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Exploring Project-based Learning in the Public High Schools in Nepal

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Abstact

This research seeks to examine the application of Project-Based Learning (PBL) within public high schools across Nepal, focusing on health and population education. This study aims to assess perceptions, practices and challenges of such integration into the establishment. In an interpretative paradigm, techniques such as interviews, focus group discussions and classroom observations are used to collect data. The study sample comprises five health and population teachers from Kirtipur municipality who were selected due to their experience and active involvement in teaching and professional development. Findings reveal that PBL strongly falters due to limited resources, inadequate materials, infrastructure and funding. PBL tend to be adopted more by urban schools as compared to rural ones due to resources access advantage. Other challenge includes lack of harmonization between PBL activities and the national curriculum, too few teacher training opportunities and very large classes. However, teachers, when pressed, admitted to the development which PBL brings about in one's critical thinking, teamwork and practical learning, but now have difficulty implementing it due to more time restrictions and syllabus completion pressure. Despite that, it enhances student engagement and develops hard-learned skills. Resource gaps, professional development, and stakeholder awareness could promote effective PBL practices in the public school sector in Nepal.

Keywords: *Project-based learning, public schools, teachers professional development*

Introduction

Nepalese public schools often follows traditional, teacher-centered methods such as lectures and rote memorization. These methods, described as the 'banking model of education' (Freire, 1996) learn content and not understanding or critical thinking. Here, students become passive recipients of knowledge with little exposure to experimentation or any activity themselves. Known and accepted as traditional, the glare of this system cannot match the heat of the real world where students work with the problem on the spot or in conjunction with others. Thus, teaching and learning remain fixed and exam-oriented, suffocating potential creativity and innovation. Project-based learning (PBL), however, is a phenomenon that changes the way learning takes place: experiential, collaborative, and inquiry-based learning. The essence of PBL encourages students to come to terms with real-life scenarios in

problem-solving, work as a team or in groups, and reflect on their learning processes. Critical thinking and creativity develop through doing things using concepts as experienced in PBL rather than traditionally. Unfortunately, Nepal may not be very successful in putting PBL into practice because of some challenges such as insufficient resources, limited time, and a complete change in attitude from an authority figure to a learning facilitator for teachers.

It has been a learn experience for a health and population educator in schools and as a teacher in Tribhuvan University in TU when teaching from the traditional methods and getting adapted to PBL. Teaching initially mimicked the rigid systems of lectures and rote learning. Exposure to educational theories like social constructivism, experiential learning, over a period forced these practices to change, demonstrating the need for hands-on activities, teamwork, and ongoing assessment. Activities are illustrative: clay modeling and comic strips to teach students deep concepts about population dynamics encourage for active engagement and reflection of their learning. Despite the benefits, implementing PBL in Nepalese public school classrooms is not without challenges. Teachers often encounter uneven student abilities, noise during group work, and students' reluctance to participate in reflective activities. Moreover, resource shortages and the lack of professional development opportunities compound these issues. Nevertheless, with careful planning, peer evaluation, and student involvement in the learning process, these challenges can be addressed effectively.

This study explores the cultural and practical aspects of implementing PBL in Nepalese health and population subject classrooms. By focusing on the experiences of teachers and students, it aims to uncover strategies to make PBL more effective and sustainable. The findings contribute to understanding how PBL can transform population education in Nepal, fostering a dynamic and student-centered learning environment. Innovative teaching methods are transforming population education by making learning more engaging and effective. Hands-on learning, as Yannier et al. (2021) highlighted, actively involves students in experiencing scientific concepts. Storytelling, proposed by Penuel et al. (2022), transforms complex scientific ideas into simple, captivating narratives. Role-play, according to McGahee et al. (2021), helps students understand concepts by enacting them. Sports-based links population with real-life applications through sports activities, while visual clues use images to clarify and reinforce scientific ideas. Instructional conversations (Acharya, 2019) promote learning through meaningful discussions.

Among these approaches, project-based learning (PBL) stands out as an effective strategy in population education. Darmawan et al. argue that understanding students' beliefs about knowledge is vital for successful PBL implementation. Furthermore, fostering positive emotional experiences during PBL enhances students' engagement and learning outcomes. Teachers play a crucial role in this process, but challenges remain. For instance, Islamiati et al.found that teachers often struggle with assessing students' work and require additional support to integrate PBL effectively. According to Marcinauskas et al. PBL holds promise in engaging risk students from underprivileged backgrounds, while the traditional pedagogies professed by teachers

fail to bring about retention of knowledge and even profound problem-solving abilities in students. Succinctly put, students tend to memorize most of the things to pass exams, but what follows afterward is a huge gap in actually applying that knowledge to real life after the examiner closes the exam. The standardized tests do not foster any changes in this situation; they just contributed by ignoring learning styles and the new demands of education in the present era.

