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Cultural Discontinuity as A Major Problem of Rai Students' Learning of Mathematical

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Abstract

This study explores the impact of cultural diversity and discontinuity on the learning of mathematics by Rai students in community schools, and its correlation with student dropout rates. The research utilized interviews, observations, diaries, and field notes to gather data, which were subsequently analyzed thematically. Findings indicate that cultural factors, socio-economic status, language differences, and gender roles significantly influence the Rai students' academic performance and engagement, particularly in mathematics. This cultural discontinuity between home and school environments, alongside societal and teacher behaviors, impedes their learning process. The article recommends implementing culturally inclusive teaching strategies and enhancing teacher sensitivity to the students' diverse backgrounds to improve educational outcomes.

Keywords: *Cultural Discontinuity, socio-cultural background, implications, discrimination*

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Introduction

The organized system of Education is expected to meet the real situation of a community. It is expected to be in accordance with the physical and social needs of the community. The intrinsic needs and activities of the child are closely related to the needs of the community. Therefore, education is a constructive agency for improving our society and nations. Aryal (1970)regarded education as the greatest force for building up a country economically, socially, and culturally. Furthermore, the challenges created by the economic, social, and cultural phenomena have been accepted by educationalists. In this regard, unless education is properly planned and organized, it is not possible for social welfare for all. Relating to the importance of education, Maskey(1975) writes:

Education has occupied the most prominent in the life of every nation worth the name ancient or modern. History tells us how much it was instrumental in the advancement of civilization and the progress of the world and the giant strides made through it by modern nations are evident to even the most casual observer. In its scientific, technical, and industrial branches, it has truly been the handmaiden of progress these days. (p. 24)

As mathematics is one of the important subjects in school education as well as in all major (formal life and official work) and minor(household work) activities of life such as selling, purchasing in the market, arranging the party, joining the profession, celebrating marriage, and so on. Mathematical considerations are uppermost in the human mind. In

the study of almost all disciplines such as history, politics, science, geography, economics, and commerce, mathematical concepts are applied. It is not so easy to say when and from where mathematics started but one can see mathematics as an essential part of human civilization from time immemorial. It is created to fulfill the daily needs of human life like counting the cattle, calculating time, etc., and thus, the nature and structure of mathematics have been built with the development of human civilizations. Indeed, mathematics education has enormously contributed to the Roman, Greek, Arabian, Hindu, and all civilizations through the work of great mathematicians such as Pythagoras, Euclid, Plato Archimedes Ptolemy, Pappas, Newton, Gauss, and so on Maskey (1975).

Now learning is affected by the cultural phenomenon. The different ethnic groups have their own culture which causes difficulty in learning. Similarly, Rai has a traditional culture. They make almost everything that they use themselves. Children of Rai are highly affected by their culture. “If children are taught in languages which are different from their home language, they drop out from school, have low achievement and repeat classes due to a high failure rate. This state of affairs is still persistent in Nepal (Yadava, 2007; Awasthi, 2004, cited in Rai, Rai, Phyak, & Rai, 2011, p. 9) as there is a gap between home culture and school culture which causes difficulty in learning mathematics. In this scenario, the study aims to understand the difficulty in learning the mathematics of Rai students because of the influence of their socio-cultural phenomena. Due to this unique social system, the Rai children face problems in learning mathematics. Besides, everyday lives such as social as well as cultural practices influence the learning of Rai students. Because of differences in culture, people have cultural diversity, discontinuity in language, learning strategy, and style that does not match them with school, curriculum, and teaching methods. Adhikari (2006) claims that home culture is responsible in learning mathematics in school. Hence, every individual has different everyday life and it reflects the cultural difference and learning.

It is believed that the everyday lives of Rai children have not emphasized their learning of school practices, they always consider school as an artificial and incompatible institution. So, they neither assimilate nor accommodate in the mainstream of the school system. At home, Rai children learn from doing side-by-side work with their parents and doing things and observing the parents but they do not get such opportunities at school. The school provides theoretical knowledge, which is not sufficient for them. There is a great difference between the everyday life of Rai students and the school practices system that affects the learning at school and face difficulties. They also feel mathematics is a difficult subject. These Rai students with cultural differences between school and at the home face so many difficulties in learning mathematics and get low achievement in mathematics. However, students who have the same cultural background do not face such difficulties during learning at school and at home. But the students are “pushed out from schools due to a difference between home and school languages” (Yadava & Grove, 2008 cited in Rai, Rai, Phyak, & Rai, 2011, p. 9).

