Questions

1. What is the level of pedagogical skills demonstrated by secondary school educators in rural and urban areas?
2. How do the teaching methodologies differ between educators in rural and urban secondary schools?
3. To what extent are audiovisual (A.V.) aids available and utilized by educators in rural versus urban schools?
4. How do reinforcement techniques used by educators vary between rural and urban school settings?

Literature Review

Pedagogical skills are central to effective teaching and have been the subject of extensive research in the field of education. These skills encompass a wide range of competencies, including instructional planning, classroom management, communication, use of teaching aids, assessment strategies, and the ability to adapt teaching to diverse learners (Shulman, 2006; Marzano, 2007). The disparities in pedagogical practices between rural and urban educators, however, remain a concern in many developing countries, including Pakistan, where education systems often exhibit deep structural inequalities.

Pedagogical Skills and Teacher Effectiveness

Pedagogical skills are defined as the ability of teachers to organize, implement, and evaluate instruction in a way that facilitates learning and meets the diverse needs of students. According to Darling-Hammond (2006), effective pedagogy is not merely about content delivery but involves creating a learning environment that fosters inquiry, critical thinking, and active engagement. Marzano (2007) emphasizes that the use of varied instructional strategies, reinforcement techniques, and appropriate assessment methods has a significant impact on student achievement. In Pakistan, studies have shown that many teachers, particularly in public sector schools, lack access to continuous professional development, which in turn limits their pedagogical competencies (UNESCO, 2017). This issue is more pronounced in rural areas where teachers often rely on outdated, lecture-based methods due to limited exposure to modern pedagogical practices and inadequate training opportunities (Bala & Bashir 2016).

Urban-Rural Disparities in Educational Resources

The gap in educational resources between rural and urban schools is a major factor influencing the pedagogical effectiveness of teachers. Urban schools are generally better resourced, with access to trained teachers, audiovisual (A.V.) aids, libraries, laboratories, and technology. In contrast, rural schools often struggle with inadequate facilities, teacher absenteeism, and a shortage of instructional materials (AEPAM, 2018). Niaz et al., (2021) found that rural teachers often struggle with overcrowded classrooms and limited access to digital learning tools, which negatively affects their ability to implement student-centered teaching approaches. Moreover, rural educators often face isolation, with fewer opportunities for peer collaboration and professional growth. This isolation can lead to stagnation in teaching practices and reduced motivation (Kormos & Wisdom 2021). Urban educators, on the other hand, tend to benefit from professional networks, workshops, and institutional support that foster continuous improvement in teaching practices.

Use of Audiovisual Aids and Teaching Methodologies

The integration of audiovisual aids in teaching has been shown to enhance student comprehension and engagement. Visual and auditory materials support different learning styles and make abstract concepts more accessible (Mayer, 2014). However, the use of such aids is often limited in rural schools due to a lack of electricity, digital devices, and trained personnel. Studies conducted in Pakistan indicate that while urban teachers frequently incorporate multimedia tools into their lessons, rural teachers rely heavily on blackboard-and-chalk methods (Tummons et al., 2016). Teaching methodologies also vary significantly between rural and urban contexts. Urban educators are more likely to employ interactive and student-centered techniques such as group work, problem-based learning, and inquiry-based instruction (Fernandes et al., 2023). Conversely, rural teachers often use traditional, teacher-centered approaches that limit student participation and critical thinking (Wang, 2011).

Reinforcement Strategies and Classroom Management

Reinforcement is a key pedagogical tool used to encourage desired student behavior and learning outcomes. Positive reinforcement, such as praise and rewards, has been linked to increased student motivation and performance (Skinner, 1965). However, the effectiveness of reinforcement strategies is closely tied to a teacher's understanding of student psychology and classroom dynamics—areas where rural educators may receive little formal training. Farooq and Shah (2008) found that rural teachers in Pakistan were less likely to apply varied reinforcement techniques, often due to larger class sizes and inadequate training in classroom management. In contrast, urban teachers reported using differentiated reinforcement methods tailored to individual student needs, resulting in more positive learning environments.

