Exploring Enrollment Growth Potential Through School Bus Implementation: A Survey-Based Study at Deurali Basic School, Lahachok, Machhapuchhre Rural Muncipality-4, Nepal

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Abstract

This report examines the potential for increasing student enrollment at Deurali Basic School, located in Lahachok, Machhapuchhre Rural Municipality-4, Nepal, through the implementation of a dedicated school bus service. Established in 2057 B.S., Deurali Basic School currently enrolls 92 students. Historically, enrollment reached a peak of 160 students before the COVID-19 pandemic, largely supported by the school bus service. The discontinuation of this service led to a significant decline in student numbers, underscoring the critical role of transportation in ensuring educational access.

The report utilizes a structured survey methodology, including KoboCollect for data collection and ArcMap for spatial analysis. Observations reveal that reinstating the school bus could significantly increase enrollment. Specifically, the highest potential for new students is identified in Varthar, with approximately 38 additional students, and Mardi, with approximately 25 additional students. Other areas with notable potential include Gaichaur (16 additional students), Thakurithar and Sano Patan (a combined total of 4 additional students), and Bhalabot (14 additional students).

Key challenges identified include poor road conditions during the rainy season and the logistical complexities of operating a bus service across a broad catchment area. Despite these challenges, the results suggest that a well-implemented bus service could add up to 97 students from high-potential areas alone. The report concludes that reintroducing a school bus has substantial potential to boost student enrollment and enhance the school's educational impact within the community.

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Chapters 1 Introduction

Deurali Basic School, located in Lahachok, Machhapuchhre Rural Municipality-4, Nepal, was established in 2057 B.S. and has since been a vital educational institution for the local community and neighboring villages. Serving 92 students, the school has the highest enrollment compared to other schools in the surrounding area. The student body includes not only children from Machhapuchhre Rural Municipality Ward Number 3 and 4 but also from Pokhara Metropolitan City Ward Number 25, reflecting its broad appeal and accessibility.

Figure 1 Deurali Basic School

Source: pahar-trust.org

The school is staffed by a dedicated team of 13 individuals, including 12 teaching staff and 1 non-teaching staff, all under the leadership of Principal Prem Lal Parajuli. As a government-funded institution, Deurali Basic School offers free education and lunch, making it accessible to children from various socioeconomic backgrounds.

Situated in a picturesque valley surrounded by hills and a river, the school not only provides a conducive environment for learning but also stands out for its innovative approach to education. Notably, the school has introduced a computer science subject, which is not part of the standard curriculum provided by the Rural Municipality. This initiative has made Deurali Basic School more attractive to students compared to other schools in the region.

The school's commitment to excellence was recognized last year when it was awarded the title of "Best Basic School" by the Machhapuchhre Rural Municipality. This accolade reflects the school's ongoing efforts to provide quality education and its significant role in the community.

Chapters 2 Objective and Methodology

2.1 Primary Objective:

- To assess the potential increase in student enrollment at Deurali Basic School through the reimplementation of a school bus service.

2.2 Secondary Objectives:

- To identify key geographic areas with high student potential.
- To gather insights from parents and local residents on transportation need.

2.3 Methodology

The methodology followed for the survey is mentioned below:

1. Form Creation: A form was created using the KoboCollect toolbox, incorporating the following fields:

- Name
- Address
- Latitude and Longitude (using the GPS feature of the mobile device)
- Distance from School
- Total Number of Children
- Classes They Study

2. Data Collection:

- Interviews: Conducted with the school administration to discuss the past and present scenarios of the school.
- Survey: Data was collected using the KoboCollect form, followed by interviews with parents.

3. Data Processing:

- Cleansing: The collected data was cleaned using Microsoft Office.
- Visualization: The cleansed data was then processed in ArcMap for visualization purposes.

