

Chapter I

Introduction

Background of the Study

Mathematics is the subject that has significant impacts on people. Every people need mathematics to the problems to solve the problems in the daily activities. The development of mathematics was simultaneous with the social development. The development of mathematics has its for history with the development of human civilization " Mathematics is used throughout the whole world as an essential tool in many fields, including natural science, engineering, medicine and the social science" (Bell, 2008).

The concept of number and the process of counting developed, as so long before the time of recorded history, that the manner of this development is largely conjectured. It seems fair to argue that human even in the most primitive time, had some number sense, at least to the extent of recognizing more and less when some objects were added to or taken from a small group with the gradual evolution of society, simple counting becomes imperative. A tribe has to know if his flock of sheep was decreasing in size. Probably the earliest way of keeping a count was by some simple tally method, employing the principle of one to one correspondence. In keeping counts on sheep, for example, one finger per sheep could be turned under. Counts could also be maintained by making collections of pebbles or sticks by making scratches in the dirt or on a stone, by cutting notches in a piece of wood, or by tying knots in a string.

Then perhaps later, an assortment of vocal sounds was developed as a word tally against the number of subjects in a small group. And still later, with the refinement of writing, an assortment of symbols was derived to understand for these

numbers. Such an imagined development is supported by reports of anthropologists in their studies of present-day primitive people (Eves, 1981).

Ethno mathematics research focuses on methodological differences in various cultures mathematics such as the cultural uses of the period and comma in mathematical notation or how learning is affected when notational conventions of numeration developed for one cultural linguistic system of another; it can analyse the conceptual differences in various cultures mathematics, such as the classification of structures of other languages. For example in African language Setwana, things are classified by what they do, rather than by what they are as in Indo-European languages.

Indigenous math's concepts and process are originated from direct interaction of the people with their environment. It reflects the need of the people and essentially relevant to their practical life.

Nepal is a multicultural country where many cultural systems are found. But in this field Nepal is neither clear nor attempts any discussion about ethnomathematics. Since ethnomathematics is so important part of curriculum for all-round development of human life. There are many examples in our culture which is related to ethno mathematics as nanglo, Doko, Eye, Windows, Temples Windows, Houses, Doors, Pots, well etc. Which are the different shape and size of geometrical figure. These are related to the mathematics and scientific aspect. So Nepal is also rich in the field of ethno mathematics research.

Mathematics has to be made more equal for all students' ethnomathematics draw cultural experiences and practices of the individual learner, communities and the society. It is not only make mathematics learning more meaningful but more importantly, to provide learners with the insights of mathematical knowledge as

embedded in their social and cultural environment. It connects students to mathematics through cultural practices. Ethnomathematics in classroom is play vital role to offer your students the best education through a different perspective not only the Eurocentric view. To give real problem is more effective than premade text problem.

(a) Ethno mathematics

Ethnomathematics is defined as the cultural anthropology of mathematics and mathematical education is a relatively new field of interest that lies at the confluence of mathematics and cultural anthropology. Traditionally, the dominant view saw mathematics as a "culturally free" universal phenomenon and ethnomathematics emerged later than other ethno sciences. In the same way ethnomathematics is called mathematics in the environment, mathematics in the community and in other ways it is the ways that specify cultural groups go about the tasks of counting, measuring, classifying and ordering.

D'Ambrosio, father of Ethno mathematics, a Brazilian mathematician and mathematics educator, played a dynamic role in all these initiatives. It was during that period that he launched his ethnomathematical programs and at the Fourth International Congress of Mathematics Education. The term 'Ethnomathematics' was first used in the late 1960s by a Brazilian mathematician, Ubiratan D' Ambrosio, to describe the mathematical practices of identifiable cultural groups. Somebody takes it as the study of mathematics in different cultures, others as a way of making mathematics more relevant to different cultural or ethnic groups. Now it can be seen as a way of understanding the differences between cultures. But perhaps the most powerful claim for the new discipline has been made by D' Ambrosio himself. When defining where ethnomathematics originated. The concept of mathematics began

when human beings began to quantify phenomena in their lives. Although the process of counting was different for different groups of people around the world, the symbols by which they represented specific quantities varied according to particular cultural conventions. Thus, African, Chinese, Mayan and other cultural groups wrote numbers in many different ways. Mathematical practices were developed as a result of every single culture, tribe, community and individual trying to cope with everyday needs, problems and challenges for their survival in direct relationship with the environment and fellow human beings.

Ethno mathematics is a very new area of study. The concept was popularized by Professor Ubiratan D'Ambrosio of Brazil in his keynote addresses on the relationship between cultural and mathematics at ICME- V in 1984 in Adelaide, Australia. To understand ethnomathematics start with a group bound together by how they use certain mathematical ideas, such as artist, bankers, architects, sports figures, musicians, and seamstresses. Next, examine their language, preconceptions, values and experience with mathematical ideas- some of which may not be identified as mathematical.