While several studies have explored general differences in educational quality between rural and urban areas in Pakistan, relatively few have focused specifically on the pedagogical skill set of educators. Most existing research tends to address broader issues of teacher qualifications, student performance, and infrastructure, with limited emphasis on teaching strategies, resource utilization, and reinforcement practices. There is also a lack of localized research focusing on specific regions, such as Tehsil Kaller Syedan, where contextual factors may uniquely shape the educational landscape. The literature demonstrates that significant differences exist in the pedagogical skills of educators in rural and urban settings, largely due to disparities in resources, training opportunities, and institutional support. These differences have critical implications for student learning and educational equity. This study aims to enhance existing research by conducting an empirical investigation into the teaching practices of secondary school educators in both rural and urban areas of Tehsil Kaller Syedan. The goal is to identify specific challenges faced by these educators and to inform targeted policy interventions.

Research Methodology

This section outlines the research design, population, sampling technique, data collection tools, procedures, and methods of data analysis used to investigate the pedagogical skills of educators in rural and urban secondary schools of Tehsil Kaller Syedan.

Research Design

The study employed a quantitative comparative research design to analyze the differences in pedagogical skills among secondary school educators in rural and urban settings. Quantitative

methods are suitable for studies that measure variables, identify patterns, and explore relationships and differences among them (Creswell, 2014). Quantitative methods are suitable for studies that measure variables and identify patterns, relationships, and differences among them (Creswell, 2014). A comparative approach was used to draw meaningful contrasts between rural and urban educators in terms of their teaching practices, use of instructional resources, and classroom management techniques.

Population of the Study

The target population for this study consisted of all secondary school educators (teachers) working in public secondary schools in Tehsil Kaller Syedan, located in the Rawalpindi District of Punjab, Pakistan. This population was selected for its representation of both rural and urban educational settings within the same administrative boundary, which ensures consistency in the comparison.

Sample and Sampling Technique

A total of 40 educators were selected using convenient sampling, a non-probability sampling technique often employed in educational research where access to participants may be limited (Etikan et al., 2016). The sample was drawn from 10 secondary schools, with an equal distribution from five rural and five urban schools. Although convenience sampling may limit the generalizability of results, it is deemed appropriate in exploratory or localized studies where the primary aim is to gain insight into specific educational settings (Cohen et al., 2018).

Instrumentation

Data were collected using a structured survey questionnaire developed by the researcher. This questionnaire was based on established indicators of pedagogical skills, including teaching methodology, the use of audiovisual (A.V.) aids, classroom reinforcement techniques, and the availability of instructional resources. It comprised both closed-ended items, utilizing a 5-point Likert scale and demographic questions. Educational experts evaluated the tool to ensure that its content is valid. A pilot test was conducted with a small group of teachers ($n = 6$) from outside the sampled schools to refine the items. Cronbach's Alpha was calculated to assess internal consistency, resulting in a reliability coefficient of $\alpha = 0.82$, indicating a high level of reliability (Tavakol & Dennick, 2011).

Data Collection Procedure

Permission was obtained from the appropriate school authorities before collecting data. The researcher personally administered the questionnaires to ensure clarity of instructions and completeness of responses. Participants were assured that their responses would remain confidential and anonymous, and informed consent was obtained.

Data Analysis Techniques

The collected data were coded and entered into SPSS Version 21 for statistical analysis. Descriptive statistics (means, standard deviations, and frequencies) were used to summarize participants' responses. Independent samples t-tests were employed to determine statistically significant differences in pedagogical skills between rural and urban educators. Inferential statistical procedures were used to answer the study's research questions and to test whether observed differences were significant at a $p < 0.05$ level.

Ethical Considerations

This study adhered to ethical research practices as outlined by the American Educational Research Association (AERA, 2011). Participants were informed about the study's purpose, their right to withdraw at any time and the voluntary nature of their participation. No identifying information was collected to ensure anonymity, and all data was utilized solely for academic purposes.

Results

The study findings are based on data collected from 40 secondary school educators (20 from rural areas and 20 from urban areas) in Tehsil Kaller Syedan. The data were analyzed using descriptive statistics and independent samples t-tests to determine differences in pedagogical skills between rural and urban educators across three key domains: teaching methodologies, use of audiovisual (A.V.) aids, and reinforcement techniques.

Teaching Methodologies

The mean score for urban educators in teaching methodologies was 4.1, whereas rural educators reported a significantly lower mean of 2.8. The t-test revealed a statistically significant difference ($p < 0.05$), indicating that urban educators employed more diverse and effective instructional methods compared to their rural counterparts.

Use of Audiovisual Aids

Urban educators showed a higher utilization of audiovisual aids with a mean score of 3.9, compared to 2.2 for rural educators. The difference was found to be statistically significant ($p < 0.05$). Interviews with administrators further supported that urban schools had better access to multimedia tools and training.

