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Exploring Challenges in Science Teachers' Training at Community Schools in Nepal

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ABSTRACT

Science teaching is considered an integral component of school education in Nepal. Though the government has implemented a series of continuous professional development (CPD) activities to capacitate science teachers, the achievement in science learning, as per the National Assessment of Student Achievement (NASA) report, is below the average. This gap has to be filled if the nation is committed to prosperous outcomes in the field of education, as it is the foundation of every sector. The researcher aims to bridge the breach and overcome the issues that are aligned with Nepal's current circumstances. This paper analyses the qualitative phenomenology approach to explore science teachers' challenges in their training. This study reveals diverse key aspects of CPD, such as resource constraints, administrative support issues, teacher training, and collaborative effort. The researcher has shed light on the significance of CPD in Nepal, furnishing the required strategies to foster better educational outcomes from the students' side.

KEYWORDS: Teachers' Training; Qualitative; Phenomenology; Students' Outcome; CPD

1. INTRODUCTION

Continuous Professional Development (CPD) is vital for preserving and cultivating teaching superiority in educational institutions globally. In Nepal, where community schools serve a huge number of students, the role of CPD becomes even more critical. These schools, mainly in rural areas, encounter plentiful challenges, including scarce resources, insufficient infrastructure, and a dearth of qualified teachers. The effective application of workshops, conferences, and training is indispensable to address these challenges, confirming that teachers are well-equipped to deliver eminent education and acclimate to the varying demands of the educational scenery. However, the veracity of CPD in Nepalese community schools is multifaceted, with numerous barriers that impede its effectiveness. This paper explores the challenges associated with training in community schools in Nepal, concentrating on the contextual factors that subsidize these complications.

CPD is indispensable for improving the quality of teaching, fostering professional growth, and, eventually, taming student learning outcomes (Desimone, 2009). In the context of science education in Nepalese community schools, effective training is crucial, as these schools face unique challenges, including limited resources, infrastructural deficits, and inadequate backing from educational authorities (Basnet & Bista, 2019). Science education necessitates hands-on experience and an inquiry-based learning approach, which can be tough to implement in under-resourced community schools. Subsequently, the efficacy of training activities in these settings is frequently negotiated.

Despite efforts to mend training programs in Nepal, substantial gaps remain, mainly in rural community schools where teachers scuffle with inadequate training support and a dearth of resources to apply new teaching strategies (Karki, 2017). This study employs a phenomenological approach to explore the lived experiences of science teachers in community schools, focusing on how activities related to training affect educational outcomes and the implementation of teaching practices.

2. LITERATURE REVIEW

The literature review is based on the prominence of CPD in education the education system in Nepal, challenges in science education in Nepal, challenges in executing CPD in community schools, and the effect of CPD challenges on educational quality

The Prominence of CPD in Education

Continuous Professional Development is a key factor in refining educational outcomes. It comprises the ongoing process of teachers procuring new knowledge, skills, and proficiencies to boost their teaching practices. CPD is predominantly imperative in developing countries such as Nepal, where the education system is still sprouting, and teachers often face substantial challenges in conveying quality education. Effective CPD programs can also help teachers stay updated with the latest pedagogical strategies, curriculum changes, and technological improvements, eventually leading to improved student learning outcomes (Darling-Hammond, Hyler, & Gardner, 2017). CPD is a continuous training and learning process that helps teachers develop skills and refine teaching practices (Timperley, 2011). Effective CPD is categorized by unrelenting, collaborative, and context-specific training, which is linked to cultivating student learning outcomes (Desimone, 2009). However, in developing countries like Nepal, CPD programs are repeatedly sporadic, theoretical, and detached from classroom realities (Pant, Shrestha, & Rana, 2018).

The Education System in Nepal

Nepal's education system is characterized by a twofold structure, with both community and institutional schools. Community schools, which are government-funded, accommodate the maximum number of students, particularly in rural areas. However, these schools frequently tussle with a dearth of resources, insufficient infrastructure, and an unavailability of qualified teachers (World Bank, 2018). The quality of education in community schools is normally inferior to that in institutional schools, contributing to educational disparity in the country. CPD is a crucial tool for connecting this gap by allowing teachers to mend their instructional practices and enhance student learning.

Challenges in Science Education in Nepal

Nepal's Community schools face innumerable challenges, including pitiable infrastructure, lack of laboratory facilities, and scarce teaching aids (Adhikari & Pant, 2020). Specifically, science teachers face the double burden of teaching theoretical concepts without the essential tools for practical demonstrations, making it problematic to improve students' critical thinking and problem-solving skills. These challenges are more aggravated by the poor alignment of CPD programs with the distinctive prerequisites of community schools, leading to an absence of meaningful impact on student outcomes (Kafle & Shrestha, 2019).

