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Teaching Effectiveness in Multigrade Classrooms: The Role of Teaching Challenges, Instructional Strategies, And Institutional Support Among Female Primary School Teachers in Pakistan

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Abstract

Multigrade teaching is still a common practice in rural and resource-poor educational contexts, especially in developing nations in which teachers are in short supply and school resources are limited. Although multigrade teaching has been adopted widely, there are a number of pedagogical and organizational difficulties which can impact the effectiveness of multigrade teaching. This study has analyzed the effect of teaching challenges, instructional strategies, institutional support and teaching effectiveness of female teachers working in multigrade class in District Kohat of Pakistan. A quantitative cross sectional survey design was used. The sample consisted of 447 teachers in the female teachers from the 12th grade primary schools in Nakuru Division of Murang'a district in Kerricho district, out of which 211 teachers were randomly selected using simple random sampling. The teaching challenges, teaching approaches, institutional support, and teaching effectiveness were measured by using a structured questionnaire. Descriptive statistics, Pearson correlation, multiple regression analysis, independent samples t-test and one-way analysis of variance (ANOVA) were used to analyze data. The findings showed that teachers faced many problems in multigrade classes, especially workload, classroom management and shortage of resources. The results of the correlation analysis showed that teaching challenges had a negative correlation with teaching effectiveness, while instructional strategies and institutional support were significantly and positively correlated with effectiveness. Multiple regression analysis indicated that the predictors accounted for 50% of the variance in teaching effectiveness. The institutional support was found

to be the most predictive factor, followed by instructional strategies and having a significant negative effect was teaching challenges. In addition, considerable variation in effectiveness of teaching was found between teachers in terms of experience and qualification. The study finds that in addition to teachers' teaching skills, supportive institutional conditions are crucial to effective multigrade teaching. The results highlight that professional development, administrative support and instructional resources need to be improved to boost educational quality in multigrade schools in rural areas.

Keywords; *Multigrade teaching, teaching effectiveness, teaching strategies, institutional support, teaching problems, female primary school teachers, rural education and Pakistan.*

Introduction

Fair access to equitable quality primary education is a core priority of educational systems globally. While significant improvements have been made in school enrolment, in many developing countries, teachers are still in short supply, school infrastructure is inadequate, and educational resources are not evenly distributed, especially in rural and geographically remote areas. Multigrade teaching is one solution that is widely used to meet the problems mentioned above; it is when a single teacher is put in a classroom to teach more than one grade level of the same subject at the same time. At first, multigrade teaching was a practical measure to tackle resource limitations, but over time it has become more than just a challenge; it is a pedagogical model that demands specific teaching skills and organizational capabilities (Ares-Ferreirós et al., 2025; Minaz et al., 2024).

Multigrade schooling is widely established in many Asian, African and Latin American countries where single-grade schooling is not feasible due to few students, scattered population and financial constraints. Studies indicate that multigrade classes can help to improve education access and inclusion, as they allow schools in remote areas to operate in the face of teacher shortages and limited school facilities (UNESCO, 2023). In most cases, multi-grade schools provide the main avenue for formal schooling to children in the marginalized regions. Hence, the factors affecting the effectiveness of teaching in these contexts are of growing significance for planners and policy makers.

Multigrade teaching is an important part of the rural primary education system in Pakistan. Many of the public primary schools have fewer teachers and teachers must teach several classes at once. This is especially true in less populated areas where schools are few and far between. Multi-grade classes are beneficial to improving access to learning but also provide significant instructional complexity. The teachers have to cope with the diversity of learning needs and have to implement different curricula and have to manage their class effectively without compromising the meaningful learning for the students of all ages and academic level (Salamet & Majeed, 2025).

Female primary school teachers have a very important role in these difficult environments among the professionals working in these environments. They have been linked to better student enrolment, retention and participation particularly among girls. Previous studies have demonstrated that female teachers contribute positively to creating supportive and inclusive learning environments, thereby promoting gender equity in education (UNESCO, 2023). Female teachers in rural areas, however, face other possible barriers such as social constraints, safety risks, transportation problems, and lack of professional development opportunities. These factors can have an impact on their teaching performance and effectiveness in instruction (Akhtar & Rafiq, 2024).