In the context of different cultures at home and school for learning, teachers can play a significant role in children’s learning in mathematics. The meaning traditions, beliefs, and norms that the children learned from their community may differ from the others with whom they have to interact, participate, and compete. This can be an influencing factor for their schooling and learning too. The children, whose home culture similar to the

culture of education systems as they have a similar cultural and ethnic schooling system, can easily cope with the system resulting in better achievement. The impact of cultural differences in children's learning and schooling due to the above-mentioned factors seems to be a researchable topic to explore the relationship between learning and socio-cultural factors that may provide an understanding of children's schooling and learning in mathematics as well.

More discontinuity/difference between the cultures of home and school seems to be difficult in learning in school. For Rai students, mathematics is difficult because of the conflicting nature of their socio-cultural perspectives and practices to the school curriculum, educational setting, and teaching practices. Furthermore, they belong to the hill tribe ethnic group and find themselves different from the mainstream in terms of language and culture. In fact, Home is regarded as the first but informal school for every child. They also get socialized through the observation and face-to-face interaction with their parents and other family members inside the home, community members in the sphere of the (mono)cultural community, and adjust to their own cultural backgrounds in which they get various sorts of cultural values, norms, and beliefs that may determine their learning style/strategies. However, when they enroll in a school, they find a completely different, somehow unexpected socio-cultural context—mainstream culture—for their formal education. For the first time, they feel a big difference between their own culture and school culture—mainstream culture— and widened the gaps due to the rules and regulations of the school, teaching styles and tasks they have to perform in the school.

So, this study would have a significant meaning in studying the relationship between cultural differences with children's learning difficulties. Since the impact of childhood lasts for a long time, the construction of mathematical knowledge in childhood also helps children in further development in their learning.

However, in Nepal, no substantial study has been done among Rai students in the area of mathematics yet. Therefore, this research attempts to investigate the difficulties in learning mathematics faced by Rai school children by answering the research question of what underlying factors are contributing to the learning difficulties experienced by eighth-grade Rai students in their study of mathematics. The findings of the study is expected to provide the appropriate information about the difficulty of Rai students and help them giving proper treatmentin the teaching-learning process in mathematics, implementation of curriculum, types of modification to be made in present educational policy, integrating class of students, concentrate the government sight over the gap of the culture of Rai students, manage their education and also open the door for further research in the area of learning problems of Rai students and also the other ethnic tribes of children.

Literature Review

Many theories—behaviorism, humanism, social learning theory, social constructivism, everyday life theory, cultural discontinuity theory, code theory, Vygotskian theory, and so on—have been developed about children's learning and development. The researcher has adopted only a cultural discontinuity/difference theory by John U. Ogbu(1982,2000,2001). The author delineates the cultural difference cultural discontinuity theory, which deals with the problems in children's learning caused by the

difference and discontinuity between the culture of home and school (Ogbu, 2000). He further adds that those children, whose home cultures are much similar to the cultures of school can cope easily with the system which may result in better learning achievement. Consequently, children with unmatched or dissimilar home cultures with school cultures do not have attention to their learning which causes them to achieve less learning outcomes compared to children with good matches.

However, his theory of cultural differences was developed in the case of the US, it might be applicable in other contexts too including the cultural discontinuity and learning difficulties in mathematics by Rai students. The cultural discontinuity in Rai students causes them to get hesitated to interact with other children—from the mainstream—in the school. Furthermore, the identity of Rai children labelled with Bhote in the mainstream socio-cultural context also discourages them to participate in the learning process and obstructs their learning. Ogbu(2001) blames their different languages, thoughts, and measurement from the mainstream to create discontinuity in the teaching-learning culture. Likewise, Nasir (1979) credits gender beliefs, confidence, socio-economic status, attribution of success to a teacher, motivation, enjoyment of peers, location of schools, school environment, ethnicity beliefs, and prior achievement in mathematics were significant predictors of mathematics achievements in Malaysia. This justifies that students' motivation in learning is directly associated with their cultural traits which include these attributes. Similarly, Poudyal (2008) describes the responsible factors for learners' learning mathematics as their parents' occupation, economic status, and interest, educational status of parents, and the interaction between teachers and students. In the same line, Adhikari, (2006) concludes that home culture is not supportive of learning mathematics in school. In addition, Luitel(2009) finds out that students feel difficulty in learning mathematics (arithmetic) because of their poor conceptual understanding and the supportive atmosphere from home and society. Khadka (2006) also finds ex-Kamaiyas' children's poor learning due to their socio-cultural status, theirparents' low involvement in education, and so on.