Challenges in Executing CPD in Community Schools

Instigating CPD in community schools in Nepal depicts numerous challenges. One of the key issues is the shortage of resources. Many community schools have inadequate financial support, which hampers their capacity to provide teachers with access to CPD programs (Bista, 2004). Furthermore, the geographic seclusion of many community schools promotes complications in the delivery of CPD, as teachers in remote areas often have limited access to training opportunities and professional linkages (Dhungana, 2020). An additional substantial challenge is the lack of institutional support for CPD. In many cases, CPD programs are not well-integrated into the school system, and teachers are not provided ample time or inducements to partake in professional development activities (Shrestha, 2016). This lack of support can lead to less involvement proportions and bar the efficacy of CPD initiatives.

Cultural dynamics also play an essential role in the challenges linked with CPD in Nepal. The conventional topdown tactic to education in Nepal can deter the acceptance of novel teaching practices endorsed through CPD (Poudel, 2020). Moreover, there is usually a lack of mindfulness and understanding of the significance of CPD among teachers and school administrators, further restraining its impact.

The Effect of CPD Challenges on Educational Quality

The challenges allied with CPD in Nepalese community schools directly impact the excellence of education. Without effective CPD, teachers may struggle to implement contemporary teaching approaches, address the diverse requirements of their students, and keep up with variations in the curriculum. It can lead to inactive teaching practices and sub-standard student learning outcomes, principally in remote areas (Thapa, 2012). Research has shown that effective CPD can considerably improve educational outcomes by improving teachers' pedagogical skills and increasing student engagement (Borko, 2004). However, in the context of community schools in Nepal, CPD programs time and again fail to address the systemic issues that limit teachers from executing what they learn. This disconnection diminishes the efficacy of CPD in achieving its intended goals and adversely impacts student performance (Basnet & Bista, 2019).

Objectives of the Study

This study aimed to explore the unique practices that are prevailing in the context of Nepalese community schools. Teachers are now more vigilant regarding the challenges of CPD within distinctive circumstances. Thus, among many, two of the objectives have been listed below:

To find out and analyze the prominent factors that hinder the implementation of CPD in the community schools of Nepal.

To assess the impact of existing challenges in science teachers' training and their outcomes in the community schools of Nepal.

Research Questions

This paper is bound to respond to all the questions that are mentioned as follows:

What factors affect the transfer of knowledge and skills that teachers are exposed to through CDP?

What are the challenges that science teachers face in their classrooms?

How are these challenges affecting the teachers' classroom performance in engaging students in learning science?

3. METHODOLOGY

The research employs a phenomenological approach, which is mainly suited for discovering and understanding the lived experiences of individuals in explicit contexts. As a qualitative research methodology, phenomenology is concentrated on apprehending the essence of participants' experiences, illuminating the subjective realities and perceptions that influence their professional practices (Moustakas, 1994). Given the research emphasis on science teachers' experiences with the training programs provided in community schools, this approach supports the examination of their perceptions of how CPD challenges affect educational outcomes and teaching practices.

Research Design

This study adopted a qualitative research design, aiming at in-depth exploration and indulgence of participants' experiences rather than quantifying variables. The phenomenological approach guided the research process, accentuating the subjective accounts of the teachers involved in training programs at community schools in Nepal. Semi-structured interviews were chosen as the primary data collection method as they allow for open-ended responses, allowing participants to express their experiences, thoughts, concerns, and suggestions without the limitations of structured questionnaires (Creswell, 2013). A purposive sampling technique was used to select the participant, who is a science teacher from a community school in Dhading, a district near the capital city of Kathmandu. This sampling method ensured that the selected participant had relevant experiences related to the research topic. Only one science teacher was picked based on her readiness to participate, years in the teaching profession, and exposure to training programs. The sample considered geographical conditions and captured various experiences and perceptions regarding challenges while undertaking training (Patton, 2015).

Data Collection Procedures

The data were collected using face-to-face and online semi-structured interviews, depending on the participant's availability and preference. I conducted interviews with the same participant thrice, lasting between 50 and 70 minutes. The interview protocol incorporated open-ended questions concentrating on themes such as the types of training programs she has attended, challenges in gaining access and implementing training tactics, differences in the configuration of training content with her classroom realities, and her insights into the impact of training on her teaching practices and student outcomes (Kvale & Brinkmann, 2015). The interviews were recorded with the participants' consent and transcribed precisely for truthful representation of the data. Follow-up questions were queried to elucidate answers and probe deeper into definite experiences guided by this research (Rubin & Rubin, 2012). This approach facilitated ensuring the participant's voice was genuinely heard, reflecting the intricacy and profundity of her lived experiences (Seidman, 2019).

