

**MATHEMATICS PRACTICE IN MUSLIM COMMUNITY**

**A**

**THESIS**

**BY**

**ANIL DHAWAL**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTERS OF EDUCATION**

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त्रिभुवन विश्वविद्यालय  
शिक्षा शास्त्र केन्द्रीय विभाग  
**गणित शिक्षा विभाग**

विश्वविद्यालय क्याम्पस  
कीर्तिपुर, काठमाडौं, नेपाल

UNIVERSITY CAMPUS  
Kirtipur, Kathmandu, Nepal

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**LETTER OF CERTIFICATE**

This is to certify that **Mr. Anil Dhawal**, a student of the academic year 2074/076 with Campus Roll Number 362 thesis Number 1593 Exam Roll Number 7328312 and T.U. Registration Number 9-2-0306-0005-2013 has completed his thesis under the supervision of Mr. Krishna Prasad Bhatt during the period prescribed by the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal. This thesis entitled "**Mathematics Practice in Muslim Community**" has been prepared based on the results of his investigation conducted in the period 2022 at the Department of Mathematics Education, University campus, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward his thesis for evaluation as the partial requirement to award the Degree of Master of Education.

.....  
(Mr. Abatar Subedi)

Head

Department of Mathematics Education

Date:- .....



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UNIVERSITY CAMPUS  
Kirtipur, Kathmandu, Nepal

पत्र संख्या:-  
Ref.

मिति:  
Date: .....

**LETTER OF APPROVAL**

This thesis entitled “**Mathematics Practice in Muslim Community**” submitted by  
**Mr. Anil Dhawal**, in partial fulfillment of the requirement for the Master’s Degree in  
Mathematics Education has been approved.

**Viva- Voce Committee**

**Signature**

Abatar Subedi

.....

(Chairman)

Prof. Dr. Bed Raj Acharya

.....

(External)

Krishna Prashad Bhatt

.....

(Supervisor)

Date: - November 15, 2022



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**RECOMMENDATION FOR ACCEPTANCE**

This is to certify **Mr. Anil Dhawal** has completed his thesis entitled “**Mathematics Practice in Muslim Community**” under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal. I recommended and forward his thesis to the Department of Mathematics Education to organize the final Viva-voice.

Date: - .....

.....  
Krishna Prashad Bhatt

(Supervisor)

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## DECLARATION

This thesis does not contain any other work which is offensive and beyond the copy write norms. To the best of my knowledge and beliefs, this research is truly based on my effort and it does not match with, any research that was published earlier in any institution. I take all the ethical and legal responsibility for submitting this thesis.

Date: - November 15, 2022

.....

Anil Dhawal

## **DEDICATION**

This work is heartily dedicated to my respected parents Shree Prashuram Dhobi and Sumitra Dhobi. My wife Gulabi Kumari Dhobi, daughter Aaradhya Dhawal, brother Kamleshwar Dhawal and all my family members who supported me in every step of my life what I am now.

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Finally, I am also thankful to all Muslim villagers and Muslim leaders to help me take observation interviews for my research. I would like to express my deepest gratitude to my father Prashuram Dhobi, mother Sumitra Dhobi, Brother Kamleshwar Dhawal who continuously encouraged and support me to complete this thesis as well as thankful to Mr. Baijnath Yadav who continuously encouraged and helped me to complete study.

Date:- November 15, 2022

.....

Mr. Anil Dhawal



## **Abstract**

This study was made to explore the counting system, algorithm of four fundamental operations, money counting, and their units counting of days, and the measurement system as practiced in the Muslim community. The research design of my study was qualitative with ethnographic approaches where ethnography is the in-depth study of human culture. So, my research site was ward no. 5 of Rohini rural municipality of Rupandehi district selected three agriculture farmers, two Molbi(Maulana), and one shopkeeper purposively. There were different tools used in data collection in my research, primary data was collected from observation and interview, and secondary data was collected from different journals, articles, books, and other published and unpublished documents. Based on the interpretation and analysis of the data it found that the Muslim culture holds innumerable mathematical ideas in their daily life used in number counting, counting of days, measurement system, fundamental operations, and money counting and their unit. But children had limited knowledge of formal mathematical concepts. They were writing mathematics in practice but not connected to formal mathematical cognitive processes. By taking interviews with primary-level Muslim teachers and students, they were less informed about Muslim mathematical knowledge applied in teaching-learning activities.

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## **Chapter- I**

### **Introduction**

#### **Background of the Study**

Muslims have lived in Nepal for a long period and have shared common historical experiences with the Hindu majority, and as such have developed a stronger identification with the Nepali state. However, the Terai Muslims, on the other hand, like other Terai communities also continue to have strong ties across the border and receive culture. Nepali historians believed that the first Muslims settled in Kathmandu during King Ratna Malla's reign in the late 15<sup>th</sup> Century. Kashmiri traders were probably the first Muslims to arrive, followed by Afghans, Persians, and even Arabians. The Bajar in Indrachowk gets its name from the tragimerchants Singh, C.P (2011).

Nepal is a multi-culture, multi-religion, multi-ethnic country. Nepal is a landlocked country in Asia that is sandwiched between two extensive countries china and India with a total area of 147,181 Square kilometers and it has a population of around 30 million. But what Nepal lacks in size and population, it makes up with bio and cultural diversity of epic proportion. More than 123 languages are spoken as the mother tongue in Nepal. There are many religions and that are Hindu, Buddha, Muslim, and Christian.

The term Muslim is a religion. Muslims are defined as those who sincerely accepted of unity of God, have faith in Quran and Hadith, obedient to orders and are true believers in "Allah", accept faith or five pillars (i.e. the Sahara (oneness of God), Salat or Namaz (prayer of God), Zakat (charity), Kiyam or Roza (fasting) and Hajj (pilgrimage) of Islam is known as Muslim.

As per the statistics of Nepal's national population census 2068 B.S., the Muslims are in the number 1,164,255. The Muslim community people are found in all districts of Nepal as permanent residents and temporary migrants for business and livelihood. As per the statistics of the population census, there are some Muslims in the hilly region, some in the mountain region, and many of them in the Terai region. In the aspect of sex, there are 579,501 female and 584,754 male Muslim people. In the context of Nepal, there are 4.4% of Muslims in Nepal. They are found all over Nepal. A maximum of 135,283 Muslim people reside in the Rautahat district whereas only 2 Muslim peoples reside in the Taplejung district. About 97% Muslim community lived in Terai while the other 3% are found mainly in the city of Kathmandu and western hill.

The term 'Mathematics' has been interpreted and explained in various ways. According to Oxford Advanced Learners Dictionary "Mathematics is the science of numbers and shapes." According to James and James (1986) "Mathematics is the logical study of space, arrangement quality, and many related concepts. Mathematics is a way of thinking i.e. the way of organizing, analyzing, and synthesizing a body of data. (Aichele and Reys, 1971)

Mathematics is a boat of the experiences of all people regardless of how far they have gone in school. It is the foundation of the scientific and technological world as we live today. The great advance that civilization has made in science and technology could not have been made without the advancement of mathematics. (The American Education Encyclopedia 7 p- 22 78 A).