Based on the above-mentioned literature, it can be hypothesized that discontinuity in cultureof the students from different ethnicities might influence their learning. The present study related to the Rai students' learning mathematics and their (poor) achievement due to the discontinuity is the culture's main concern of this study. Regarding the concern of the problem of students learning mathematics, their home environment has become an obstacle to learning mathematics therefore there arise different questions related to learning mathematics and students. However, my concern with this study is to explore the cultural discontinuity that affects learning mathematics by Rai students.

Method and Procedures

I, here, have adopted a case study design under the qualitative method to explore cultural discontinuity that affects mathematics learning by Rai students. For this, sites were purposively selected from a community school from Dhankuta, one of the Rai-tribe-spread districts in eastern Nepal. The secondary school from grades one to ten had 16 teachers from the Brahmin, Chhetries, Newar, and Rai castes, and 356 students—out of which 60% were Rai. Though the majority is of Rai students, in the mainstream education

system, the curriculum, textbooks, and classroom pedagogy are different from their culture.

With the rationale behind the discussion of different castes and finding their difficulties in learning mathematics, I adopted the research tools such as observations, interviews, field notes, and students' diaries to collect the data and information. I made the case study of only four students on the basis of in-depth interviews with the four Rai students and mathematics teacher and observations—participant and non-participant—to get the data for the research study. However, at first, I took 18 out of 30 Rai students, and finally selected only four Rai students who had achieved a low score in mathematics in the final examination of grade 8. For the study purpose, I prepared their individual records files and analyzed them.

Findings and Discussions

It is totally the description of the everyday lives of the four key children as what and how they acted, reacted, and interacted in order to understand their learning and notice their learning in mathematics in the school. The researcher arranged the data given by the four key informants and analyzed the data by using the cultural discontinuity theory.

Children's Life at Home

Children were found living with their parents in the Rai communities. They had a mono-cultural setting, monolingual communication, and stereotyped lifestyles in their Rai community. They rarely interacted with the other castes and cultures before going to school. They also learned various household chores and skills through imitation and learning by doing with their parents and social members. They had their own distinctive attributes of the human race. They were also found improvising their cultural traits as per their necessity with the time and context. They were found more guided by their sociocultural practices and confused about the changes outside their locality. Their learning styles and cognitive part were widely influenced by their cultural heritages—transferred from one generation to the next—and learning by doing. Oral knowledge and practical skills had a dominant role in their community. Gradually, they were found attracted to the mass media and social media. However, there were two classes of Rai people haves and not-haves. The socio-cultural discontinuity could be seen among them too.

Specially speaking, one of the major concerns of this study is to analyze how far the existing cultural practice is supporting to learn the mathematics of Rai school children. A short description of a Rai child is given below:

Mangli Rai

Mangli Rai is 14 years old girl studying in grade VIII. She lives in Santang. It takes twenty minutes to reach school from her house. She has eight members in her family including her grandparents and parents. She has a poor economic condition. To go to school, she has to finish all her household work. After reaching school, Mangli Rai gets engaged in her study. There due to the difference between her home language and classroom language, it becomes difficult to her to understand the process of solving mathematical problems.

I talked to her about her learning difficulties in mathematics and observed her activities in class and school. I found her confused about her language and behavior in the class that

contradict her own community. For example, Mangli Rai used colloquial Rai language in her class *yo kasari bhayeko bhandeuna sir* (How is it solved, sir?). However, her mathematics teacher did not enjoy her colloquial language—non-honorary language—though she did not have such intention. It was her language and way of speaking in her culture that does not suit the classroom context for mainstream language—Nepali—and culture. She used the same language as she asked her mother *Aamai bhatdeuna* (mother, give [me] rice), and father *Bau malai yeuta copi kindeuna* (father, buy one copy for me). She had a typical language, way of speaking to others, communication culture, and lifestyles contradicting the school language—Nepali, culture—formal, and so on. Furthermore, she was allowed to speak in Nepali or English languages in school but she had never spoken them at her home. She knew the Rai language and spoke quite a lot at home but was not allowed to speak in school. She was confused that she was not allowed to speak the language that she could communicate, but only allowed the languages—Nepali or English—in which she could not communicate efficiently. It usually confuses her and becomes silent even when needed. This different culture discomforts and discourages her to learn in school.