In Nepal, problems related to the use of innovative methods such as PBL become all the more complicated due to resource limitations and systematic problems. Many teachers face job instability and lack involvement in curriculum design. Additionally, inadequate pedagogical training limits their ability to manage classrooms, plan lessons, and evaluate students effectively (Lamichhane et al., 2014) reported similar barriers to PBL implementation, such as limited teacher training, insufficient resources, and reliance on traditional teaching methods. These difficulties highlight the fact that an overhaul is required with proper measures to accommodate innovative strategies in population education. This study investigates the effectiveness of innovative teaching such as PBL in solving the shortcomings of the traditional teaching and creating a meaningful learning context. It further seeks to understand the context, delivery, and integration of PBL in health and population education, specifically in public health schools in Nepal.

Method

This research adopts an interpretive paradigm to explore the beliefs and practices of health and population teachers implementing project-based learning (PBL). The interpretive approach recognizes that social reality is shaped by human experiences and contexts. This study focuses on qualitative research, emphasizing natural settings and prolonged engagement to gather in-depth insights. The research methodology is rooted in ethnography, capturing the cultural and contextual aspects of health and population teaching practices related to PBL. By restoring and retelling the participants' experiences, this study aims to understand their perceptions, challenges, and successes in implementing PBL in secondary health and population education. The study targeted experienced health and population teachers to ensure rich data about PBL implementation. Five teachers with a minimum of three years of teaching experience were purposively selected. Participants were recruited through the purposive sampling among ten teachers. This was followed by a preliminary field visit and qualitative interaction, upon which the numbers were filtered down to five, based on interest, availability and study requirements.

The study area was Kirtipur municipality, one of the municipalities of Kathmandu district in Bagmati province, Nepal. This site was chosen for their distinct educational environments. Kirtipur recognized as an educational hub with established PBL practices. The participant group consisted of three female and two male teachers. The study explored their practices, culture, and perceptions of PBL in health and population education. Participants included teachers actively involved in professional

development programs and mentoring. Some had prior teaching experience in private/institutionalized schools, bringing diverse perspectives to their roles. To the richness of the study, their professional journeys influenced their perspectives of PBL implementations.

Data collection was done through semi-structured interviews, focus group discussions, and classroom observations. Explain that interviews started with informal talks about the teachers' professional backgrounds before transitioning to PBL-specific questions. Focus group discussions were used to confirm and expand upon individual interview findings. These methods provided a comprehensive understanding of teachers' practices, experiences, and challenges in implementing PBL. Classroom observations were conducted in real-life settings to contextualize the teachers' practices. Regular in-person visits and virtual follow-ups ensured prolonged engagement with the participants. For instance, in Kirtipur, the researcher visited each school two times over two weeks. Data analysis was iterative, with thematic analysis guiding the process. Interviews and focus group discussions were transcribed and reviewed to identify recurring themes and patterns. Data saturation was achieved when no new insights emerged from repeated observations and follow-ups. A combination of individual interviews and group discussions ensured a balanced understanding of personal and collective perspectives. The findings were contextualized within the cultural and professional realities of the participants, providing a nuanced understanding of their PBL practices in population education.

Findings

PBL is not well-punished in the public high schools in Nepal. One of the primary reasons is the lack of resources, including teaching materials, infrastructure, and financial support. Traditional teaching methods remain highly reliant on these contemporary methods of teaching, as they may turn out to be easier to implement but offer lesser interactivity. Teacher-centered approaches dominate the classrooms, leaving little room for innovative practices like PBL. Urban schools are more likely to adopt PBL than rural schools. Urban areas have better access to infrastructure, technology, and funding. In contrast, the rural schools suffer from inadequate infrastructure and little access to resources, making PBL implementation a challenge. Another issue is that PBL activities are not fully integrated into the national curriculum. The curriculum primarily focuses on theoretical knowledge and standardized tests. This is difficult to do within a PBL framework, resulting in uneven implementation of PBL in schools. Teachers recognize that PBL promotes students' critical thinking, collaboration, and application of knowledge to real-world situations. They think that it can help make learning more exciting, engaging, and real-life. And many teachers are not well-equipped to leverage PBL in the classroom.

One of the major challenges in the adoption of PBL is the lack of professional development opportunities. Almost all teachers have not had sufficient

exposure and experience with respect to how they can design and apply PBL at schools. They do not also feel confident enough to handle various aspects of PBL, such as dealing with groups, using tangible materials, and defining real life projects or contexts for learning. Time is another challenge for teaching in general and implementing PBL in particular. Teachers usually should cover certain content in a given period of time. Thus, they do not believe that they have any opportunity to implement a new instructional strategy like PBL. Furthermore; considering high stake examinations which works based on rewarding memorization discourage most teachers to use this approach as an alternative way of teaching and learning.

Students participating in PBL report higher levels of interest and engagement in their studies. They find the interactive and practical approach more appealing than traditional lectures. However, not all students benefit equally. High-performing students often adapt to PBL quickly, while low-performing students may struggle without additional support. This can create disparities in learning outcomes. There are several challenges in implementing PBL in public high schools. One major issue is the lack of resources. In rural areas and schools, resources are even scarcer, so PBL activities are frequently underfunded or lack the necessary materials and technology. Another difficulty is managing the class. Both group collaboration and effective teaching become a challenge to the teacher in case public institutions have big students' attendance. Packed classrooms increase the difficulty of getting every student involved in the PBL tasks.