Mathematics education is concerned with the development and implementation of appropriate Mathematics curricula, and with all issues associated with the teaching and learning of Mathematics in keeping with the concepts of lifelong learning. Also, Mathematics education covers learners of all ages and at all levels from early childhood to adulthood. Thus, Mathematics education is not solely concerned with curricula, classroom teachers, and learners in schools nevertheless issues associated with school Mathematics will be a major focus.

According to Polya (1965) " Mathematics presented educationally appears as a systematic in deductive science but Mathematics in the making appears in an inductive science. Thus, Mathematical understanding is essential for effective living in society. The Cambridge conference on school Mathematics (1963) reported as "Mathematics education, to fulfill the needs of an advanced and advancing public must be under continual, scrutiny and undergo context change and it is the responsibility of a Mathematics working in university, school or industry to concern themselves with the problems of keeping Mathematical education vital and up to date."

Mathematics is a creation of cultural activities. Cultural practice is the source of Mathematical knowledge. Mathematics as a plan is a cultural phenomenon (Bishop, 1988, 9.589). Culture and Mathematics have a strong directly proportional and circular connection. Cultural institution influences the mode of Mathematics teaching, learning, and curriculum development. Similarly, the term culture denotes social property, assets, and heritage. Such heritages which are in practice at any time are transformed from generation to generation. With the mobility of time, there are changes. But the nature of culture varies from culture to culture. No culture is found to be the same in most aspects

even if there are some similarities. Since the human being is born and grows up in society he/she learns to receive and brings into practice in their daily life.

Mathematics is always developed and proceeds in society as than product of our culture. So, Mathematics has a significant role in the development of our culture. There is no doubt to the fact that Mathematics creates Mathematics that is inherent to each other. If there is the absence of one, another remains incomplete. Such type of intimate relationship between culture, Mathematics, and nature of the Mathematics is called the cultural nature of Mathematics. There is an influence of culture in Mathematics even if the people have gained knowledge of formal Mathematics and they have received any level of degree. Every student always brings their indigenous knowledge of "Mana, Pathi, Muri, Dharni" in practice in daily life which is prevalent in their culture even if they are taught standard Mathematical in their school. So that this study found the Mathematical practice used in the Muslim community.

### **Statement of the Problem**

Nepal is a small country in which there are many ethnic groups and every ethnic group has its own religious, language, social, and cultural beliefs. Their cultural activity plays the important role in the national culture. Most ethnic groups have Mathematical knowledge. Muslims are one of the ethnic groups of Nepal. Their cultural and hidden Mathematical activities are different from other indigenous culture groups and communities whereas ethnomathematics is the combined study of their culture and Mathematics. Very few studies have been carried out in Mathematics practice in the Muslim community of the Rupandehi district. Therefore, I was interested to study



ethnomathematics practice, cultural activities, hidden Mathematical activities, and pedagogical implications of Mathematical concepts practiced in the Muslim community.

I indent to find out the mathematics practices in the Muslim community. So this study tried to answer the questions. What kinds of basic Mathematical concepts were practiced by the Muslim community and how do they perform the basic Mathematical operations in real life? Also, how does their cultural context affect his mathematical thinking? Therefore, this study focused on the cultural mathematics practices in the Muslim community. Thus, such questions occurred in my mind. So, I was motivated to carry out this research in this area.

### **Objectives of the Study**

The main objective of this study was to find out the Mathematical concept formation and practices in the Muslim community. The following objectives were formed to gain the result of this study.

1. To find out the mathematical practices used in the Muslim community.
2. To explore the development of mathematical concepts and skills of the Muslim community concerning cultural context.

### **Research Questions**

The following research questions are addressed in this study.

1. What kinds of basic Mathematical concepts were practiced by the Muslim community?
2. How do they perform the basic Mathematical operations in real life?

3. How does their cultural context affect his mathematical thinking?

### **Justification of the Study**

This study reflects indigenous mathematics knowledge and skills. This study helps teachers, students, educationists, and curriculum maker's to use indigenous mathematics knowledge and skill. Mathematics is an essential part of the school curriculum so every student should study school education i.e. grades one to ten in Nepal. Mathematics has taught to all students as a compulsory subject at the school level as well as an optional subject. Therefore, this study has been helpful for teachers, school counselors, policymakers, researchers, etc. further, the result of this study helps in the following way.

- This study suggests that mathematics teachers address cultural diversity in teaching mathematics.
- This study helps to promote ethnomathematics knowledge.
- It helps to motivate and encourage Muslim students to study mathematical concepts and practice.
- To find different kinds of teaching materials and teaching methods that are locally available.

### **Delimitation of the Study**

This study would have been executed in a disadvantaged community with a small number of respondents. This study would have the following delimitations:

- This study would have limited to Muslim ethnic groups of the Rupandehi district.

- Only one ward (ward 5, Rohini Rural municipality, Rupandehi district).
- This study would have tried to develop Mathematical concepts/skills of the Muslim community with cultural context.

### **Operational Definition of Related Terms**

**Basic mathematical concept.** Mathematical concepts are used by the Muslim community based on four major operations as addition, subtraction, multiplication, division, and numeration system.

**Mathematical knowledge.** Mathematical knowledge is used by the main professional of the Muslim community in farming, and business.

**Muslim.** An ethnic group of religion who sincerely accepted of unity of God, are obedient to order and true believers in "Allah" accept faith in the five pillars of Islam is defined as Muslim.

**Indigenous knowledge.** In this research indigenous knowledge refers to the unique cultural practices, intellectual resources, beliefs, and values of a particular marginalized Muslim community.

**Ethnography.** In this research, ethnography refers to the in-depth study of culture, beliefs, customs, rituals, etc, practiced by the Muslim community.

**Marginalize community.** The most oppressed groups of people are listed by the constitution of Nepal.

**Ethnographic.** The scientific study of people and cultures.

**Ethnic group.** A category of people who identify with each other based on similarities such as common ancestry, language, society, culture, or nation.

**Cultural heritage.** In this study cultural heritage refers to the human creation intended to inform and the main source of self-expression and self-realization.

## **Chapter-II**

### **Review of Related Literature**

This chapter is related to the empirical literature, theoretical literature, and conceptual framework of the study. A collective body of work done by scientists is technically called literature. A review of the related literature is an important part of the research because it supports identifying variables relevant to the research, to avoid the repetition and synthesis of prior works. It also determines the meaning and relationship among the variables (Sing, 2008). This chapter includes the different features of articles, journals, and findings of different research in the field of mathematics practice in the Muslim community. The main purpose of related literature is to identify the mathematics practice in the Muslim community. This chapter deals with the work carried out in the area of this research project, theories, and interpretations ever found in the literature reviewed were previous theories, books, journals, articles, and internet resources.

There are two types of literature review named: empirical literature and theoretical literature. The empirical literature includes the different research in the area of mathematics practice in the Muslim community and theoretical literature for linking different theories.

#### **Empirical Literature**

The empirical study of literature is an interdisciplinary field of research that includes psychology, sociology, philosophy, contextual study literature, and the history of reading literary texts. Empirical research is based on observed and measured phenomena and derives knowledge from experience rather than from theory or belief.