Data Analysis Procedures

The data analysis followed Moustakas' (1994) phenomenological analysis method, encompassing three key stages: horizontalization, clustering, and textural and structural description. At first, horizontalization was done by reading through the transcriptions and ascertaining every noteworthy statement related to the research questions. Every statement was treated with equal prominence to avoid researcher bias. Afterward, clustering was implemented, where the substantial statements were assembled into themes that characterize the essential components of the participants' experiences. For illustration, themes such as "misalignment of training content with classroom realities" and "lack of resources and support" arose as dominant classifications. These themes

were polished and scrutinized from the perspective of how they influence the teachers' and students' educational outcomes and the efficacy of training programs.

Lastly, textural and structural descriptions were well-developed. The textural description delineated what the participant experienced and the nature of challenges in training, while the structural description discovered how she experienced these challenges, bearing in mind the context of her community school and socio-cultural environment. This collective narrative delivered a widespread understanding of the phenomenon, emphasizing the nuanced ways in which training challenges manifest and affect teaching practices in community schools of Nepal. This arduous data analysis process confirmed that the findings genuinely epitomize the shared experiences of science teachers, given that treasured insights for policymakers and educational stakeholders in quest of honing training usefulness in similar educational settings.

Findings

The analysis of the interview data exposed numerous critical themes that answer the research questions regarding the impression of training challenges on educational outcomes and the potency of teaching practices in community schools in Nepal (Braun & Clarke, 2006). The findings are systematized into three core themes: Misalignment of Training Programs with Classroom Realities, Resource Constraints and Dearth of Support, and Limited Impact on Student Performance and Teaching Practices. Each theme delivers visions into how science teacher experiences training challenges and how they decipher extensive educational outcomes.

Misalignment of Training Programs with Classroom Realities

The most commonly stated challenges by the interviewed science teachers were the misalignment of training programs with tangible classroom settings and the realism of community schools. Science Teacher testified that many training sessions she joined were structured around generic or urban-centric models, which did not consider the precise necessities of rural community schools where the participant was based. Participant underlined that the training materials and strategies offered in CPD activities mostly underscored using digital tools, exclusive laboratory kits, and innovative teaching aids, which are fundamentally unreachable in their contexts. To illustrate, a participating teacher from a remote district of Gandaki province mentioned:

"The CPD trainers generally talk about using digital projectors, computers or laptops, and resources from the internet to make science classes communicative, but in our school, we don't even have an appropriate blackboard; the computer is far-fetched. It feels like the trainings are meant for an entirely different type of school."

Such a reaction emphasizes a critical issue: training programs are frequently designed in a top-down style without ample consideration of local requirements. This mismatch generates frustration among teachers who feel the training sessions are inappropriate for their teaching environment. Furthermore, the teacher noticed that CPD programs recurrently emphasize pedagogical theories without furnishing practical guidelines on how to apply these theories in resource-limited settings. This deficiency of contextualization leaves teachers without solid approaches to implement new techniques, eventually shrinking the utility of the training. Another point of disagreement was that CPD trainers were frequently supposed to have a deficient understanding of the challenges confronted by community school teachers. Many trainers were from urban areas and had pintsize to no acquaintance with rural schools' limitations. This gap in apprehension led to training content that was supposed to be ardent rather than practical. Teachers advocated that connecting trainers with local experience or conducting needs assessments before planning CPD programs could help bridge this gap.

Resource Constraints and Dearth of Support

The second foremost theme that emerged from the data is the severe resource restraints and absence of institutional support that hamper the effective execution of CPD initiatives in community schools. Even when teachers conveyed curiosity about applying novel practices learned during training sessions, they repeatedly found themselves incapable of doing so due to the dearth of rudimentary resources. Regarding science education, to be specific, the absence of laboratory amenities, scientific tools, and even simple teaching aids such as models or illustrations is a substantial blockade. The teacher mentioned feeling stranded and demoralized when she could not apply the skills and knowledge gained from training to real-world classroom activities. The teacher from a community school also noted:

"We learn about fascinating science experiments during training, but we don't even have an appropriate lab back at school. Most of our teaching is solely lectures; nevertheless, we know it's not worth it. Without adequate resources, how can we create science come alive for the students?" The lack of means is compounded by insufficient administrative support. The participant testified that her school administration does not give preference for the implementation of training recommendations because of financial constraints or a lack of consciousness about the value of training. In some cases, teachers were hopeless about partaking in training programs as it meant taking time away from daily teaching duties. This lack of backing hinders teachers from joining training and makes it tough for them to request the resources they require to implement what they learn. Moreover, there is inadequate follow-up support from CPD providers after the preliminary training sessions. The teacher revealed that once the workshops finished, there was no system for constant supervision or consultation to help them navigate the challenges of implementing new strategies. This lack of follow-up support leads to isolation as teachers struggle to acclimate to new methods independently without proper direction or feedback.

