The Geographical Journal of Nepal
Vol. 15: 131-143, 2022
DOI: https://doi.org/10.3126/gjn.v15i01.42891
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Impact of distance on learning outcomes: A case study of community school in Dhankuta district

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Received: 15 September, 2021; Accepted: 17 October, 2021; Published: March, 2022

Abstract

The intent of this study is to identify the impact of distance on the educational achievement of students at community schools in Dhankuta district of Province 1. Regarding the philosophical standpoint, this study embraces the positivist paradigm. The ontological assumption is the multiple realities of the phenomena. Similarly, the interaction and experiences of the participants are considered as epistemological understanding. Class eight students' mark sheet (Mathematics, English, and Nepali) were studied to generate the quantitative data followed by a semi structured interview of purposively selected participants to generate the qualitative data. In the quantitative analysis, the mean and variance of distance and achievement were measured. Likewise, the Pearson's correlation coefficient between distance and score in English, Mathematics, and Nepali were obtained by using the statistical software SPSS. In the qualitative phase, the phenomenological inquiry sought two essential themes related to distance from home and educational achievement, named subject preference and home school coordination. The quantitative and qualitative findings from the two phases of study proved that the travel distance of the student affects educational achievement, preferably in major subjects. Implications are provided for policy makers, concerned government institutions, and teachers to consider in countries' educational reform.

Keywords: Learning outcomes, educational achievement, subject preference, distance from home

Introduction

Nepal is a diversified country in terms of geography, caste/ethnicity, religion and language etc. (Dahal, 2003). These diversities may impact on the learning attitudes of

the school students particularly within the difficult geographical areas of the hills and mountains. The performance, competency, and motivation factors are jeopardized by the numerous indicators. In this connection, Falch, Lujala, and Strom (2013) pointed out that the learning attitudes of students are affected by geographical parameters such as distance from home to school, rain and storms, landslides, floods etc. The present researcher has got an opportunity to assess the performance audit of the community schools and observed that some students of the community schools are coming to school from their homes walking more than two hours. It has stroked in my mind and inspired me to pursue a research to unfold the mystery on the role of the distance between the homes and the schools and the achievements of the students on teaching and learning processes. The researcher immediately engaged with the students in exploring about home school distancing and influences on the student's learning. A student informed me that he is the first boy in class eight. However; he walks nearly two hours to reach home to school every day. This fact made the researcher more curious to know how the distance affects the student's achievement. This curiosity led me to conduct the present research choosing the community schools from the rural settings from the Hill ecological regions of Nepal to validate the issue.

The review of literatures suggest that distance impact on student's low academic achievement, high absenteeism, limited extracurricular engagement (Ward, 2013), and a lack of access to support services after school and before school (Johnson, Howley & Howley, 2002). Similarly, Orfield (2004) was in view that high rates of absences adversely affect on student success, which can be resulted in low marks for the students. The little opportunities to take part in post-school events for poverty-sensitive students may lead to low academic performance, increasing drop-out numbers and the cycle of repeated poverty (Jimerson, 2007). The study conducted through an online survey during the academic year 2016 using a random sample of 854 students by the King Saud University found that the delays for students and their academic rates have a negative correlation, that is, as the delays increase, students GPAs fall and their academic accomplishments are reduced (Qoradi, 2018). Similarly Gibbons and Vignoles (2012) stated that home school distance is a huge determinant of school choice for all the students.

In this context, the present study attempts to evaluate the effect of distance on the educational achievement of students. The study findings may be useful in setting up recommendations for a policy in establishing schools in the local area in such a way that all students might get the equal opportunity to acquire education with reference to the context of the country.

The study area

Dhankuta municipality covers both rural and urban areas to the headquarters of Dhankuta district. It lies within 26º55'01" to 27º02'56" north latitude and 87º16'25" to 87º23'06" east longitude and is distributed in 10 administrative units called wards. Present ward number nine of the Dhankuta municipality which was the part of Belhara Village Development Committee before federal structure is purposively selected as the study area to test the present research issue. Belhara area of the ward nine lies in the slope above Tamor River in the south with the characteristics mostly of rural settings. The ward covers 3,893 populations of various castes and ethnic groups such as Rai, Limbu, Chhetri, Brahmins, Magar, Kami, Darji, and Sarki etc. with diverse cultures. The majority of the people are engaged in agriculture. However, people's farming hardly fulfills their family's livelihoods. In this ward, infrastructure development such as electricity, drinking water, and roads are not well managed. There are a secondary school (Figure 1) and two basic schools. The present research mainly focuses on students of grade eight and the ward had 95 pupils in the grade.