CERID (1990) studied "Elementary processes of learning mathematical concepts and processes of Rasuwa, Tamang". The purpose of that study was to identify the basic mathematical concept used by Tamang adults with no formal mathematical education, to identify the traditional Tamang method of mathematical operation, and to find out the implication of Tamang processes and tune up to the present learning situation. That project works show that the Tamang have a system of measurement, counting, mathematical processes, and geometrical concept. The study has also shown the situation of children in the formal system, but it did not study the effect of Ethno-mathematics practice in classroom settings. The study concluded that the Tamang numeration system is base twenty and Tamang has its traditional distinct concept for calculation, measurement, and mathematical work.

Similarly, Shrestha (2003) studied "The measurement system in Newar civilization." The main aim of this research was to find the root of the Newar numeral. The ethnographical research design was used with a purposively selected field and concluded that all the numerals of the Newar civilization were found as developed from the Brahmi numerals. Their measurement is the same as general. The counting system is general, similarly, Kandel (2005) did research entitled " The basic mathematical concept and processes of Chepang community and concluded that: The numeration system of Chepang is a system of a base 20. They have their math process which is a simple computation process. They have their traditional system of measurement. Like as Mainali (2005) studied "Development of the numeration system of the Limbu ethnic group" and concluded that: The script of the Limbu is influenced by the Brahmi script. The number is based on a decimal scale. The numerals system of Limbu adopts ten basic symbols with a

positional number system. All Kirati people used the same numerals including Limbu but vary in pronunciation and continue till now.

Dhakal (2008) studied "Basic mathematical concepts and processes used by the Rai community". She concluded that the ethnic group has been base 10 (young/ literate people) and base 20 (traditional people) practiced in their community. They do have not their symbol for the native name of numbers. Their counting system, measurement system, and operating system are also the same as general but the language is different. Nowadays, literate and younger also use Hindu- the Arabic counting system and they use shortcut methods to solve mathematical problems.

Pangani (2006) studied the topic "Concept of Geometry used by Chitawan Tharu" and conclude that: before constructing any object first make a shape and size of that object in their mind and construct an object using a traditional method of measuring using hand according to their thoughts designed before. They mostly prefer to construct geometrical objects which are circular in shape. They could not distinguish between geometrical objects having different shapes. Some machinery equipment could be able to tell the name of each part but for some machinery equipment they could be able to tell the name of each part but for some machinery equipment, they could say the name of the whole object.

Khanal (2008) conducted his research on an "Ethnographical study on the Mathematical concepts and process used by the potter." In this study, the researcher concluded that gaining knowledge is a process of observing reflecting thinking, performing, and practicing. They use Mathematical concepts like center, straight line,

plane, area, circle, sphere, rectangle, cylinder, and trapezoid, three-dimensional geometrical figures.

From the above discussion will of the related literature, a lot of studies were concluded around the world in this field and many ethnic- Mathematical practices have been conducted south in various places like Brazil, Ghana, South Africa, Portugal, and Spain. Among these studies, some were directly related to learning strategies of Mathematical concepts in different ethnic groups. Nepal is a multicultural country, where many cultural systems are found. These cultures perform their Mathematical problems in their style/ method. But a few researchers will make on the mathematical process of these cultural groups.

D' Ambrosio (1985) the father of Ethno- mathematics deconstructs the world Ethno- Mathematics as ethno+ mathema+tict (techne) where Ethno means culture environment, Mathema means teaching, explaining, and tics use a reminder of techne, the root for arts and techniques. So Ethno- Mathematics is an intersection form of Mathematics, cultural anthropology, and Mathematical modeling. According to the encyclopedia "Ethno- Mathematics is the study of the relationship between Mathematics and culture." It refers to a broad cluster of ideas ranging from distinct numerical and Mathematical systems to multicultural Mathematics education. we know anthropology refers to the holistic study of human beings and culture anthropology refers to cultural variation among all human beings of the world.

Ethno Mathematics also develops the study of Mathematical ideas and practices of socio-cultural groups, but how this is realized in the classroom is still problematic because



much of Ethno- Mathematical research and investigations identify ethnoMathematical forms of Mathematics but do not continue to develop the pedagogical actions for this program. Classroom research (D' Amaborsio, 1979) about Ethno- Mathematics and its role is a crucial aspect of this perspective because this program should be implemented in the classroom. Ethnomathematics emphasizes the communal trends to connect Mathematics with its contexts.

Mallory (1992) conducted international research on "An ethnographic study of the Mathematical ideas of a group of carpenters." He conducted a six-month ethnographic study as an apprentice carpenter in Cape Town, South Africa. The methodology of the study was the participant observation, the result shows that they made extensive use of concepts such as congruence, symmetry, proportion, and straight and parallel lines in their every work. There was tacit Mathematical knowledge in their action and reflection, the action led them to concrete contextualized problems and their ideas were formed by the context of the workshop and carpentry tools. Comparison, using the sense of touch and sight was performed to measure and usually resulted in optimal solutions.

### **Research Gap**

From the above discussion of related literature, very few studies have been carried out in the field of ethnomathematics. Among these practices, some were directly related to learning strategies of the mathematical concept of a different ethnic group. But this study tried to find mathematical knowledge practices in the Muslim community and also explore the relation of Muslim cultural mathematical practice to basic level mathematical knowledge. Because any related research does not try to explore the mathematical

knowledge practice in the Muslim community. I argue that culturally relevant mathematics teaching builds a meaningful bridge between students' home culture and school mathematics.

### **Theoretical Literature**

For the study, the researcher introduces the theoretical discussion in this chapter. The constructivism theory and Vygotskian theory of social constructivism have been used for the interpretation of the findings of the study. They are described as follows:

#### **Constructivism**

In general, constructivism means kinds of consideration about themes and building up a strong mental plan, so different individuals have their construction about existing phenomena. Learning Mathematics requires constructions, not passive reception, and knowing Mathematics requires constructive work with Mathematical objects in a Mathematical community.

Constructivism is a philosophy of learning founded on the premise that by reflecting on our experiences, we construct our understanding of the world, and what we like in each of us, generating our own 'rules' and mental models which used to make sense of our experience. Learning therefore is simply the process of adjusting our mental models to accommodate new experiences.

The term constructivism is taken from the construction of knowledge. So, the learner can be compared with a craft person and teachers with an architect in architecture. Constructivism is one theory from a variety of disciplines that calls for us to question our

anthological (to a position) and epistemological assumptions. We know that constructivism is a philosophy of learning and teaching objects existing in the world.

Some scholars believe that learning occurs from social interaction. In their view, every child learns from society, through social activity with family and the universe. Constructivism which denotes learning as individual construction believes that knowledge is something that can be constructed. We can construct much experience. Therefore, it is simply the process of adjusting our mental model to accommodate new experiences.

Upadhyay (2003) stated that Mathematics is an art, art demand creativity, and ideal art. Constructivism considers every aspect of learners and tries to carry out his increase the curiosity of the students about an object.

The constructivist theory posits that students make sense of the world by synthesizing new experiences into what they have previously understood. They form rules through reflection on their interaction with objects and ideas when they encounter objects, ideas, and relationships that do not make sense to them. They either interpret what they see to confirm their rules or they adjust their rules to better account for the new information. (Brook and Brook, 1993)

Constructivism stands on its three axioms which are as follows:

1. Learners learn knowledge from their active participation.
2. Learners gain knowledge while reflecting on their actions.
3. Learners gain knowledge when they try to convey their solutions to others.