Thus Ethno mathematics is the study of mathematical techniques used by identifiable cultural groups in understanding, explaining and managing problems and activities arising in their own environment. In 1985 D' Ambrosio defines the Ethnomathematics in the following lines:

"A relation between anthropological cultural, historical and mathematical is an important step towards the recognition of different ways of thinking which direct to different mathematical forms, this is what we call ethnomathematics."

Hunting (1985) defines the ethnomathematics as "Mathematics used by a defined cultural group in preceding the relations with the problems and activities in content."

Geraldo Pompu, Jr defines ethno mathematics as "Ethno mathematics refers to any form of culture of cultural knowledge or social activity. Characteristics of a social and \or cultural group that can be recognized by other groups such as "Western" anthropologists but not necessarily by the group of origin as mathematical knowledge or mathematical activity."

According to Barton (1996) ethno mathematics embraces the mathematics the mathematical ideas, through and practices as developed by all cultures, ethno mathematics is a programs that seeks to study how district peoples have come to understand, comprehend, articulate, process and ultimately use mathematics ideas, concepts, and practices that may solve problems related to their daily activity. Ethno mathematics is not only the study of mathematical ideas because it is also the study of anthropology and history. In this Perspective, the study of the culture history of mathematics and mathematics attempts to identify the historical mathematical contributions of different cultures across the word.

According to Orey It has allowed us to define ethnomathematics as the interaction of cultural anthropology, mathematics and mathematical modelling which is used to translate diverse mathematical practices.

Locating- It is related to finding out one's way around traveling without getting lost and relating objects to each other. Different way coding and symbolizing of special environment of different people is studied.

Designing- This activity concerns all objects and artefacts. The constructions of objects are sources of important mathematical ideas such as shape, size, scale, ratio, proportional and many other geometrical concepts.

Playing- All culture has its own rules of playing. The development of games involves behaviours which is similar to criteria of mathematics.

Explaining- Mathematical proof is derived on the base of diverse phenomena where community lives.

Ethno mathematics is recognized as set of mathematical practices which is considered as a universal language the way of teaching and learning mathematics, such as simple operations, counting, estimating, calculation, measurement etc. are culturally dependent and therefore are different.

Every ethnic group has its own value and specialty. In Nepal there are several caste and ethnic groups. Study of different cultures helps to strengthen national unity and cooperation. And the national system of education must include both national and ethnical cultures to make sure and certain human development of the nations.

Introduction of Raute Community

Raute caste is listed ethnic group of Nepal. The Raute are still lived by hunting, gathering, and bartering. They vary loss often affect in villages. They live in jungle. They barter wooden boxes and bowl against rice with village people near their camp. And again back to their camp in jungle collecting the food. They frequently hunt the monkey and they supply of monkey with other forest food.

They are still live nomadic life. They cannot afford to stay more than two to

three weeks in the same camp as they get food scares. They make small hut of twigs and leaves with temple area for couples and their infant. Their belonging supportfortheir mobile settlement. They belong only hatchet, axe and chisel. That tool is used to collect foods and a pot for cooking. Rautes areas are Puthan, Jajarkot, Achham, Doti, Dadeldura, Surkhet, Jumla, Dolpa, Dang and Banke. Raute people speak Khamchi language based on Bhot-Burmas language (Silwal 2011).

Economic and Material Culture of Raute

They have economy primarily based on trading hunting of monkey with nets, the trading of woods objects called "Koshi" for food stuffs Raute community divides economic activities according to the sexes. Hunting and carving woods is mostly done by men and other by women.

Hunting monkey is a co-operative effort for male Raute in groups more than 10. Hunting aspects is taken with all of the member's will. They are usually divided equally among those who participated and those who remained home or had gone for gathering food but who were in the village trading wooden object that day, do not receive anything because they think the hunting god will be angry.

The Raute make wooden object to barter it with the surrounding villages in other to gain grains and vegetables. They do not force any villagers to trade for them. Rautes try to be friendly while trading wooden objects. On the trading time they never stay overnight in the village or away from their camp. Specially Raute woman gather plants, particularly yams in the forest. Most of time woman leave in a small group for the search of yams. These yams are normally days out of the ground (Silwal 2011).

Social Structure

The Raute claim that they belong to "Kshatiya" (Chhetri and Thakuri) casts which is only second to the Brahmins in the cast system. However, they do not wear

sacred thread like Chhetri and thakuris and nor do they keep any of customs associated with those cast. They are calming that they are "Kashatryya" because according to them they are the kings of the forest and "Kashatriya" are the kings of cultivated land. The Raute do not keep track of generations and relatives like village people and do not keep any symbolical objectification of lineage like they do not have inherited property, any lineage name, any lineage deity.

Politics

The central position in Raute community is held by one man, which is not common in majority of egalitarian hunting and gathering societies. However, at deeper level the term "leader" is used here to the man primarily responsible for dealing with outsiders, and no leader as such exists for intergroup affair.