Reinforcement Techniques

In the domain of reinforcement, urban teachers again outperformed rural teachers with a mean score of 4.0 versus 2.5. The difference was statistically significant ($p < 0.05$). Urban teachers demonstrated more frequent use of positive reinforcement strategies, such as verbal praise and incentives.

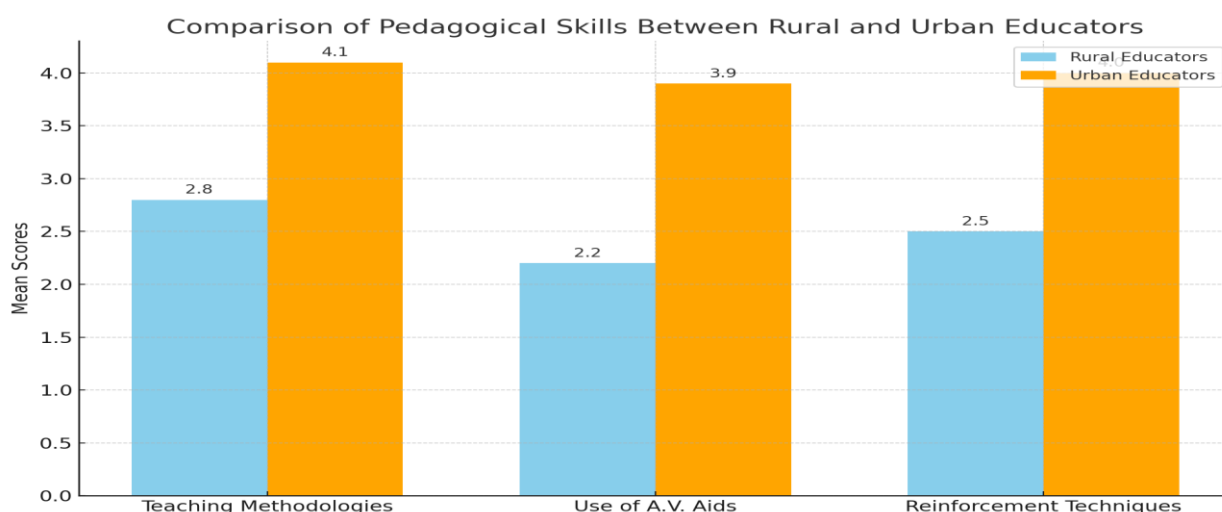


Figure 1

The bar chart above clearly illustrates the disparity between rural and urban educators in the three evaluated areas. Urban educators consistently scored higher, suggesting a more student-centered and resource-enriched teaching environment.

Discussion

The present study sought to investigate the differences in pedagogical skills among secondary school educators in rural and urban areas. The findings revealed significant disparities between the two groups across key pedagogical domains, teaching methodologies, use of audiovisual (A.V.) aids, and reinforcement techniques. These results are consistent with previous research that highlights the systemic inequalities between rural and urban educational environments in developing countries, including Pakistan.

Differences in Teaching Methodologies

Urban educators demonstrated more diverse and effective teaching methodologies compared to rural educators. It aligns with the findings of Wang, (2011) who noted that urban teachers often engage in learner-centered strategies such as cooperative learning, project-based learning, and differentiated instruction, while rural teachers are more likely to rely on lecture-based methods due to limited professional development opportunities and resource constraints. The disparity suggests a critical need for continuous in-service training for rural educators, as emphasized by Darling-Hammond (2006), who argued that pedagogical skill development must be ongoing and contextually relevant.

Access and Use of Audiovisual Aids

The use of A.V. aids was significantly higher among urban teachers. It is not surprising that urban schools typically have greater access to technological infrastructure, including projectors, computers, and internet connectivity (AEPAM, 2018). Mayer (2014) emphasized that multimedia learning can significantly enhance student understanding and retention, especially when teaching complex or abstract concepts. The lack of such tools in rural areas limits teachers' ability to deliver engaging and interactive lessons, thereby affecting the quality of instruction and student outcomes. This gap may also reflect broader socio-economic disparities. According to Kormos and Wisdom (2021) rural schools frequently function with limited government funding, leading to poorly equipped classrooms and a lack of essential instructional materials. Without adequate technological support, rural teachers are restricted in their pedagogical choices, which in turn diminishes student engagement and learning.