Figure 1: Location of the school within the study area

Data collection and analysis procedure

The present study has adopted a mixed method approach (Creswell, 2009) and accepts the importance of various ways on conducting research in which the researcher freely relies on both quantitative and qualitative assumptions (Creswell & Poth, 2018). Broadly the sequential mixed method research design consists of two phases: a quantitative phase, followed by a qualitative phase that builds directly on quantitative data. The first phase (quantitative strands) of this study has utilized a design of the survey in which the trends in the marks received by a population unit by analyzing a population sample were described in quantitative or numerical terms (Acosta & Acosta, 2017). The second stage of the study was based on a phenomenological design (Manen, 1997) which established the essentials of human understanding of a phenomenon that applies at various stages (Ajjawi & Higgs, 2015). The researcher not only focused on gathering both types of data but also used both procedures in a cycle in such a way that the total strength of a study would be higher than or equivalent to either of a quantitative or qualitative research.

The first step was devoted to gather and analyze quantitative data. Similarly, in the second step the focus was to collect and analyze qualitative data which helps to explain, elaborate or broaden the quantitative conclusions acquired in the first phase. During the quantitative phase, besides collecting quantitative data to discover the issue, attempts were also made to choose informants for further investigation to generate qualitative data. In this way the two stages of the study were linked. After both stages were finished, the findings were fully integrated as part of the overall research study's outcomes (Acosta & Acosta, 2017).

Of course, the research participants were eight grade students from three different sample schools located in Belhara area of Dhankuta. At first, the researcher collected the records of the students in three schools out of which one was secondary school and other two basic schools. The total number of students in this ward who were studying in class eight was 95. The researcher has used Slovin's method (Ellen, 2021) to compute the required number of samples for the study which is as follows: {No. of samples (n) = N ÷(1+Ne2)}. The formula gave a sample size of 59 for the survey assuming a 5% error of tolerance. The data that would be obtained from the 59 students on three subjects are taken as dependent variables whereas the distance from their home is considered as the independent variable. Four students were selected to generate qualitative data in the qualitative phase. In-depth interviews and informal talking were conducted. Interviews were transcribed and developed into a code. The same codes were used to develop themes, to analyze links with literature and data derived from the participants.

Quantitative data analysis

The quantitative data collected from the informants have been tabulated and anlysed using the SPSS statistical software package. At first all the demographic information for all sample respondents were used to generate descriptive statistics including frequencies and percentages (Acosta & Acosta, 2017). Correlation and other statistical inferences such as minimum, maximum, and mean are calculated for student's learning achievement in Mathematics, English, and Nepali subjects. Home and school distances are categorized as 0 to 30 minutes, 31minutes to 60 minutes, 61 minutes to more and its frequency and percentage are calculated. Similarly, the relationship between home and school has been calculated and interpreted through the Pearson correlation coefficient values.

Qualitative data analysis

The qualitative data obtained from field observation and in-depth interviews with the participants was transcribed and analyzed using a thematic network. All such qualitative data obtained were transcribed as verbatim and analyzed accordingly.

Results and discussion

This section produces the results and interpretation of the research to reach into the conclusion. The issues such as student's learning outputs and distance between home and school have been analysed through the quantitative data.

Student's learning outputs

Learning outputs represent the learners' acquisition of knowledge and skills at the end of the course or program. For better opportunities, every student attempts to maximize good results. The table 1 produces the students' learning achievement in three subjects: Nepali, Mathematics and English within the Dhankuta area.

Table 1: Marks obtained by the students in three subjects

Subjects	Number	Minimum	Maximum	Average
Nepali	59	37	85	52.5
Mathematics	59	10	66	37.8
English	59	26	85	50.8

The highest marks obtained by the students among 59 in Nepali falls under 85 and the least marks obtained are 37. The average marks obtained by the total students in Nepali

is 52.5 which is less than the average marks obtained by the students in class eight in Nepal (Metsamuuronen & Kale, 2013). Similarly, the minimum and maximum number obtained by students among the total students in Mathematics is 10 and 66 respectively. The average marks 37.8 for the sample schools is lesser than the average marks of the students in class eight in Nepal (Metsamuuronen & Kale, 2013). The same score for English was 26 and 85 respectively. However, the average number 50.8 for the sample schools were higher than the average for the students of eight class of whole Nepal. This indicates that the scores are not normally distributed. In the overall result, the mean scores obtained in Nepali and English are significant.