Chapters 3 Observation

During the field observations, we used the KoboCollect toolbox to gather both attribute and spatial data. This data was subsequently visualized using Microsoft Office and ArcMap. Additionally, we conducted interviews with local residents and school administration. Mr. Navraj Adhikari, President of School Management Committee, Mr. Prem Lal Parajuli, School Principal and Mr. Madhav Prasad Poudel, School Vice-Principal helped to find out the major areas for the survey and interact with locals more easily.

3.1 For past few years

During our field observations and survey, it was revealed that Deurali Basic School once had an enrollment of 160 students before the COVID-19 pandemic. This high number of students was largely supported by the availability of a school bus, which played a crucial role in facilitating access to education for children living up to 4 kilometers away from the school premises.

The bus, already old, covered a route that included Kharibot, Varthar, Thakurithar, Poudelthar, Sano Patan, Jogichaur, Mardibesi, and Kiley. Unfortunately, due to its age and the financial challenges during the pandemic, the bus became increasingly unreliable, often breaking down mid-route and forcing students to walk home.

After the pandemic, the bus was no longer operable and had to be sold for scrap. This loss of transportation led to a decrease in student enrollment, as many families struggled to send their children to school without this essential service.

3.2 At Present

Deurali Basic School currently enrolls 90 students. Following the sale of the school's bus, the institution sought assistance from the local bus service, which operates on the same route previously covered by their own vehicle. However, several issues have been reported with this arrangement. The principal, Mr. Parajuli, has indicated that the local bus service is often inconsistent in its schedule and that the bus staff frequently neglect the safety of students during boarding and alighting.

Mr. Ryan Gc, a parent of two children in LKG from Gaichaur, has expressed concerns regarding the conduct of the bus staff. He reported that the staff display a lack of regard for the children’s safety and are often hurried, which leads to inadequate attention during stops. The principal has acknowledged these concerns and is actively working to improve the situation. He emphasized that, due to the limited availability of buses servicing the route, efforts are being made to enhance the responsibility and professionalism of the current bus staff.

3.3 About Future

The reinstatement of a school bus at Deurali Basic School is expected to significantly increase student enrollment. Here are a few interviews with local residents that illustrate the potential impact:

Mrs. Sumitra Ranabhat from Varthar highlighted the school's superior educational performance compared to other local boarding and government-funded schools. She expressed frustration with the high tuition fees and lack of improvement observed in her child at a boarding school. Mrs.

Ranabhat noted the inconvenience of having her son, who is in Grade 2, walk 1.5 kilometers to school, especially during the rainy season. She stated that if Deurali Basic School had a reliable bus service, she would prefer to enroll her child there rather than continue with the costly and unsatisfactory boarding school option.

Mrs. Bhandari, mother of Jenisha Bhandari, a Grade 4 student at Deurali Basic School, reported substantial academic improvement in her daughter since transferring from a boarding school. She expressed high satisfaction with the school's educational quality.

Mrs. Lila Gurung, a former parent of Deurali Basic School students from Mardibesi, recounted her positive experiences with the school when the bus service was operational. However, due to concerns about the safety of the route, particularly during the rainy season when landslides and floods are common, she had to relocate her children to another school. Mrs. Gurung mentioned that more than ten students from her neighborhood previously attended Deurali Basic School, but now only two or three continue to do so.