## **Social Constructivism**

Social Constructivism is the trend within the modern field of the sociology of knowledge. Sociological knowledge is an epistemological discussion of knowledge is created and acquired. Social constructivism focuses on the actual production of scientific knowledge. Therefore it is not merely a study of how social factor and practical theory and Vygotskian theory of social construction has been used for the interpretation of the finding of the study. They are described as follows:

### **Leg Vygotsky**

Lev Snitch Vygotsky was a Russian psychologist. He was born on November 5, 1896, in the town of Orsha, northeast of Miinkin, Byelorussia. He completed the gymnasium in Gomel with the gold medal in 1913. After graduating from Masco University with a specialization in literature in 1917, he began his literacy research. Vygotsky was a famous scholar who emphasis on social construction. Social construction is a theory among the several theories on construction. Social construction is a theory among several theories on construction. The researcher has used Vygotsky's theory for this study that knowledge is socially constructed and children learn when they get contact with the outer environment either verbally or observantly. Vygotskian theory is one of them; that regarded social interaction between peers and adults as an important aspect in creating meaning making sense and conveying culture within the shared context.

According to Vygotsky, infants are endowed with basic perceptual and memory capacities that they shared with other animals. These develop during the first year through direct contact with the environment. The rapid growth of language leads to a

profound change in thinking. It broadens preschool participation in social dialogues with more knowledgeable individuals, who encourage them to master the culturally important task. Soon, young children start to communicate with themselves. As a result, basic mental capacities are transformed uniquely into a human's higher cognitive process.

Vygotsky focuses on a child learning something first on the social level, then later on at the individual level. It means children develop their skills through playing or increasing with peers and other adults. This means that the social level takes first for the intention of the learning. Vygotsky thought of such inner psychological processes at the individual level e.g. emotional and cognitive structure. Therefore internalization is processed by which inter-psychological becomes the intra-psychological is not a simple transformation from external activities to perform cognitive structures. The learning is thus facilitated through speech, interaction, and cooperative activities.

Knowledge is being constructed in the social situation of negotiation rather than being the relation of the real object reality, which is termed as social construction believes in the multiple constructions of the world. In social constructivism theory, each human being makes sense of the world in a unique way (Mc Combs and Mc Neely, 1919 cited in JRME, 1992).

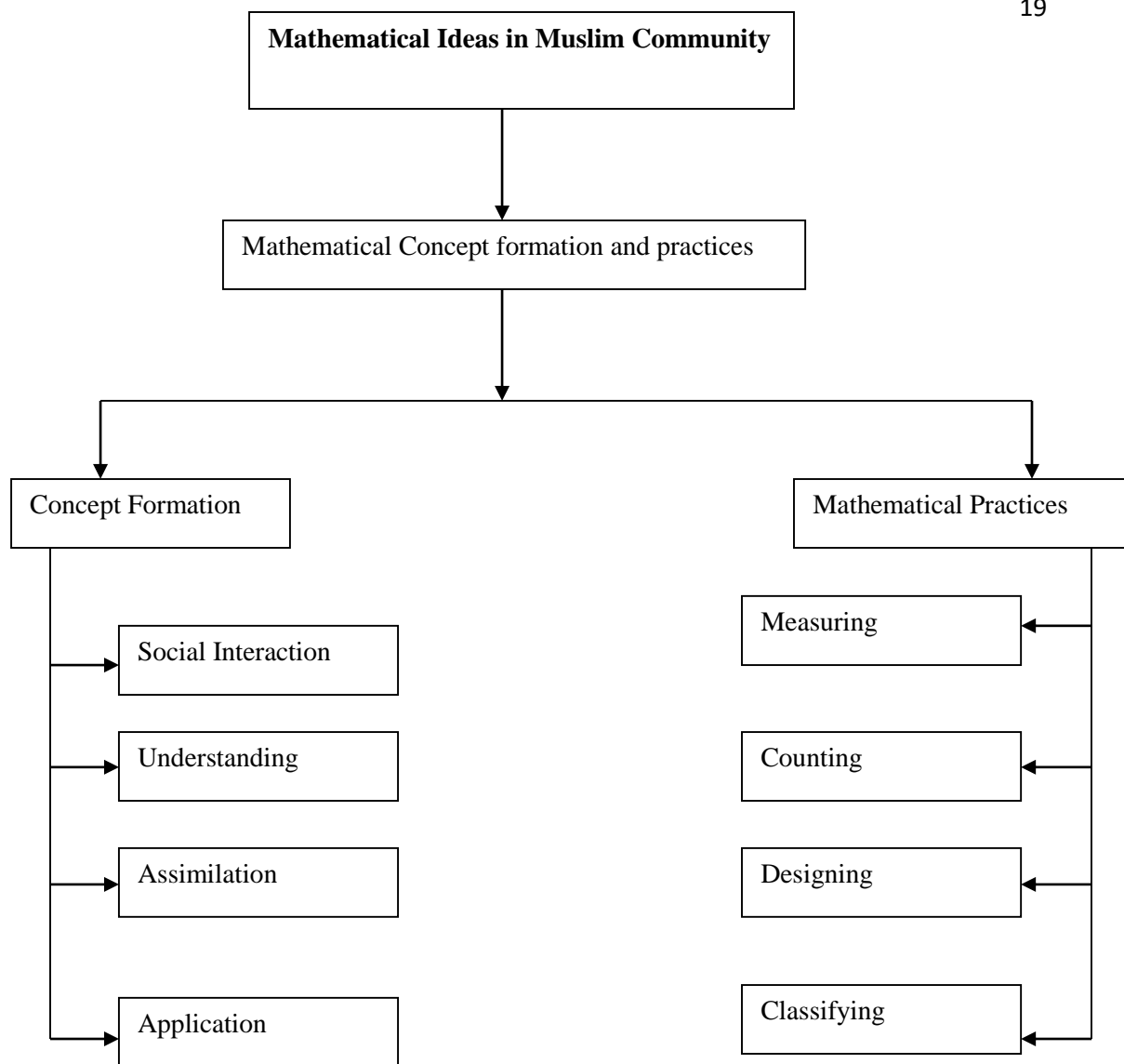
According to social constructivist Vygotsky, knowledge is constructed in two ways in the social context. Firstly, social interaction influences the nature of knowledge that is constructed and the process individuals use to construct that knowledge. Thus the constructions are socially centered and in the value process of understanding, constructing, meaning, and making senses (Brunner et, al. 1987). The children's

construction of knowledge is not only from individuals but also from the contents, the context, and the interaction with more knowledgeable others. Here the knowledge is constructed by the child needs some mediators such as parents, teachers, and adults or peers to uplift his knowledge they were. Although, the researcher has reviewed many aspects. I have used only selected theoretical concepts related to my objectives which are relevant to the concept of Vygotsky Sian social constructivism.

The assessing process is necessary as mentioned in the Vygotskian zone of proximal development. However, these mediators are the members of the society and culture who are again greatly influenced by the social and cultural background. Social and cultural context influences what their member think about how they learn to think and acquired information and why children learn t particular forms of knowledge. Thus, Vygotsky proposed that child's knowledge can be predicted if we could understand the social context.