Distance between home and school

In Nepalese context particularly in rural areas walking to and from schools is the common practice. Literatures have shown that the time taken for walking to and from school and home may affect on the students learning outcomes as well. It would be very serious if there are difficult terrains, forests or even rivers/streams without bridges exist. Table 2 shows that in the case of sample students of Dhankuta almost half of the students come to school walking within less than 30 minutes, whereas more than one-thirds of the students walk for 31 to 60 minutes to reach school from home. It is very severe for 8% of the students who takes more than one hour for each visit. Almost 40% students of the eight classes were coming to school walking around one hour which is double for a total in the day.

Table 2: Distance between homes to school (in minutes)

Distance	Number	Percent
0-30	32	54.2
31-60	22	37.3
60+	5	8.5
Total	59	100.0

Attempts have also been made here to test the association between home-school distance and marks obtained in three subjects (Nepali, English and Math) using the Pearson correlation coefficient (Table 3).

Table 3: Pearson correlation coefficient between distance and subjects

Test		Distance between home and school	Marks in Nepali	Marks in English	Marks in Math
Distance between home and school	Pearson Correlation	1	-0.049	0.078	0.028
	Sig. (2-tailed)		0.713	0.556	0.833
	N	59	59	59	59
Marks obtained in Nepali		-0.049	1	0.783**	0.759**
	Sig. (2-tailed)	0.713		0	0
	N	59	59	59	59
Marks obtained in English		0.078	0.783**	1	0.675**
	Sig. (2-tailed)	0.556	0		0
	N	59	59	59	59
Marks obtained in Math		0.028	0.759**	0.675**	1
	Sig. (2-tailed)	0.833	0	0	
	N	59	59	59	59

** Correlation is significant at 0.01 level of significance (2-tailed)

Table 3, shows that the correlation between distance from home to school and learning achievement in Nepali, Mathematics and English are significant at 99% confidence level. The limit is 0.049 to 0.713 and there is a negative correlation between distance and score in Nepali. As the distance covered by students to arrive at school from their home is increasing, there is decrease in the marks secured in Nepali. The students with home nearby to school secured higher marks in Nepali than the students coming from a far distance. It might be either due to the less interest in Nepali subject by the students who are coming from far places or getting less time to loss of time due to coming and going to the school. Similarly, the same limit for English is 078 and 556. It indicates a positive correlation between distance from home and achievement in English subject. Interestingly, the increase in distance from home has resulted in better scores in English than in Nepali. In the same way, the same scores for Mathematics are 0.028 and 0.833. It shows a low degree of positive correlation between distance from home and achievement in Mathematics subject. The results of the study made by Ward (2013) and Metsamuuronen and Kale (2013) also had discussed on a high degree of positive correlation between distance from home and achievement in Mathematics.

The results and interpretations of qualitative data generated from purposively selected participants on time management, subject preference and home school coordination are presented in the following sections:

Time management

The process of planning and organizing time for study refers to time management (Basila, 2014). Time is a continuous flow of events from the past, present, and future (Barkley & Murphy, 2006). Managing our lives entails managing our time, and managing our time entails managing our lives' events (Murphy, 2006). Effective time management is essential for every student to promote their academic tenure (Olley, Cohn, & Cowan, 2010). Regarding time management at home for students, participant P1 stated as:

> I can't manage sufficient time for my studies at home for various reasons. Going to school and coming from school make fatigued and tired during school days. I need more time for my study but I don't have. The study time is not sufficient for reading.

For the permanency of reading, the students need to perform tasks related to home assignments with prolonged engagement (Feil & Pohle, 2016). Supporting the above statement, another participant P2 concluded that they face other problems such as flooding, landslides, and soil erosion on the way to school. It shows that in the rainy season students seem to be struggling with the effects of the weather. In this prospect the participant P1 stated that in such circumstances, students spend more time in school. In spite of these circumstances, the students with higher distances from home to school are securing better marks in Mathematics and English due to student's priorities. Sometimes, they could not attend school at the time and they suffered from teachers' bullying. This might cause serious psychological problems as well. Participant P3 expressed that in coming from a far place, they had to come group wise and enjoy by playing on the way. Sometimes, there might be gang-fights as well which impede reading in school. These findings show that home school distancing engage the students for some extra activities that harm their learning environment. Spergel (1995) stated on the youth gang activities as a social problem which might hinder the learning achievement of the students.