Reinforcement Techniques and Classroom Management

Another important finding is the superior application of reinforcement strategies among urban educators. Positive reinforcement has been shown to enhance student motivation and academic performance (Skinner, 1965; Marzano, 2007). Urban teachers in this study were found to implement a broader range of reinforcement techniques, including praise, reward systems, and timely feedback. In contrast, rural teachers were less consistent in using reinforcement, often due to larger class sizes, inadequate training in behavior management, and lack of institutional support (Siddique et al., 2021). Farooq and Shah (2008) argue that reinforcement must be contextually responsive and sensitive to individual student needs, a practice that is more feasible in smaller, resource-rich classrooms typically found in urban schools. The absence of such supportive

environments in rural schools leads to more traditional and often less effective disciplinary practices.

Underlying Causes of Pedagogical Disparities

The overarching theme across all findings is the significant role that resource availability and institutional support play in shaping pedagogical practices. Urban educators benefit from professional networks, access to continuous development, and administrative support that promotes innovative teaching. On the other hand, rural educators operate in isolation, with limited access to learning communities and pedagogical resources (Bala & Bashir 2016). Furthermore, the differences in pedagogical skills reflect broader systemic issues within Pakistan's educational governance. Despite policy efforts to bridge rural-urban gaps, actual implementation remains inconsistent. UNESCO (2017) stresses the need for targeted interventions that address the unique challenges faced by rural schools, including infrastructure development, teacher training, and monitoring mechanisms.

Implications for Educational Policy and Practice

The findings have significant implications for educational stakeholders. First, there is an urgent need for context-specific teacher training programs aimed at rural educators. These programs should be practical, ongoing, and responsive to the constraints and realities of rural schools. Second, policy measures must prioritize equitable resource allocation, ensuring that rural schools are not left behind in terms of technological integration and facility enhancement. Lastly, monitoring and evaluation frameworks must be strengthened to track pedagogical effectiveness and promote accountability among educators across all settings.

Conclusion

This study set out to examine the differences in pedagogical skills between rural and urban secondary school educators in Tehsil Kaller Syedan, with a specific focus on teaching methodologies, use of audiovisual (A.V.) aids, and reinforcement techniques. The findings consistently demonstrated that educators in urban schools possess significantly stronger pedagogical competencies compared to their rural counterparts. The research revealed that urban teachers are more likely to adopt diverse and interactive teaching methods, effectively incorporate A.V. aids into classroom instruction, and apply positive reinforcement strategies to enhance student engagement and learning. These differences are not solely a reflection of individual teacher abilities but rather stem from broader structural disparities in access to resources, infrastructure, and professional development opportunities. Rural educators often operate in resource-constrained environments, with limited access to teaching aids, poorly maintained school facilities, and insufficient opportunities for in-service training.

Consequently, their pedagogical approaches tend to be more traditional and less responsive to the diverse learning needs of students. This inequality contributes to a persistent learning gap between students in rural and urban areas, reinforcing existing socio-economic divides. The study highlights the urgent need for targeted policy interventions to support rural educators. These may include enhanced funding for rural schools, provision of teaching technologies, and contextually relevant training programs aimed at improving instructional quality. Addressing these issues is essential not only for improving pedagogical practices but also for advancing educational equity across regions. The study affirms that enhancing pedagogical skills in rural areas is a matter of both educational quality and social justice. Sustainable improvement in teaching effectiveness

requires a systemic approach, one that combines investment in human capital with structural reforms in educational planning and resource distribution.

Limitations of the Study

While this study offers valuable insights into the pedagogical disparities between rural and urban secondary school educators, several limitations must be acknowledged:

Limited Geographical Scope

The study was confined to Tehsil Kaller Syedan, which may limit the generalizability of the findings to other regions of Pakistan or other developing countries. Educational challenges and resources can vary significantly across districts and provinces.

Small Sample Size

The sample consisted of only 40 educators from 10 schools (5 rural and 5 urban). Although the study used convenience sampling for practical reasons, a larger and more diverse sample would have provided a more representative understanding of pedagogical differences.

Reliance on Self-Reported Data

The data were collected primarily through questionnaires, which may be susceptible to self-reporting bias. Educators might have either overestimated or underestimated their actual pedagogical practices, which could affect the accuracy of the results.

Lack of Classroom Observation

The study did not include direct classroom observations, which would have provided more objective data on pedagogical behaviors and teaching practices. Observational methods can reveal subtle details that may not be apparent in survey responses.