Chapters 4 Findings

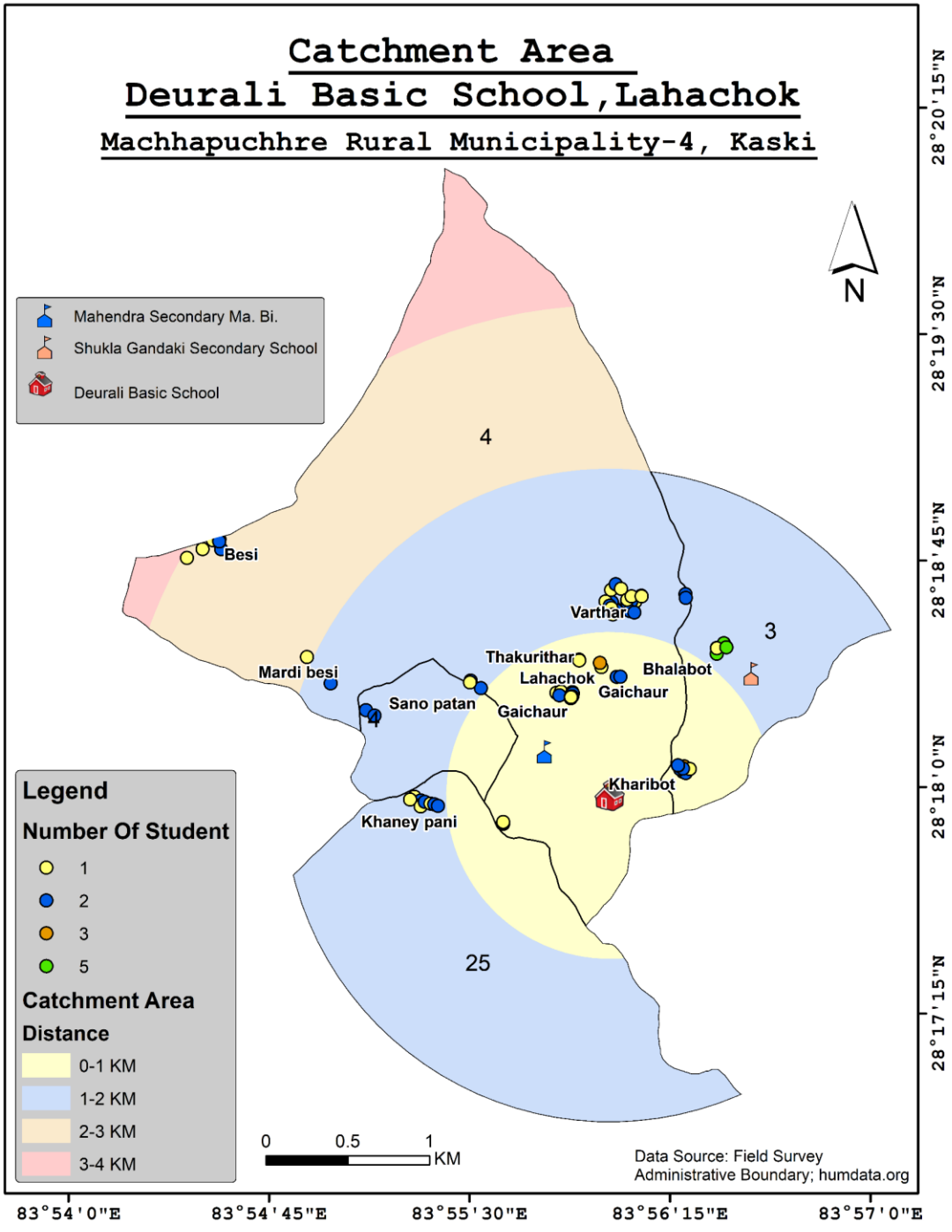

Figure 2 Catchment Area

The map illustrates the catchment area for Deurali Basic School located in Lahachok, within Machhapuchhre Rural Municipality. The catchment area is divided into three administrative regions: Wards 3 and 4 of Machhapuchhre Rural Municipality and Ward 25 of Pokhara

Metropolitan City. The map effectively visualizes the geographical distribution of potential students across these areas, providing a clear picture of where students are likely to enroll if transportation services, such as a school bus, are introduced.

The map is layered with buffer zones that indicate the distance from the school, categorized into four concentric zones:

- 0-1km (Yellow Zone)
- 1-2 km (Blue Zone)
- 2-3 km (Green Zone)
- 3-4 km (Red Zone)

These zones are color-coded to represent their proximity to the school, with the innermost yellow zone being closest and the outermost red zone being the farthest. Additionally, the map uses colored dots to indicate the number of students residing in each area:

- Yellow dots represent households with 0-1 student,
- Blue dots represent 1-2 students,
- Green dots represent 2-3 students,
- Red dots represent 3-5 students.