Increased workload for teachers is one of the most common problems reported in multigrade education. Planning multiple curricula and preparing differentiated learning activities for multiple grade levels as well as ongoing monitoring of students of different ability levels are all necessary in multigrade classrooms. These demands create cognitive workload, and frequently limit the time that can be spent on teaching a student. (Ares-Ferreirós et al., 2025) The teachers also find it hard to cover the curriculum at the different levels and keep students engaged in the classroom with discipline. In resource-challenged schools, these challenges are accentuated by lack of teaching resources, limited classroom space and limited administrative support.

However, the studies show that with the right instruction in multigrade classes, teachers' performance can be greatly enhanced. The modern pedagogical theories focus on the importance of collaborative learning, cooperative group work, differentiated instruction, and peer tutoring as strategies for overcoming learner diversity. There is an opportunity for peer assisted learning, where the more advanced student or older students assist the younger students, and knowledge is shared and social interaction takes place. Likewise, differentiated instruction enables teachers to adjust the contents of learning activities based on students' educational needs and developmental stages, which fosters active learning and academic success (Tomlinson, 2023; Cornish, 2022). Research in rural settings has demonstrated the positive impact of these strategies on student achievement and teachers' effectiveness.

Another important determinant of the effectiveness of teaching in multigrade classrooms is institutional support. Institutional support includes professional development, access to instructional tools, administrative support, mentoring, and school leadership. Recent educational research indicates that teachers with sufficient organizational support are more satisfied with their jobs, are better at their instruction, and are more effective in their classrooms (OECD, 2023). Lack of support, on the other hand, can lead to isolation from the profession, lowered motivation and high stress at work. In multigrade schools, it is likely that teaching is often carried out under challenging conditions and institutional support can be important in alleviating instructional difficulties and improving teaching performance.

The current study is based on Vygotsky's theory of Social Constructivist Theory that emphasizes social interaction and collaborative learning in cognitive development. This view defines knowledge as a product of meaningful interaction between students and between students and teacher. Multigrade classrooms offer a realistic environment for such relations as pupils of various age and ability levels work cooperatively and instruction is provided by peers. The theory provides a solid conceptual basis to grasp the role of instructional strategies in effective teaching and learning in multigrade classrooms (Vygotsky, 1978).

While multigrade teaching has gained greater interest from scholars, there are a few important gaps that need to be filled in the literature. First, most of the previously published research has been on the structural and organizational features of multigrade education and not on teacher effectiveness as a multi-dimensional construct. Secondly, the factors that affect teaching challenges, teaching strategies, institutional support, and their impact on teaching effectiveness have been studied separately in many studies, and less research has been conducted on the interdependence of these factors in affecting teaching. Third, there is relatively little empirical evidence on female primary school teachers in rural multigrade schools in Pakistan. Last, but not least, studies have recently pointed to the importance of context-specific investigations that consider gender-specific, teachers' professional experiences, challenges and institutional conditions (Minaz et al., 2024; Salamet & Majeed, 2025).

The present study explores the effect of the problems in teaching, instructional methods and institutional support on the effectiveness of teaching in the context of multigrade classes of

female teachers in District Kohat within the primary school. The study examined the interplay between these factors, aiming to contribute to the understanding of the multigrade approach and the information gathered may support educational policy, teacher training programmes, and the process of improving educational institutions in rural educational systems.

Significance of the Study

The study makes a contribution to theory building by adding to the knowledge base on teacher effectiveness in multi-grade classrooms. Empirically, it offers the evidence of factors that affect the teaching performance of female teachers in rural schools. The results could benefit educational authorities in providing specific professional development, improving institutional support systems, and formulating policies to support better teaching and learning in multigrade classrooms. Moreover, the study is also a contribution to the scanty empirical literature on multigrade education in Pakistan.

Research Objectives

The study was guided by the following objectives:

1. To examine the challenges faced by female primary school teachers in multigrade classrooms.
2. To investigate the instructional strategies employed by female primary school teachers in multigrade settings.
3. To determine the level of institutional support available to female teachers working in multigrade classrooms.
4. To examine the relationship between teaching challenges and teaching effectiveness.
5. To examine the relationship between instructional strategies and teaching effectiveness.
6. To examine the relationship between institutional support and teaching effectiveness.
7. To determine the predictive influence of teaching challenges, instructional strategies, and institutional support on teaching effectiveness.

Research Hypotheses

H1: Teaching challenges significantly and negatively influence teaching effectiveness among female primary school teachers in multigrade classrooms.