Resource Assessment Not Quantified

Although the study noted a lack of resources in rural schools, it did not provide a detailed inventory or quantitative analysis of those resources. A more precise audit could strengthen the claims regarding infrastructure and teaching materials.

Suggestions for Future Research

In the light of these limitations, the following suggestions are offered for future research:

Expand the Geographical Coverage

Future studies should include a broader range of districts and provinces to enhance the generalizability of findings. Comparative studies at the provincial or national level can help policymakers identify trends and regional disparities more effectively.

Use a Mixed-Methods Approach

Incorporating both quantitative and qualitative methods, such as interviews, classroom observations, and focus group discussions, would provide a more comprehensive understanding of pedagogical practices and contextual factors that affect them.

Increase Sample Size and Use Random Sampling

Larger and more randomly selected samples would increase the validity and reliability of findings. Stratified sampling techniques could also ensure representation across gender, subject expertise, and years of teaching experience.

Include Student Outcomes as a Variable

Future research could examine the relationship between teacher's pedagogical skills and student's academic performance to determine how variations in instructional quality impact learning outcomes.

Investigate Teacher Training and Development Programs

Further studies could focus on evaluating the effectiveness of pre-service and in-service training programs across rural and urban settings. Understanding the impact of these programs on teaching practices would help improve teacher education policies.

Explore Digital Pedagogy in Rural Schools

With the increasing importance of technology in education, future research should explore how digital tools are (or are not) integrated into teaching in rural areas to identify barriers and opportunities for digital transformation in low-resource settings.

References

1. Academy of Educational Planning and Management (AEPAM). (2018). Pakistan education statistics 2016–17. Ministry of Federal Education and Professional Training.
2. American Educational Research Association (AERA). (2011). Code of ethics. <https://www.aera.net>
3. Bala, M. P., & Bashir, L. (2016). Teaching effectiveness of secondary school teachers in relation to their work motivation. *International Education and Research Journal*, 2(9), 7-8.
4. Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
5. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
6. Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs*. Jossey-Bass.
7. Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.
8. Farooq, M. S. (2006). Effect of teacher's professional education on students' achievement in mathematics. *International Journal of Business and Social Science*, 3(6), 212–221.
9. Farooq, M. S., & Shah, S. Z. H. (2008). Students' attitude towards mathematics. *Pakistan Economic and Social Review*, 46(1), 75–83.

10. Fernandes, S., Araújo, A. M., Miguel, I., & Abelha, M. (2023). Teacher professional development in higher education: The impact of pedagogical training perceived by teachers. *Education Sciences*, 13(3), 309.
11. Kormos, E., & Wisdom, K. (2021). Rural schools and the digital divide: Technology in the learning experience. *Theory & Practice in Rural Education*, 11(1).
12. Marzano, R. J. (2007). *The art and science of teaching: A comprehensive framework for effective instruction*. ASCD.
13. Mayer, R. E. (2014). Incorporating motivation into multimedia learning. *Learning and Instruction*, 29, 171-173.
14. Niaz, R. A., Ali, N., & Kiazai, A. N. (2021). Comparison of pedagogical practices of public and private secondary schools in Quetta district. *Pakistan Journal of Educational Research*, 4(2).
15. Riaz, M. (2017). *Analysis of Classroom Practices that Preschool Teachers Use to Promote Civic Efficacy*. Mississippi State University.
16. Shulman, L. S. (2006). Knowledge and teaching: Foundations of the new reform. *Teacher Education: Major Themes in Education*.—New York: *Macmillan*, 119-145.
17. Siddique, M., Tatlah, I. A., Ali, M. S., Awan, T. H., & Nadeem, H. A. (2021). Effect of Total Quality Management on Students' Performance in Chemistry at Secondary Level in Pakistan. *Multicultural Education*, 7(11), 592-602.
18. Skinner, B. F. (1965). *Science and human behavior* (No. 92904). Simon and Schuster.
19. Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
20. Tummons, J., Fournier, C., Kits, O., & MacLeod, A. (2016). Teaching without a blackboard and chalk: conflicting attitudes towards using ICTs in higher education teaching and learning. *Higher Education Research & Development*, 35(4), 829-840.
21. UNESCO. (2017). *Global education monitoring report 2017/18: Accountability in education – Meeting our commitments*. United Nations Educational, Scientific and Cultural Organization.
22. Wang, D. (2011). The dilemma of time: Student-centered teaching in the rural classroom in China. *Teaching and Teacher Education*, 27(1), 157-164.