### **Conceptual Framework**

A conceptual framework is used in research to outline possible courses of action or to present a preferred approach to an idea or thought. Conceptual frameworks (theoretical frameworks) are a type of intermediate theory that attempts to connect to all aspects of inquiry (e.g. problem definition, purpose, literature review, methodology, data collection, and analysis). Conceptual frameworks can act like maps that give coherence to empirical inquiry. From the review of previously stated empirical kinds of literature and theory, the following conceptual frame can be made:



**Source:** Pemba Sherpa

The above framework has shown that Muslim community the interacts with he/she parents or family or post peer groups of friends and other persons. This framework depicts that there are four steps in the formation of cultural mathematics. First of all, there will be social interaction with the people of the society and then an understanding of the mathematical concepts used in daily life. Assimilation is the process of internalizing the concepts in one's mind so that the concepts can be taken out when there is a need. The last step is to apply the learned concepts in their daily life. On the other

hand, there are four beautiful applications or practices of mathematics. According to Vygotsky's learning theory, learning takes place with the help of social phenomena. The learners can internalize their knowledge in society themselves. The researcher has also modified the framework. Researcher research the mathematical concept of the Muslim community as like: counting, designing, classification, and calculating.



## **Chapter-III**

### **Research Methods and Procedures**

This chapter dealt with research design, methods and procedures, site selection, and procedures selection of the case respondent tools of research used to collect the data. It also explains the methods of analyzing the collected data.

#### **Design of the Study**

The research design of my study is qualitative with an ethnographic approach. Where ethnography is the in-depth study of human culture. Ethnographic designs are qualitative research procedures for describing, analyzing, and interpreting a culture, sharing a group's shared patterns of behavior, beliefs, and language that develop over time. The researcher tries to explore the mathematics practice in the Muslim ethnic group. This study lays on the observation of natural behavior that occurs in a real-life setting, free from the constraints of more conventional research producers. It mentioned the objectives of the purposed study and to make a good and systematic.

#### **Research Site**

The study site of the research consisted Muslim community of ward No. 5 of Rohini Rural Municipality of Rupandehi district.

#### **Respondents of the Study**

This was qualitative research. There are no rules for selecting a sample in inquiry (Anderson 2001, p. 12). Eight Muslim people take by ward no. 5 of Rohini Rural

Municipality including four agricultural farmers, three animal farmers, two Muslim teachers, and one shopkeeper from related ward no. At first one ward no. selected by purposive sampling and then respondents were chosen by convenient sampling method. The study was an ethnographic-based qualitative inquiry.

### **Data Collection Tools**

This research adopted observation, interview, and photograph as different tools to answer the research questions they are briefly described below:

#### **Observation**

In this study, the researcher had gone and noted the Mathematical concept select more and more narrative people. It is qualitative research so observation is most frequent in this study. Participant observation is that in which the observer is familiar and participates with the object of study. Observation helps to get information that is not obtained from the interview. Observation help in finding the answer to different questions like, how do they work? What do they think? What type of Mathematical concept do they use in their occupation? How does cultural context affect? What do they think about Mathematics?

#### **Interview Schedule**

The interview is a process of data collection from face-to-face interaction. The interview is an oral questionnaire. Most of those discussion focuses on needed the information for qualitative research. The interview helped to get information that could not be obtained from observation. The advantage of interviewing was that the interview

was explained more explicitly. The interview's purpose was to get the actual information that the researcher wants.

### **Quality Standards**

Lincoln and Guba (1985) propose four criteria for 'naturalistic' research. As their work to 'formalize rigor' has been particularly influential in social science generally, and in the occupational therapy field specifically, it is worth focusing on their categories in depth. Interestingly, they link (or pair) their criteria with four used conventional quantitative inquiries: those of internal validity, external validity, reliability, and objectivity.

**Credibility.** Credibility is achieved by addressing such aspects as immersion in the environment, accurate interpretation of the data, triangulation, and member checking (Lincoln & Gude, 1985 as cited in Smyth, 2006). To maintain the credibility of my research, the Researcher tried to spend more time with participants for the research. The data were collected from multiple sources such as observations and interviews and got information related to research problems. After getting information, again I met participants to make results realistic from the perspective of their culture when the researcher got participants were eager to hear their culture actives and experience in the form of research.

**Transferability.** Transferability refers that the findings of the researcher that are applicable and similar to another educational setting. In the field of research, the data-generating process can be useful and similar to another researcher in a similar area. To maintain the transferability of the research, the Researcher captured the daily life activities, cultural, professional, and social activities of the Muslim community through

the interview, observation, and photos in this research. Also, this study encouraged linking the reader's culture and geometrical knowledge of socially available and made the education process effective and object-oriented through ethnomathematics.

**Dependability.** To maintain dependability, the Researcher observed and took interviews with the participants and included me in this study. If repeated this study, the result of the research would be the same from the involvement in the same place, same participants, and same mythologies, when the social environment is changing due to modernism.

**Conformability.** For Conformability, it is also important to ensure that the findings of the investigation are the result of the experiences and ideas of the participants and not the preference and characteristics of the researcher (Shenton, 2004 as cited in Vandeleur, 2010, p.127). So the quality of the results produced by an inquiry in terms of how well they are supported by the informants (members) who are involved in the study and by the events that are independent of the inquiry. So all collected information was based on participants' views, ideas, experiences, and interpretations. Thus, this helps to make the research findings true and exact on participant's practice. In this study, the Researcher presented ideas; Views, and practices the participants have found to be the same in their daily life activities.

### **Data Collection Procedure**

In course of data collection, the researcher followed the following procedures. First of all, the researcher went to the research place in Ward No. 5 of Rohini Rural Municipality then the researcher selected a random sample then prepared some questions related to the research and every night wrote the notebook. One month duration collected

the data inward no. 5 of Rohini Rural Municipality. Then the researcher prepared a questionnaire and interview schedule regarding the native Muslim people in ward no. 5 of Rohini Rural municipality. I visited the selected participants to build rapport with them and asked for their permission to explain the purpose of the research. Then, the researcher also assisted them if find any problems understanding the questions.

### **Data Analysis Procedure**

Analysis of data means studying organized materials to discover the inherent facts. The data and information gathered from the field study were analyzed and interpreted descriptively. At first, I visited my village area and measured the tools of data collection needed for my research study. I used an unstructured interview and observation form. The collected information first was categorized according to the mathematics concept practice in the Muslim community. At the time of the identification of mathematics practice, I asked a research question to Muslim agriculture farmers, animal farmers, Muslim teachers, shopkeepers, and senior Muslim people. I took the interview according to the objectives of the study and at that time I did audio and video recording along with photos then I collected the necessary information, and I coded, categorized, and organized the collected data according to the objectives of the study. After finishing this task, I categorized and kept the information under different headings.

Then I moved to my first objective to find out the mathematics practice used in the Muslim community. Lastly, I worked on the last objective to explore the development of mathematical concepts and skills of the Muslim community with respect to cultural context.

**Ethical Consideration**

The researcher had many ethical considerations to research as given below.

- I equally respect all respondents.
- I spoke politely with the respondents.
- I did not keep the information under control and pressure as well.
- I did not discriminate based on respondent cast, culture, language, and gender.
- I took permission before entering the field site.

## Chapter IV

### Data Analysis and Interpretation

This is an ethnographic case study related to mathematics concepts practiced in the Muslim community. The major objectives of this study were to explore the numeration system, measurement system, and fundamental operations practiced by the Muslim community. The respondent of this study were Muslim people who know Muslim culture, language, etc.