Bir Bahadur Rai and other Rai children at school had a similar story. Bir Bahadur Rai wanted to be a good student in the class, ECA, and other activities but could not be good due to his linguistic and cultural dissimilarities. Like him, most of Rai students complained that they wanted to study well but could not understand the textual language which was usually in Nepali or English, and felt difficulty in solving a word problem, applying the formula, simplification, multiplication, and division of decimal numbers, measuring angles. They also felt uneasy to ask questions to their mathematics teacher from Brahmin community since most of his friends laughed at his language and tune of language—Nepali in Rai's accent—and the mathematics teacher got furious at his non-honorary language—though it would be acceptable in his Rai community. The misunderstanding between the teacher and Rai students in the class due to their linguistic variation—polite versus impolite language—creates miscommunication and problems in the class.

Furthermore, the obligation of learning three languages by Rai school children such as Rai language (they use at home), second, Nepali use in school, and third, is English language (English course) simultaneously. Although the role of the modern education system is contributing progressively to the betterment of education, the condition of Rai is still vulnerable and the education stands in Rai falls far below the normal standard. However, the Rai students from an urban or mixed society seem to be better at learning mathematics.

School and Home Learning Culture

Like other children, at home, Rai children learn informally or by observing and doing things side by side. However, they find the school learning culture is totally different from their learning culture at home. There is a great difference between the everyday life of Rai students and school practices. Since the everyday lives of the Rai students are given emphasis for their learning in school practices, they always consider as an artificial and incompatible institution so they neither assimilate nor accommodate into the

mainstreaming school system. As I have referenced Manmati who has a different culture of learning, communicating, and behaving that rarely suits her class. Furthermore, the mathematics teacher could not understand her household works and culture which disturbs her study much more than her choice. Most of the students from the Rai community, I believe in other communities too, there are two types of learning, two types of a learning culture, and two types of problems to be solved. They are at home and school. when they support each other, learning would be easier otherwise, it would be difficult for them.

Since the culture of home and school is different in terms of language, teaching style, and everyday lives, Rai students along with the mathematics teacher have to adopt learning strategies differently. Since the learning strategy for children at home is discontinued at school, it is to be connected.In this regard, Ogbu(2000,2001)argued for cultural discontinuity that creates differences between home culture and school cultureand makes the students face problems in learning mathematics. To sum up, the discontinuity between the culture, i.e. environment of and school discourages the Rai student in mathematics learning. A teacher never gives proper attention separately to the Rai students, which indicates that it is a very important influencing factor. Home is the main focused center of learning for children. So home environment, school environment, and parents' behaviors play an important role. Similarly, the behavior of society and teachers also play a vital role for Rai students in learning mathematics.

Influencing Factors for Learning Mathematics

As an observer, I have found there are many influencing factors for learning mathematics in Rai children. They are rarely understood as the main factor of obstacle in learning mathematics and are considered in modern measurement problems. Some of these influencing factors are described below.

Caste Differences

Caste difference is one of the influencing factors in learning mathematics. In this study, most of the Rai students, who do not feel comfortable with school culture, were compelled to be silent in class due to their language and presentation style. The Rai children speak the language as guided by their socio-cultural aspect which would be a subject of laughter for others and ‘impolite’ for teachers. Furthermore, their straight and clear presentation of the Rai children also embarrassing for the teachers who asked the Rai children to be silent in class. The differences in culture and language caused by their caste have made the Rai children low priority in the class and achieve low results in mathematics.

To sum up, the main problem for the Rai children in learning mathematics is their status in society which is inferior. Another thing is their home environment and teacher’s

behaviors/ role as we are concerned with the school children. Here, we are just talking about caste differences as the influencing factor of learning. Rai children are disadvantaged because they are supposed to lower status in society which influences their learning process.

Discriminating between Son and Daughter

The gender role also determines the learning attitude, atmosphere, and access as Manamati utters- I have to work much at home since I am a girl. For her, a girl should prioritize her household chores much more than her study. At the same time, Bir Bahadur proudly said- my father asked me to study well. He indicated that he was given much time, attention, and effort for the study. According to him, he should not give much attention to his household chores. The picture of Manamati and Bir Bahadur depicts gender discrimination in their priorities, opportunities, and objectives of the study. Unfortunately, the mathematics teacher usually behaves them equally and does not do 'justice to the girl'.

I have also observed and understood the gender discrimination and differences that are constructed through social and cultural practices. The social practices encourage people to send daughters to bring fodder, and household work whereas sons to play in the ground. Our socio-cultural practices unequally ensure the son's inheritance rights to the paternal-maternal properties and considered the daughter as an 'object' for supporters where daughters are regarded to be the worker to be engaged in their husband's homes. Such behaviors of parents influence a lot of the learning process.