H2: Instructional strategies significantly and positively influence teaching effectiveness among female primary school teachers in multigrade classrooms.

H3: Institutional support significantly and positively influences teaching effectiveness among female primary school teachers in multigrade classrooms.

H4: Teaching challenges, instructional strategies, and institutional support collectively predict teaching effectiveness among female primary school teachers in multigrade classrooms.

Conceptual Framework

The conceptual framework is based on the idea that teaching effectiveness is the dependent variable that would be affected by the three independent variables such as teaching challenges, teaching strategies, and teaching institutions support. The "negative" effects of teaching challenges are expected to impact teaching effectiveness, while the "positive" effects of the teaching challenges are expected to come from factors such as instructional strategies and institutional support. The focus on effective teaching in multigrade classrooms is based on the premise that effective teaching is a product of the interaction between class-level instructional practices and the institutional context.

Methodology

Research Design

The study used a quantitative cross sectional survey research design to analyse the effect of the teaching challenges, teaching methods and institutional assistance on the teaching effectiveness

of female primary school teachers in multigrade classes. Since the investigation of relationships among variables and the testing of hypothesized relationships were the most important considerations, and the relationships are best explored and investigated through a systematic collection of data and statistical analysis, a quantitative approach was deemed appropriate. The cross-sectional design allowed data to be gathered at one time to give a snapshot view of teachers' perceptions and experiences in multigrade education.

Population and Sample

All female primary school teachers working in public sector multi-grade schools in District Kohat of Khyber Pakhtunkhwa Pakistan were used as the target population. The official records from district education office revealed that there were 447 female primary school teachers.

The sample size was calculated based on the suggestions of Krejcie and Morgan (1970) as guides for determining sample size. A sample size of 211 teachers was determined to be adequate based on the size of the population, to provide adequate statistical power and representativeness. The participants were selected using simple random sampling method which gives every member of the population an equal chance of being selected, thus eliminating selection bias.

Instrumentation

A structured, self-administered questionnaire was designed after a thorough literature search on multigrade teaching, teacher effectiveness, teaching strategies and institutional support. The instrument was divided into two parts.

The first part gathered demographic data such as age, academic qualifications and teaching experience. The second section assessed the study variables which were the teaching challenges, instructional strategies, institutional support and teaching effectiveness. The responses were measured on a five-point Likert scale (ranging from Strongly Disagree to Strongly Agree) with higher scores representing more agreement with each statement.

The questionnaire aimed to collect teachers' perceptions on the problem areas, pedagogical approaches, organizational support mechanisms, and effectiveness of multigrade teaching.

Validity and Reliability

In order to ensure content validity, the instrument was examined by the experts of educational research, teacher education and curriculum studies. The suggestions they gave on clarity, relevance and appropriateness of the items were included in the final questionnaire.

Cronbach alpha coefficient was used to determine the reliability of the instrument. The overall reliability value was above the recommended .70, suggesting overall satisfactory internal consistency, and suitable for data collection and statistical analysis (Taber, 2018).

Data Collection Procedure

After authorization by the concerned educational bodies, data were gathered from the selected ones during the academic session. Teachers were informed about the purpose of the study and assured that participation was voluntary. Questionnaire was administered after informed consent. The participants were also informed that their responses would remain anonymous and confidential; no individual information was gathered.

Completed questionnaires were checked prior to coding and data entry into the Statistical Package for the Social Sciences (SPSS) Version 26 for analysis.

Data Analysis

In the analysis of data descriptive and inferential statistical techniques were used. Demographic characteristics of the respondents along with description of the study variables were summarized with descriptive statistics such as frequencies, percentages, means and standard deviations.

The correlation between the teaching challenges, teaching strategies, institutional supports and teaching effectiveness was done using Pearson product-moment correlation analysis. Multiple

regression analysis was used to find the predictive effect of the independent variables on teaching effectiveness and the best predictor of the model.

Moreover, differences in teaching effectiveness as a result of teaching experience were investigated by independent samples t-test and the differences in teaching effectiveness as a function of qualifications were investigated by one-way analysis of variance (ANOVA). The level of .05 was used to establish statistical significance.

Ethical Considerations

Research conducted in the study was sensitive to the ethical principles for educational research. All participation was voluntary and the respondents were made aware that they could at any time and for any reason withdraw from the study without any repercussions. All the data were collected on a confidential and anonymous basis, and used only for academic purposes. Moreover, all procedures were carried out in compliance with accepted practices in responsible research with human subjects.