The case of this study was the Muslim community and the selection process of the respondents was based on the grounded theory approach. The researchers used open-ended interviews, field observation, document analysis, and audio-visual materials as tools for data collection.

Thus, the obtained information was analyzed and interpreted under the following main themes obtained in the process of data analysis:

- Numeration System
- Money counting and their units
- Counting of days
- Measurement system
- Fundamental operations
- Concept of fraction

#### Numeration System

The number is a mathematical abstraction used to count measure and label things. Numerals are mathematical notations like; symbols, words, and pictures that represent a

number. And the numeration system is a systematic use of numerals to represent numbers. For instance, the Hindu-Arabic numeration system utilizes ten symbols to represent numbers.

Throughout the observation and interview, I found that Muslim people use positive real numbers. The Muslim people have their symbols to represent the numbers. I found the Muslim numerals used by some Muslim people but most of the Muslim people use Devanagari numerals.

The numeration system of Muslim people is much influenced by Hindu-Arabic, Devanagari systems, etc. 10 symbols represent the Muslim number system. The Muslim numeration is based on base 10 which is the same as our Hindu-Arabic numeration system. Muslim numerals have the concept of the number zero. Muslim people are aware of the idea of nothing less which is called 'Sifr' in the Muslim language and the mathematical notation of Sifr: is '0' The counting numbers from zero to twenty and their native names are given in table 1.

Muslim	Nepali Numeral	Formal Literacy Meaning
Aik	१	One
Dow	२	Two
Teen	३	Three
Chair	४	Four
Paanch	५	Five
Chhay	६	Six
Saat	७	Seven
Math	८	Eight



Now	٩	Nine
Das	١٠	Ten
Garth	١١	Eleven
Sarah	١٢	Twelve
Terah	١٣	Thirteen
Chanukah	١٤	Fourteen
Pandora	١٥	Fifteen
Solah	١٦	Sixteen
Sarah	١٧	Seventeen
Atarah	١٨	Eighteen
Units	١٩	Nineteen
Bees	٢٠	Twenty

The above table shows the formal counting system of Muslim numerals in comparison with Hindu-Arabic numerals. A set of Muslim numerals from 0 to 9 (Sifr: to Bees) works as same as the Hindu Arabic numeration system. But one important thing is that. In the case of the expressions of the larger number, they express numbers in two ways. It expressed the numbers in the following ways:

#### Tens One Meaning in Hindu-Arabic System

Das-Aik             $10+1=11$         one ten plus one equals eleven

Das-Dow             $10+2=12$         one ten plus two equals twelve

Dareen             $10+3=13$         one ten plus three equals thirteen

But other larger numbers from Bees (20) are defined as the following grouping system.

### Tens One Meaning in Hindu-Arabic System

Bees  $1 \times 20 = 20$  one twenty

Bees-Aik  $1 \times 20 + 1 = 21$  one twenty plus one equal to twenty-one

Bees-Dow  $1 \times 20 + 2 = 22$  one twenty plus two equal to twenty-two

And so on. Whereas,

Bees-Das =  $1 \times 20 + 10 = 30$  one twenty plus ten equals thirty

Bees-Das-Aik =  $1 \times 20 + 10 + 1 = 31$  one twenty plus ten plus one equals thirty-one

Bees-Das-Dow =  $1 \times 20 + 10 + 2 = 32$  one twenty plus ten plus two equals thirty-two

DowBees =  $2 \times 20 = 40$  two twenty

DowBees-Aik =  $2 \times 20 + 1 = 41$  two twenty plus one equals forty

-one

Downes-Dow =  $2 \times 20 + 2 = 42$  two twenty plus two equals forty-two

And so on. Similarly, the numbers after 90 look as;

Charles-Das =  $4 \times 20 + 10 = 90$  four twenty plus ten equals ninety

Charles-Das-Aik =  $4 \times 20 + 10 + 1 = 91$  four twenty plus ten plus one equals ninety

-one

Charles-Das-Dow =  $4 \times 20 + 10 + 2 = 92$  four twenty plus ten plus two equals ninety-two

And so on.

From the analysis of the above representation of numbers larger than twenty, this is the same as our traditional grouping system like Ek-bisa, DUI-bisa, and so on. That means Bees is the same as Ek-bisa, Dow-Bees is the same as DUI bias, and so on. In this way Bees are essential to represent the larger numbers table 3 clarifies numbers based on the Bees system;

Muslim	English	Old Nepali grouping
Das	10	Ten
Bees	20	One Twenty
Bees-Das	30	One twenty and ten
Dow-Bees	40	Two Twenty
DowBees-Das	50	Two twenty and ten
Teen-Bees	60	Three twenty
TeenBees-Das	70	Three twenty and ten
Chaar-Bees	80	Four Twenty
Charles-Das	90	Four twenty and ten
Paanch-Bees	100	Five twenty

On the other hand, the Muslim community people represent the multiple of ten in the following table.

Muslim	Meaning	English	Nepali
Das	One-Ten	10	१०
Dow-Das	Two-Ten	20	२०
Teen-Das	Three-Ten	30	३०
Chaar-Das	Four- Ten	40	४०
Paanch-Das	Five- Ten	50	५०
Chhay-Das	Six- Ten	60	६०
Saat-Das	Seven- Ten	70	७०
Aath-das	Eight- Ten	80	८०
Now-Das	Nine- Ten	90	९०
Das-Das	Ten- Ten	100	१००

In the above table, multiple tens look like our Hindu-Arabic numeration system, and no concepts were found of a grouping system of twenty.

## Money Counting and their Units

A system that has been to count money properly without any confusion of their units is known as money counting. Generally, most people recognize the money notes of Rs.1, Rs.2, Rs.5, Rs.10, Rs.20, Rs.50, Rs.100, Rs.500, and Rs.1000, and coins of 25 paise, 50 paise, 1 rupee, 2 rupees, 5 rupees and so on. In the Muslim community from the observation and interview I found the following money counting of Muslim people:

Nepali Name	Muslim Names
1 Paisa	Aik-Piasa
4 Paisa	Chaar paisa
8 Paisa	Aath Paisa
1 Rupaiya	Aik rupiya
20 Rupaiya	Bees rupiya
50 Rupaiya	Pachaas rupiya
100 Rupaiya	Sow rupiya
500 Rupaiya	Paanch sow rupiya
1000 Rupaiya	Ek hazar rupiya

## Counting of Days

Throughout the interview I found the following native systems of ranking names of months and days of a week;

Name of the seven days	Muslim expression
Sunday	Itwaar
Monday	Peer
Tuesday	Mangal
Wednesday	Budh
Thursday	Jumayraat
Friday	Jummah
Saturday	Sanchar

Most Muslim people are used above mentioned days of the week as recognized days. The fifth day (Jummah) of the week is important for praying to God (Namaz).

Muslim peoples used their own native time to call:

Today = Aj

Yesterday/ tomorrow = kal

Day after tomorrow = parson

Day after day after tomorrow = tarso

Week = hafta

This week = is after

Month = machine

Year = saal

Mid-night = Adhi Raat ho Gaye hai

Mid- day = dopehar ho gaye hai

Morning = subh ho gaye hai

After- non = she Behar ho Gaye hai

On the other hand, they also use time units in their cultures same as those used in the Hindu calendar. The units used are as follows;

1 year = 12 months = Aik saal

1 months = 30 days = Aik-mahinah

1 week = 7 days = Aik hafta

1 day = 24 hours = Aik roj

All these units are the same as the Hindu calendar.