Role of Parents in Learning Domestic Work

Parents' role in learning domestic work is one of the influencing factors in learning Mathematics. When the teacher asked Rai students ``Does your father link to domestic work with school education when you learn domestic work? He said, "no sir, he gives more opportunity to participate, and observe but doesn't link with education." Here, most of the Rai students used traditional measurement tools in their houses. In school students used standard measurement. There is no link between traditional measurement tools and standard measurement tools in the course book. The Rai students learn traditional measurement tools from their parents and standard measurement tools from their teachers. There is a cultural discontinuity between traditional practices. Since the everyday lives of the children were not reflected in the school practices, they got barriers in learning mathematics.

Interpersonal Relation

The research found that there is not good communication between Rai and the other children, though theyeat together, and sit together, their company is different. Rai students are compelled to speak either Nepali or English language to communicate with children other than Rai. These Rai students are not proficient in Nepali or English but not allowed to speak in their own language—Rai—in which they are better. Maybe it might be a reason, they could not communicate much in class and are deprived of interpersonal communication. Even when they try to speak, other students would laugh at him/her or the mathematics teacher would get embarrassed due to their language—The Brahmin teacher could not digest 'impolite' language. The language might create cultural

misunderstanding among teacher and the ‘rare interpersonal communication’ influence their learning of mathematics at school.

Similarly, the role of the teacher’s behavior is another influencing factor in learning mathematics. I have also found that the mathematics teachers are less sympathetic to the Rai students to give much extra attention since Rai students’ linguistic as well as cultural barriers negatively influence their learning.

Conclusion

This study highlights the profound impact of cultural discontinuity on Rai children's learning of mathematics, as their unique cultural and linguistic background often conflicts with mainstream educational practices. These cultural disparities, coupled with their household obligations, financial constraints, and the societal behavior they face, significantly impede their mathematical comprehension and performance. Distinct gender gaps were also identified within the Rai community, further exacerbating the learning difficulties. Furthermore, the lack of understanding and empathy from mathematics teachers towards these students' unique circumstances aggravates the situation. These educators often overlook the need to adopt intercultural strategies that bridge the gap between the Rai children's home and school environments.

In an era where mathematical and logical thinking forms the basis of information technology, it is crucial to address these barriers to ensure that these historically marginalized Rai children are not further disadvantaged. Teachers must be proactive in understanding these students' socio-cultural perspectives and integrating their home and school environments, thereby facilitating more effective participation and understanding in the learning process. To achieve this, mathematics educators, as well as teachers from other disciplines, need to demonstrate greater sympathy and adapt their pedagogical practices to account for diverse cultural backgrounds and abilities. By promoting a learning environment that respects the Rai students' language and culture, we can enhance their mathematical learning quality, decrease dropout rates, and foster inclusivity within the broader educational landscape.

References

Achary, B.R.(2013).*Studies in mathematics education*. Kathmandu. DikshantPrakashan.

Aryal,N.R.(1970).*Foundation of educational thought and practice*. Ludhiyana,India.Kalyani Publisher

Adhikari, S.K. (2006), *Cultural discontinuity and difficulties in learning mathematics*(Unpublished master’s thesis). Faculty of Education, TU, Kirtipur.

Khadka, B.K. (2006). *The factor influencing the attitude towards learning mathematics to the children of Ex-Kamaiyas*(Unpublished master’s thesis). Faculty of Education, TU,Kirtipur.

Luitel, B.C. (2009), *Culture world view and transformative philosophy of mathematics education in philosophy inquiry* (Unpublished PhD dissertation). Curtin University of Technology,Australia.

Maskey, S.M. (1975).*A comparative study of mathematics achievement of primary school students under different class sizes* (Unpublished mini-research).Research Division, Rector`s Office,TU, Kathmandu.

Nasir, M.K (1997), *Factor affecting mathematics achievement in Malayasian school*(Unpublished PhD dissertation). Indian University.

Ogbu,J. (2000). Understanding cultural diversity and learning. In A. U. Bradely, etal. (Eds.) *Schooling the symbolic animal*(pp. 190-206.Oxford.

Poudyal, K.P. (2007).*Difficulties in learning mathematics: A case study of stone quarries student in Chovar VDC*(Unpublished Master's thesis). Tribhuvan University, Kirtipur.

Rai, V. S., Rai, M., Phyak, P., & Rai, N. (2011). *Multilingual education in Nepal: Hearsay and reality?* Kathmandu: UNESCO.