Subject preference

The motivation of students towards interested subject areas for utilizing their career development is considered to be the subject choice. According to Siann, Lightbody, Nicholson, Tait and Walsh (1998) students select the subjects they enjoy and develop their professional advancement with the subjects if no other acceptable alternative

exists. The subject choice by students is to have a narrow viewpoint with a short-term focus (Warton & Cooney, 1997). In this regard, participant P1 argued that the subjects have been categorized in the formal curriculum as minor and major. The major subjects such as Mathematics, English, and Science, are hard subjects. They are considered to be career subjects. I do hard work in these subjects even within the short time allocated for my reading because I have to spend more time at school. Besides this, I need to work at home also. This statement from the student hints that schools are not easily accessible within the local community. So far as the legislative provision of Nepal is concerned, every child has the right to be educated in their local community, but it is not implemented into practice. English, Science, and Mathematics are labeled as hard subjects in school, so students allocate much of their reading times on such subjects. The students have the perception on Nepali subject as a medium for communication and take it easily. Supporting the above statement, the participant P2 urged that,

> Nowadays, some of the major subjects like Mathematics and English are considered as career subjects. The advantages of these subjects are prominent within all over the world. English is spoken all over the world. Therefore, if anybody knows English, he can survive anywhere in the world.

The popularity of students on studying English subject is certainly because it is an international language spoken all over the world as well as most of the important books are written in English language. So, students and teachers emphasize those subject which have vast scopes than lesser scopes. However, the students with home far away from schools do not get adequate time except holiday (Saturday) for reading, the views of the participant P3 are:

> In the limited time at home, we prefer English and Mathematics rather than Nepali because Nepali language is the medium for communication in the local community. As a result, we secure better performance in English and Mathematics. In the subjects like Nepali, we have less priority as such achieve low scores.

Therefore, preferences on the subjects by the students produces different scores on different subjects which are proved from the results obtained by the sample students of eight class of Dhankuta municipality, ward no. 9.

Home school coordination

The continuous interaction between teachers, students and guardians of students for child performance at school is referred to as home school coordination. This plays a crucial role in the development of children. If the learning conditions and behavior of children are not supervised frequently by the guardians and school family, the achievements on teaching and learning by the students may not go smoothly. Effective home school coordination enhances the learning behavior of children. In this prospect, participant P3 said that they are inspected by school teachers and parents frequently via telephone as well. Some guardians do not contact the school to know the children's performance because they don't know where and whom to ask. From this fact it is clear that some parents are aware of their children's performance and the importance of education. Hence a recommendation can be made here that schools are required to inform parents and guardians about their children's progress frequently which can support parents in supervising their children in reading at home. In this connection, another participant P4 says:

> My parents do not get time to ask about me because of heavy work at home. There are younger brother and sister in my home, so my mother has to take care of them. My mother is uneducated and do not have the idea to know about my progress. Instead, she tells me to engage at work with my father. She says *"padi guni ke kaam! halo joti khayo maam"*.

However, despite lack of education some guardians are promoting their children for education. To overcome such thoughts of some people, the policy makers and governmental agencies need to set up strategies for awareness activities about education to the local community. The views of participant P4 on the prospects of home school coordination can be summarized as follows:

> Our school dispatch letters for parents only for the purpose of discussion on the construction of the school building. The interactions on the achievements of the students are rare in our school. The school management committee did not perform any meetings on student's progress during the last academic session. The parents are invited at school only during the distribution of the report cards.

From the above statement, it is clear that not all schools are interested in discussing with the parents for the improvement of teaching-learning activities of the students. Frequent interaction between school and home is essential to bring the changes for improvement. Therefore, the study found the home school coordination as one of the effective measure for the teaching-learning activities of the students.

Conclusion

Distance from the home to school can affect students' learning achievement. The present study found that students have preferences over the subjects. There was a priority on hard subjects such as Mathematics, English, and Science which are considered as the career building subjects. Other subjects' particularly Nepali is given least priority as such performances of the students are also relatively low.

A correlation between the distances between homes to school was found for the subjects that are taught in the class eight of Dhankuta district. The students, who performed better in Nepali subject were from the nearby of schools. Contrarily, the students with far away from the school's location had better performances on the subjects like English, Mathematics, and Science than Nepali. However, much research needs to firmly establish this fact.

The other conclusion of the present study is that the mix methods selecting the both quantitative and qualitative methods for the collection of relevant data needed for such researches and integration of both found to be advantageous. Therefore, selection of quantitative methods to generate the data for generalization over an area and use of qualitative data to compliment the former could be recommended for the future researchers on similar issues.

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