## Measurement System

A system that is used to measure various activities such as the area of land and volume of a drum is known as the measurement system. Our social and economic aspects of life are associated with different measurement tools. For example; scales, volumetric flasks, rulers, etc.

In the Muslim community Angur, Bitta, Hath, Dhur, Kaththa, and Biggha are the major land measurement tools. Throughout the interview, I found the following measurement system of the land.

9 Angur = 1 Bitta (0.75 feet)

2 Bitta = 1 Hatt (1.5 feet)

9 hatt = 13.5 feet

9 × 9 hatt = 1 hour (185.25 sq. feet)

20 hours = 1 kaththa (3645 sq. feet)

20 kaththa = 1 biggha (72900 sq. feet)

On the other hand, Quantity is measured in mana, sei, mani, and gon. Which was measured in the following ways:

4 mana = 1 sei

16 sei = 1 mani



16 mani = 1 gon and so on.

Similarly, In the Muslim community, they used for milking and other liquid things measured by mana and liter like as:

4 mana = 1 liter

Above mentioned volume is according to the answer given by the respondent. It was not found in any documents.

### **Fundamental Operations**

Generally, addition, subtraction, multiplication, and division are known as fundamental operations in mathematics. In the Muslim community the use of basic operation, all the mathematical work was done using stones, and hand figures. Yong generations followed the Hindu-Arabic system in school but the old generation use hands, figures, and knots of rope. Basically for counting and borrowing things from each other, they used addition and subtraction more.

### **Addition process**

The addition is the most impotent operation for the Muslim community. It is used to count their animals, goods, time, income, and business also. They used groups of tens and twenties making the addition process easy and accurate. Common people haven't any ideas of making groups of tens and twenties while adding. Especially groups of tens and twenties are widely used in addition to numbers. I got the following ways from a respondent to the questions;

Q. How much is the weight together between 60 kg and 75 kg?

After that, he added by using the following ways.

$$\begin{aligned}
 60 &= \text{TeenBees} = 3 \times 20 \\
 + 75 &= \text{TeenBees-Das- Paanch} = 3 \times 20 + 10 + 5 \\
 \hline
 &= 6 \times 20 + 10 + 5 \\
 &= 120 + 15 \\
 &= 135
 \end{aligned}$$

### **Subtraction process**

Subtraction is a reverse process of addition where a method of subtraction is more difficult than the method of addition while using a grouping system. To subtract any numbers they use base 10 (Das) and base 20 (Bees). For example, if you have 500 pens and you sold 345 pens out of them, how many pens are left for sale? I got the following ways:

$$\begin{aligned}
 500 &= \text{PachchesBees} \\
 500 &= 25 \times 20 \\
 -345 &= \text{SatrahBees} + \text{Paanch} \\
 \hline
 &= 17 \times 20 + 5
 \end{aligned}$$

$$500 = 24 \times 20 + 20$$

$$-345 = 17 \times 20 + 5$$


---

$$155 = (24-17) \times 20 + (20 - 5)$$

$$= 7 \times 20 + 15$$

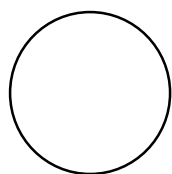
$$= 140 + 15$$

$$= 155$$

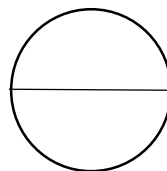
### Concept of Fraction

A fraction is a part of a whole. It describes how many parts of a certain size there are. For example one-half, three-quarters, and one-fourth, etc. Muslim people understood fractions verbally, which means common people cannot write fractions in symbols like  $\frac{1}{2}$ .

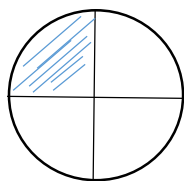
The concept of the fraction used in the Muslim community is as follows:



= Whole (1)



Aadha = Half ( $\frac{1}{2}$ )



= Chaar bhag ko Aik-Bhag = Quarter ( $\frac{1}{4}$ )

Similarly ( $\frac{1}{3}$ ).

The fractional expressions were based on the practical needs of the people. Complex fractional expressions were not found in use.

## Chapter V

### Findings, Conclusions, and Implications

#### Findings

From the analysis and interpretation of collected data, it is concluded that Muslim people have their own mathematical activities which are practices in their culture to solve their daily life problems. Different mathematical concepts reflect in their daily communication. This research is based on a grounded theory approach where field observation and interview were used as the data collection and interpretation is descriptive in nature. In the Muslim community and their culture their found mathematical notation and specific way of reasoning. The main purpose of this research was to bring out the mathematical concept and process used a practiced in Muslim people's real-life situations. I select the study area Rupandehi district Rohini Rural municipality ward no. 5, where Muslim people live with their rites, traditions, language, and belief. The result of this study should help those who are involved in ethnomathematics research and policy making.

Throughout the observation and interview, I have found several mathematical practices in the Muslim community but the major findings of this study are listed below;

- Muslim people have their numerals like Nepali. They use Sifr: (0) for zero, Aik (1) for one, Dow (2) for two, Teen (3) for three, Chaar (4) for four, Paanch (5) for five, Chhay (6) for six, Saat (7) for seven, Aath (8) for eight and Now (9) for nine.

- Most Muslim people use Hindu-Arabic numerals to represent numbers by the effect of the Devanagari number system but they have their symbols to denote the numbers.
- Muslim people use numbers associated with objects and they use Das (10) and Bees (20) to represent larger numbers.
- The concept of money is expressed by paisa and rupiya which are famous for money counting until less than a rupee is the famous traditional local money counting units in expressing money in the larger amount.
- The old generation of Muslim people used a simple time management system. They have the native name of time expressions like midnight, mid-day, tomorrow, week, month, and years.
- The concepts of the area in land measurement are seen in area estimation during buying and selling of land. Bitt and hatt are smaller units of land measurement than dhur, kaththa and bigha are larger units of land measurement.
- Quantitative things are measured by mana, sei, mani, and gon.
- The unit of volume measurement of liquid used by Muslim people is mana and liter. Whereas modern measurements are also in used.
- The method of addition and subtraction is based on Bees' (20) system. They add and subtract the times of Bees in between larger numbers same as the universal system.
- Whole (1), Aadha ( $\frac{1}{2}$ ), Chaar bhag ko Aik bhag ( $\frac{1}{4}$ ), Teen bhag ko Aik bhag ( $\frac{1}{3}$ ) words are used to express the concept of fractions.

## **Conclusions**

This study was conducted in Rohini rural municipality ward no. 5 of Rupandehi district over the Muslim community. The Muslim people of this rural municipality ward no. 5 have their numeration system, the system of measurement. These systems were locally developed in the past when there were no standardized measurement units and no need to use numbers. These systems are very simple and not symbolic abstract in nature and seem to be of practical utility in their life. These local systems are simple enough to learn and very helpful in visualizing physical quantities. So they learn these systems in their communities through day-to-day activities. The simplicity and practical usefulness of the systems are evident from the facts that in rural Nepal other communities use their native counting and measurement techniques of Muslims in Rohini rural municipality ward no. 5.