These visual elements allow for a quick assessment of where potential students are concentrated, helping in planning for services such as a school bus. The positioning of the school and the distribution of these dots give a clear picture of areas with higher and lower potential for student enrollment based on proximity and density of households.

4.1 Potential Enrollment Areas

Locations with Higher Concentration of Students:

1. **Varthar:** Located within the 1-2 km buffer zone (Blue Zone), Varthar emerges as the highest potential area for student enrollment. This area has a substantial concentration of households with students.
   - Approximately 38 students.

Remarks: Varthar has the highest potential for increased student enrollment. The relatively short distance to the school and the high number of students indicate a strong likelihood of significant enrollment if a school bus service is introduced.

2. **Mardi:** Located within the 3-4 km buffer zone (Red Zone), Mardi shows a considerable number of students despite the greater distance from the school.
   - Approximately 25 students.

Remarks: While Mardi is located further from the school, the significant number of students suggests that a school bus service could attract a considerable number of enrollments from this area.

3. **Gaichaur:** Situated within the 0-1 km buffer zone (Yellow Zone), Gaichaur shows a significant concentration of students.
   - Approximately 16 students.

Remarks: Gaichaur is within the closest buffer zone, indicating a strong potential for high enrollment if transportation is provided.

Locations with Lower Concentration of Students:

1. **Thakurithar and Sano Patan**: These locations, within the 2-3 km buffer zone (Green Zone), show a moderate potential for student enrollment, with only a few households with students.

Estimated Number of Students**:**

- Thakurithar: 2 students
- Sano Patan: 2 students
- Total Estimated Students: 4 students

Remarks: These areas have a lower concentration of students, but their proximity within the 2-3 km buffer zone suggests that with transportation, some moderate level of enrollment could be achieved.

2. **Bhalabot**: Situated in the 3-4 km buffer zone (Red Zone), Bhalabot has fewer students compared to other locations.

   - Approximately 14 students.

Remarks: Although Bhalabot has a lower concentration of students and is further from the school, providing a bus service might still encourage enrollment from this area.

Chapters 5 Challenges

Challenges identified during field observation and survey are

- **Road Conditions**: During the rainy season, significant challenges arise due to the poor condition of some road segments, which are not asphalted. This affects travel reliability and safety.
- **Bus Scheduling**: Given the extensive catchment area, the bus would need to operate from early morning until late evening. This extended schedule may cause discomfort for students in managing their daily routines.

Chapters 6 Result

The analysis of student data, combined with the geographic distribution within the catchment area of Deurali Basic School, presents a compelling case for the introduction of a school bus service to boost enrollment. In the immediate vicinity of the school, Gaichaur, located within the 0-1 km buffer zone, could contribute up to 16 students. Moving out to the 1-2 km zone, Khaneypani shows potential for an additional 12 students, while Varthar emerges as a significant source of enrollment, with a potential contribution of 38 students, far exceeding initial estimates.

Further afield, in the 2-3 km zone, Thakurithar and Sano Patan are expected to add 2 students each, reflecting a more modest impact. However, in the 3-4 km zone, which was previously considered less critical, Bhalabot and Mardi show promising potential, with 14 and 25 students, respectively. Additional areas such as Nepalithar (4 students), Kiley (5 students), and Lahachok (8 students) also contribute to the overall potential increase in student numbers.

Interviews with local residents provided valuable insights into the feasibility of the bus service. Parents, like Mrs. Sumitra Ranabhat from Varthar, indicated a strong interest in enrolling their children at Deurali Basic School if transportation were available, highlighting the potential demand for such a service. However, challenges such as poor road conditions during the rainy season and the logistical complexity of scheduling the bus across an extensive catchment area need to be carefully considered. These factors play a critical role in determining whether a bus service would be viable and effective in enhancing student enrollment at the school.