Summary

The study employed a quantitative cross sectional survey design to examine the effect of the teaching difficulties, strategies and institutional support on the effectiveness of teaching by the female primary teachers in the multigrade classes in the school. The study utilized 211 teachers of whom data were collected and analyzed using descriptive and inferential statistical technique to achieve the objectives of the study and to test the hypotheses of the study.

Results

Respondent Profile

A total of 211 female primary school teachers participated in the study. Regarding age, 46.4% of the respondents were between 31 and 40 years, followed by 29.4% aged 20–30 years, 18.0% aged 41–50 years, and 6.2% aged 51 years and above. Concerning academic qualifications, 45.5% possessed MA/M.Ed degrees, while 40.3% held BA/B.Ed qualifications. The remaining participants reported other qualifications (14.2%). In terms of teaching experience, 42.2% had 6–10 years of experience, 33.2% had 1–5 years, and 24.6% had more than 11 years of teaching experience.

Descriptive Statistics

The descriptive statistics indicated that teaching challenges recorded the highest mean score ($M = 3.89$, $SD = 0.78$), suggesting that respondents experienced considerable difficulties in multigrade classrooms. Instructional strategies showed a mean score of 3.65 ($SD = 0.71$), indicating frequent utilization of adaptive pedagogical approaches. Teaching effectiveness was reported at a moderate level ($M = 3.54$, $SD = 0.69$). Institutional support recorded the lowest mean score ($M = 3.21$, $SD = 0.83$), reflecting comparatively limited organizational and administrative support available to teachers.

Correlation Analysis

Pearson correlation analysis revealed significant relationships among the study variables. Teaching challenges were negatively associated with teaching effectiveness ($r = -.51$, $p < .01$), indicating that higher levels of classroom challenges corresponded with lower levels of teaching effectiveness. Instructional strategies demonstrated a positive relationship with teaching effectiveness ($r = .58$, $p < .01$). Likewise, institutional support exhibited a strong positive association with teaching effectiveness ($r = .62$, $p < .01$). Furthermore, instructional strategies were positively correlated with institutional support ($r = .45$, $p < .01$), suggesting that supportive school environments encourage the implementation of effective teaching practices.

Regression Analysis

Multiple regression analysis was conducted to examine the predictive influence of teaching challenges, instructional strategies, and institutional support on teaching effectiveness. The model was statistically significant, $F(3, 207) = 52.31, p < .001$, explaining 50% of the variance in teaching effectiveness ($R^2 = .50$, Adjusted $R^2 = .48$).

The regression coefficients indicated that institutional support was the strongest predictor of teaching effectiveness ($\beta = .41, p < .001$). Instructional strategies also exerted a significant positive influence on teaching effectiveness ($\beta = .28, p < .001$). In contrast, teaching challenges negatively predicted teaching effectiveness ($\beta = -.31, p < .001$).

Independent Samples t-Test

An independent samples t-test was conducted to examine differences in teaching effectiveness based on teaching experience. Results showed that teachers with more than six years of experience ($M = 3.72, SD = 0.68$) reported significantly higher teaching effectiveness than teachers with one to five years of experience ($M = 3.41, SD = 0.62$), $t(209) = 3.85, p < .001$.

One-Way ANOVA

A one-way analysis of variance was conducted to assess differences in teaching effectiveness across qualification levels. The results revealed a statistically significant difference among qualification groups, $F(2, 208) = 5.87, p = .003$. The findings indicate that academic and professional qualifications significantly influence teaching effectiveness in multigrade classrooms.

Discussion

The impact of female primary school teachers' teaching difficulties, teaching strategies and institutional support on the effectiveness of primary school teachers in multigrade classrooms was the subject of the present study. The results offer empirical evidence on the role of a variety of teaching, organizational and professional factors in the teaching effectiveness in multi-grade classes.

The descriptive findings indicated that the most reported problem is teaching challenges reported by teachers. This finding indicates that multigrade teaching is a challenging teaching model that also demands teachers to oversee various curricular demands, as well as cater to the needs of a mixed population of learners. In recent studies, the challenges faced by multigrade teachers, such as workload, time constraints, and classroom management, have also been reported to potentially negatively impact their teaching quality (Ares-Ferreirós et al., 2025; Minaz et al., 2024).