Limited Impact on Student Performance and Teaching Practices

The third theme centers around the limited impact of training programs on student performance and teaching practices because of the abovementioned challenges. The teacher articulated that while training programs frequently presented ground-breaking teaching methodologies, the practical restraints she faced in her school made these methodologies hard to apply effectively. For example, one of the fundamental teaching tactics underscored in training programs is the alteration from teacher-centered to student-centered learning. This method comprises group work, inquiry-based learning, and applied activities vital for science education. However, employing student-centered learning becomes an arduous challenge in classrooms that are overpopulated, ill equipped, and lacking in elementary materials. A science teacher from a community school in the hilly region mentioned:

"Our classrooms are very crowded; sometimes, we have 50 to 60 students in a single class. How can we do group activities or experiments with that many students without materials? I want to use communicative approaches, but it's next to impossible."

Consequently, many teachers opt for conventional, lecture-based teaching methods, which are less effective in enhancing critical thinking and scientific inquiry. It, in turn, negatively affects student participation and learning outcomes. Teachers noticed that despite attending multiple training programs, they did not observe a substantial improvement in student performance, mainly in science subjects, where practical understanding is the key. The findings also specify that the lack of localized CPD programs has paved the way for low teacher enthusiasm and professional growth. Teachers sense that the training is repetitive and does not accommodate their specific requirements. This lack of professional progress opportunities reduces the overall impact of CPD on teaching practices. Subsequently, the eventual goal of improving student learning outcomes remains unmet.

Implications for Training Program Design and Implementation

The findings of this study highlight important considerations for the design and implementation of training programs in Nepal's community schools. Firstly, there is a critical need for contextualization in training programs, necessitating thorough needs assessments and the involvement of local teachers from the planning phase to ensure relevance and validity. Furthermore, effective continuous professional development (CPD) cannot be achieved without adequate resource allocation; addressing resource deficiencies is essential for transforming training into improved teaching practices. Essential scientific tools, teaching aids, and infrastructural support play a vital role in the success of science education training sessions. Moreover, follow-up support through mentorship, peer collaboration, and additional training is necessary to help teachers implement new strategies and overcome challenges. Incorporating experienced local educators as trainers can bridge the gap between training content and actual classroom situations. These local trainers can provide contextually relevant examples, making the training more applicable.

Additionally, school management must align training programs with policy and organizational support, acknowledging their importance and facilitating participation. It involves allocating time and financial resources for training and fostering a culture that values ongoing professional development. Ultimately, a comprehensive approach is needed to enhance the effectiveness of training programs in community schools.

4. CONCLUSION

The findings of this study specify that while training programs are designed to augment teaching practices, their effectiveness is strictly limited by circumstantial barriers in community schools. The misalignment from training content to the ground realities of community schools, joint with resource limitations and organizational support issues, generates a circumstance where teachers cannot apply new techniques in their classrooms. This results in diminishing the impact of workshops on educational outcomes and student performance, making it essential to rethink the design and execution of training programs for community schools in Nepal.

This study helps to find out the perilous challenges faced by science teachers in community schools of Nepal concerning CPD programs, mainly in the training aspect. The study's findings portray that the challenges related to training programs, such as misalignment with classroom realities and lack of resources, predominantly impact the execution and efficacy of these programs, ultimately leading to poor educational outcomes and unsatisfactory student performance. It is vital to generate context-sensitive programs that provide continuous support and resources for teachers in community schools to improve the effectiveness of training programs.

This study also emphasizes the multifaceted relationship between training challenges, resource constraints, and educational outcomes of students in Nepal's community schools. Addressing these challenges necessitates a comprehensive approach that ponders the countryside and marginalized schools' unique needs. By contextualizing CPD programs, providing enough resources, and nurturing an empathetic environment, policymakers and academicians can improve the impact of training on teaching practices and eventually improve students' academic and holistic performance in community schools across Nepal.

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