Today common people need to learn formal or modern mathematical processes. Their unique math systems need protections and chances for development. One way of providing these conditions is to introduce Muslim people to math concepts and processes in the school math curriculum.

## **Implications**

- The numeration system must be taught by connecting with cultural mathematics for the popularization of math among the learners.
- The teaching and learning of modern mathematics should have to be linked in their mother tongue to form a positive attitude towards mathematics.

- There are various ethnic groups which may have their native mathematical concepts and processes like Muslims so similar studies can be extended intensively over these groups to promote ethno-mathematics.
- School mathematics cannot go beyond the cultural activities of the local community. But it has been found that school mathematics, teaching styles neglect cultural and contemporary occupational mathematics as a result people are afraid of mathematics.
- Traditional mathematical knowledge of tribal communities should be documented and codified by the government but such type of research did not conduct enough by the government. So the ethnomathematics result should be done by the government to preserve original mathematical practices.

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## **Appendix I**

### **Observation Guideline**

To find the answer to the research questions, I observed the Muslim community Culture and use of mathematics in daily activities. Also, I observed the use of the counting numbers systems in daily life. At that time I observed the use of measurement systems in daily life. At last, I observed, the use of different geometrical objects and the use of different mathematical concepts. After completion of the observation, I prepared a field note.

**Appendix II**  
**Interview Guidelines**

**Interview schedule for the Muslim community**

Personal Details...

Date of interview..... Sex..... Age.....

Name..... Address.....

Religion..... Qualification.....

Occupation.....

The interview with Muslim community people was taken on the following basis:

- How many members are in your family?
- How many domestic animals do you have?
- How many numbers can you count in your Muslim language?
- Have your calendar?
- How do you measure your farmland?
- How do you measure the area of land to build a house?
- What are the most used domestic goods in the Muslim community?
- How to make different parts of domestic goods?

### Appendix III

Muslim Language	Nepali Numerals	Nepali Language	Formal Literacy Meaning
Aik	१	एक	One
Dow	२	दुई	Two
Teen	३	तीन	Three
Chaar	४	चार	Four
Paanch	५	पाँच	Five
Chhay	६	छ	Six
Saat	७	सात	Seven
Aath	८	आठ	Eight
Now	९	नौ	Nine
Das	१०	दश	Ten
Giarah	११	एघार	Eleven
Barah	१२	बाह	Twelve
Terah	१३	तेह	Thirteen

Chaudah	१४	चौध	Fourteen
Pandrah	१५	पन्ध्र	Fifteen
Solah	१६	सोह	Sixteen
Satrah	१७	सत्र	Seventeen
Atharah	१८	अठार	Eighteen
Unnees	१९	उन्नाईस	Nineteen
Bees	२०	बीस	Twenty
Ikkees	२१	एक्काइस	Twenty-one
Bais	२२	बाइस	Twenty-two
Taees	२३	तेइस	Twenty-three
Chobees	२४	चौबीस	Twenty-four
Pachchees	२५	पच्चीस	Twenty-five
Chabbees	२६	छब्बीस	Twenty-six
Sataees	२७	सत्ताइस	Twenty-seven
Athaees	२८	अठ्ठाइस	Twenty-eight
Unnatees	२९	उन्नातीस	Twenty-nine

Tees	३०	तीस	Thirty
Ekatees	३१	एकतीस	Thirty-one
Battees	३२	बत्तीस	Thirty-two
Tainteess	३३	तेतीस	Thirty-three
Chauntees	३४	चौतीस	Thirty-four
Pantees	३५	पैंतीस	Thirty-five
Chatees	३६	छत्तीस	Thirty-six
Santees	३७	सैंतीस	Thirty-seven
Adthees	३८	अड्तीस	Thirty-eight
Untaalees	३९	उनान्चालिस	Thirty-nine
Chalees	४०	चालिस	Forty
Iktalees	४१	एकचालिस	Forty-one
Biyalees	४२	बयालिस	Forty-two
Tentalees	४३	त्रिचालिस	Forty-three
Chavalees	४४	चौवालिस	Forty-four
Pantalees	४५	पैंतालिस	Forty-five

Chhiyalees	४६	छयालिस	Forty-six
Santalees	४७	सडचालिस	Forty-seven
Adtaalees	४८	अठचालिस	Forty-eight
Unchaas	४९	उनान्पचास	Forty-nine
Pachaas	५०	पचास	Fifty
Ikyavan	५१	एकाउन्न	Fifty-one
Baavan	५२	बाउन्न	Fifty-two
Tarippan	५३	त्रिपन्न	Fifty-three
Chawwan	५४	चौवन्न	Fifty-four
Pachpan	५५	पचपन्न	Fifty-five
Chappan	५६	छपन्न	Fifty-six
Staavan	५७	सन्ताउन्न	Fifty-seven
Athaavan	५८	अन्ठाउन्न	Fifty-eight
Unsathh	५९	उनान्साठी	Fifty-nine
Saath	६०	साठी	Sixty

Iksath	६१	एकसठ्ठी	Sixty-one
Baasath	६२	बैसठ्ठी	Sixty-two
Traisath	६३	त्रिसठ्ठी	Sixty-three
Chaunsath	६४	चौसठ्ठी	Sixty-four
Painsath	६५	पैसठ्ठी	Sixty-five
Chhiyasath	६६	छैसठ्ठी	Sixty-six
Sadsath	६७	सतसठ्ठी	Sixty-seven
Adsath	६८	अडसठ्ठी	Sixty-eight
Unhattar	६९	उनान्सत्री	Sixty-nine
Sattar	७०	सत्तरी	Seventy
Ikhattar	७१	एकहत्तर	Seventy-one
Behattar	७२	बहत्तर	Seventy-two
Tihattar	७३	त्रिहत्तर	Seventy-three
Chauhattar	७४	चौहत्तर	Seventy-four
Pachattar	७५	पचहत्तर	Seventy-five
Chihattar	७६	छयहत्तर	Seventy-six



Satattar	७७	सतहत्तर	Seventy-seven
Athhattar	७८	अठहत्तर	Seventy-eight
Unaasi	७९	उनानअसी	Seventy-nine
Assi	८०	असी	Eighty
Ikyaaasi	८१	एकासी	Eighty-one
Bayaasi	८२	बयासी	Eighty-two
Tiraasi	८३	त्रियासी	Eighty-three
Chaurassi	८४	चौरासी	Eighty-four
Pachaasi	८५	पचासी	Eighty-five
Chiyaasi	८६	छयासी	Eighty-six
Sataasi	८७	सतासी	Eighty-seven
Athaasi	८८	अठासी	Eighty-eight
Navassi	८९	उनान्नब्बे	Eighty-nine
Naway	९०	नब्बे	Ninety
Ikyaanvey	९१	एकानब्बे	Ninety-one

Baanvay	९२	बयानब्बे	Ninety-two
Tiraanvay	९३	त्रियानब्बे	Ninety-three
Churaanvay	९४	चौरानब्बे	Ninety-four
Pachaanvay	९५	पन्चानब्बे	Ninety-five
Chhiyaanvay	९६	छयानब्बे	Ninety-six
Sataanvay	९७	सन्तानब्बे	Ninety-seven
Athaanvay	९८	अन्ठानब्बे	Ninety-eight
Ninaanvay	९९	उनान्सय	Ninety-nine
Sow	१००	सय	One hundred