The correlation between teaching challenges and teaching effectiveness was also significant and negative in the study. This discovery lends credence to the notion that complexity in instruction and the limited resources can hinder the ability of teachers to provide effective instruction. This outcome is consistent with current educational research that has found that a heavy workload and the workload of teaching in the classroom can have a negative impact on the performance, motivation and quality of educators.

There was a strong positive correlation between the instruction and the effectiveness of instruction. Teachers who indicated that they were using more adaptive instructional strategies, including peer tutoring, differentiated instruction, and collaborative learning, also rated teaching effectiveness higher. This discovery aligns with Social Constructivist Theory where the idea of interaction, collaboration, and engagement of the learner are important in achieving an educational outcome. Previous research also shows that the use of learner-centred approaches has a positive impact on classroom management and student learning in multigrade classrooms (Tomlinson, 2023; Cornish, 2022).

The factor that predicted the most significant underlying factors of teaching effectiveness was institutional support. This discovery is significant because it shows the need for organizational aspect to improve teacher performance. Those teachers who felt that they had more professional development opportunities, instructional materials, and administrative support were more effective. The findings align with the School Effectiveness Theory which suggests that school-level conditions are important factors that affect the educational outcomes and instructional quality. These factors are also reflected in recent evidence which indicates that supportive leadership, resources and ongoing professional development are significant factors in teacher effectiveness and professional satisfaction (OECD, 2023; UNESCO, 2023).

The results also showed that there were significant differences in the effectiveness of the teacher according to their experience and qualification. The findings revealed that the more experienced teachers performed better than their less experienced counterparts which implies that professional experience is a factor in the development of classroom management techniques, pedagogical competency and confidence in classroom teaching. Likewise, those teachers with higher academic and professional qualifications reported higher effectiveness, suggesting that formal preparation and professional knowledge continue to be important factors influencing the quality of instruction. The results are consistent with the human capital theory which states that education and experience increases professional competence and performance.

The overall findings suggest that effectiveness of teaching does not depend on a single aspect, but, rather, it is a function of the interplay between classroom conditions, teaching practices, and institutional support systems in multigrade classrooms. Furthermore, there is a need to improve the education in multigrade teaching using a comprehensive approach, focusing on the teacher and organizational level.

Practical Implications

The results have implications for educational policy makers, school leaders, and teacher educators. First of all, an educational authority needs to create special teacher development initiatives related to multigrade teaching and learning, differentiated instruction and classroom organization. Second, it is important to enhance the institutional support in schools including provision of instructional resources, mentoring systems, and administrative support. Third, teacher education programs need to integrate multigrade teaching skills into pre-service and in-service teacher education curriculum. Last but not least, special attention should be paid to the needs of novice educators who might need extra guidance in dealing with complex multigrade classes.

Conclusion

In this study, teaching challenges, teaching strategies and institutional support were explored to see how they affect the effectiveness of female teachers in the primary school in District Kohat with multigrade classes. The results indicated that teachers face great difficulties in teaching, but adaptive instructional strategies still have positive impacts on teaching effectiveness. The role of organizational and administrative support in instructional effectiveness was strongly expressed by institutional support, indicating its significance in supporting teachers' instructional effectiveness. Moreover, the teaching experience and professional qualifications were shown to have a significant impact on effectiveness. The study finds that to improve multigrade education an integrated approach is needed that tackles classroom issues, builds instructional capacity, and improves institutional support systems.

Limitations

The results must be interpreted with caution for the following reasons. It is important to note that the study was conducted with female primary school teachers in District Kohat which

restricted the generalisability of the findings for other geographical regions and educational contexts. Secondly, the self-reported data from questionnaires may have caused response bias. Thirdly, the cross-sectional design of the study doesn't allow any causal inferences to be drawn between the variables. Lastly, the study was based on teachers' perceptions, and student achievement data and classroom observations were not included.

Future Research Directions

Further research is needed to cover a wider geographical area and incorporate several districts and provinces. Mixed methodology or qualitative methods can also be used to understand the teachers' experiences in a multigrade classroom in greater depth. Changes in the effectiveness of teaching over time can be studied by using longitudinal studies. Moreover, the use of digital technologies in multigrade classrooms, as well as teacher well-being, leadership practices and student learning outcomes should be investigated in future studies.

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