Students understanding of work is not clearly defined such that evaluation of students' outcomes becomes another concern. PBL adoption is encumbered by the durability of pupils during the activity since a teacher would not have proper counter measures of determining the achievement of a pupil that engages is such an activity. Parents, teachers, and learners ensure that PBL works as it is designed. Parents tend to be passive because they do not understand well enough why PBL is useful. Many parents oppose unconventional PBL methods and support any kind of rote learning instead. Like other stakeholders, school authorities have a dominant role in this. Such schools are likely to successfully apply PBL: those with active, supportive management in place. An administrator who has specific goals, provides necessary materials, appropriate classes, ongoing support, and direction will help PBL progress.

Community involvement is another important factor. Schools that involve local communities in PBL projects see better outcomes. Community-based projects help students connect with real-life issues and resources, enhancing their learning experience. Cultural and contextual factors heavily influence the adoption of PBL. In many schools, traditional lecture-based methods are still preferred over interactive approaches like PBL. Teachers and administrators are often resistant to change due to familiarity with these traditional practices. PBL projects that incorporate local problems or indigenous knowledge are more likely to succeed. When students see the relevance of their projects to their own lives and communities, they become more

motivated and engaged. Language barriers also pose a challenge. Many PBL activities are conducted in English, which can be difficult for students with limited proficiency. This can hinder their participation and learning in PBL projects. By addressing these challenges, public high schools in Nepal can create a more supportive environment for PBL, making it an effective tool for improving education quality and fostering essential skills among students.

Discussion

The pupils of Nepal could learn more efficiently with the introduction of PBL as this study suggests. However, a number of issues still remain that make it difficult for PBL to be used at high schools, these include scarcity of teaching materials, infrastructure and even financial support. These findings align with existing literature that emphasizes the role of adequate resources in facilitating PBL (Smith et al., 2022; Gautam & Acharya, 2023). Schools in urban areas, where resources and funding are more accessible, are better positioned to adopt PBL compared to rural schools, which struggle with resource deficits. This disparity reflects broader inequities in education systems, as documented by Smith et al., (2022).

One of the issues which are rooted into the Nepalese society is the chasm which separates PBL teaching from the ideal national curriculum designed for the country. The standardized testing sponsored by theory pursues this approach. According to Shen et al. one of these in fact should be introduced. Without alignment, teachers find it difficult to justify time spent on PBL while facing the pressure of completing the prescribed syllabus. In regards to ensuring that PBL methods are fully dealt with, teachers views alongside what they think PBL can enhance is crucial. This is primarily due to the fact that real world skills are reinforced through PBL, however the remedy to their lack of experience designing PBL activities still disarms them. In a study by Frankel and Marcinauskas et al. the need to revamp teachers training and their PBL practices image due to the gamut of gaps present within the implementation phase of it was raised due to time constraints and to cover the curriculum.

Research led by Islamiati et al. aligns with the analysis that PBL helps students adapt and further strengthen their communication and collaboration skills which aids them in osberving and then solving said problem, be it in class or in real life. Further research elaborates the stance, being in class during a lesson further enhances and engages students by helping them with hands on experience. But students of different proficiencies can be at a disadvantage. Students less proficient in certain areas may have a harder time assimilating and fully grasping PB or effective PB with scaffolds as proposed by Smith. PBL does have its benefits but is unequal when looking at them through the lens of different students.

Challenges such as resource scarcity, large class sizes, and the absence of clear assessment frameworks further limit the adoption of PBL. Additionally, teachers don’t have good tools to measure the results of PBL Project-Based Learning, which makes it hard to see how it affects students’ learning.

Getting everyone involved, like parents and school leaders, is very important for PBL to work well. However, many parents don't know much about the advantages of PBL, so their support is limited. This matches what Penuel et al. (2022) found they say parents need to understand and be part of new teaching methods. Schools with active and supportive leaders are better at using PBL because these leaders help by providing resources and creating a positive environment (Acharya et al., 2023; Yannier et al., 2022).

Cultural and contextual factors also influence the adoption of PBL. Many schools and teachers stick to traditional teaching methods because they are used to them and are hesitant to try new approaches. This matches the findings of Wagle et al. who point out the difficulties in moving from teacher-focused to student-focused teaching. However, Project-Based Learning (PBL) that includes local issues and traditional knowledge tends to work better because it connects with students' real-life experiences. Language barriers, especially in schools where English is not the main language, also make it harder to use PBL, as Khanal et al. (2023) have shown. To overcome these challenges, a variety of steps are needed. Adding PBL to the national curriculum, training teachers, and making sure resources are shared fairly can help create a better environment for PBL. Policymakers, educators, and other stakeholders need to work together to tackle these obstacles and unlock the potential of PBL to improve education in Nepal. By doing this, public high schools can foster critical skills and prepare students for the demands of the 21st century.

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