The leader of Raute community seems to be the person who deals with the outsiders and possesses the greatest skill in manipulating the villagers and who is often praised for his cleverness both by the Rautes as well as by the villagers. In most of the outside affairs, the leader would speak for the group. The conflict outside the community is handled by the leader whereas conflict inside the community is handled by mutual cooperation the members of the group.

Religion

The worshipping pattern of Rautes is somewhat like Hindus, but they lack elaborate rituals, priests and witchcraft. They primarily worship the deities namely Bhuyar and Dare Mastach. Bhuyar is their hunting god and the deity they fear the most. They worship him especially at the full moon of the month of Asar and Saun. Women are not allowed to participate in worship. Usually animal like chicken or goat is sacrificed by the head of the family during the worshipping time. According to Raute Bhuyar is the god who becomes angry if there is contact with villagers.

The god Dare mastah is considered as much soft and beneficent deity by the Raute people and worshipped at the same time as Bhuyar or may be at the times of illness. A bell and a metal, human- shaped figure are kept in a wooden box and taken out at the times when Mastah is worshipped. The worship is done in any open area and offering of rice is done but no sacrifice is done. Beside these two deities two other forest gods, Ban Devi and Ban Jhankari, are worshipped and they are mostly worshipped because they are get illness if the gods gets angry (Silwal 2011).

Life Cycle

The Raute said that they don't have different life cycle then high caste villagers. They have different life cycle and life style then of villages. Unlike high cast villages, there is no pollution connected to child birth, nor do they perform name giving ceremony and rice feeding ceremony as high caste villages do. Babies are indulged and allowed to breastfeed as often as they desire and are kept most of the day and night by their mother's side. Children appeared to have carefree life, running and playing throughout the camp. They wear similar clothes to those of adults. No special activities Girls marry at the age of 15-16 whereas boys between 20and 25 years of age.

The death rituals of the Raute are very different from the villagers. Funeral is attended by all men of the tribe. The dead person in the Raute community is buried unlike villagers. The dead person is buried on the same day of his/her death. A rectangular hole about three feet deep and wide and six feel long id dug. The dead man is carried in his hunting net and buried fully clothed in the net along with all of his personal belongings. After placing the person they filled with dirt and covers with stone. The hole for burial can be dug anywhere in the forest. There is no difference

between burial of man and woman. The camp is abandoned the same day of burial and is not visited again (Silwal 2011).

Objective of the Study

This main objective of this study was to find out indigenous knowledge activities and skills practices by Raute community. Therefore the following objectives formulated.

-) To explore the indigenous knowledge, activities and objects that are relevant to mathematics concepts.

Statement of the Problem

There are so many people from a different culture in Nepal. Nepal is a multi-lingual, multicultural and multi-religious country with 2.6 million populations of 125 ethnic groups and their 123 mother languages (National population Census, 2011). And also there are different social, economical, cultural, religious background and they have their own languages rules and regulations. Especially mathematical knowledge developed was from European culture so I am going to study ethno-mathematics in Raute culture in Nepal. What are the indigenous knowledge of mathematics in the Raute community and what are the mathematics concepts which can be practiced in Raute Community. They occupy the traditional occupation from generation to generation. The Raute provides a clear example of such group. Raute is one of the disadvantage and backward groups. Their mathematical concepts and process are different from the modern formal mathematical concepts. That is why the study is focused on basic mathematical concepts practiced by Raute groups.

Therefore the proposed study is concerned on seeing answer to the following research questions.

-) What is the counting system of Raute community?

-) How do they perform the basic mathematical fundamental operations (+, -, \times , \div) in their real life?
-) How do they practice measurement system in their daily life?

Significance of the Study

This study would reflect the indigenous mathematics and it was helpful for mathematics teacher, researcher and other people who are interested to understand the artefact of culture of Raute community and its relations to basic mathematical concept.

This study would explore the ethno-mathematical practices in Raute community, which was being a valuable further researcher to explain the knowledge of the mathematics of Raute community.

-) This study provides the knowledge about the relation between culture and learning mathematics and difficulties in learning mathematics.
-) The contribution in ethno-mathematics can help to promote explore mathematical knowledge and skill of the Raute community.
-) The contribution in ethno mathematics can be helped to promote, explore mathematics knowledge and skill of the Raute community.
-) This study was help to remove mathematical anxiety, practicing multicultural curriculum, it was the students, develop the habit to research mathematical knowledge surrounding them and daily-applied knowledge.

Delimitation of the Study

-) This study was based on ethno-mathematical concepts in Raute Community of Gurause municipality, Dailekha district.
-) The samples of the study would be indigenous people of 20 Raute.
-) This study would be based on only Raute ethnic group.

) This study would be based on qualitative design.

Operational Definition of Key Term

Basic Mathematical Concept. The concept of number, length, area, volume and four mathematical operations(+, -, \times , \div) and geometrical concept of shape and size(triangle, rectangle, square, circle etc.). Also indigenous knowledge, activities and objects that are relevant to mathematics concepts.

Ethnic Group. A community or population made up of people who share a common cultural background which is Raute caste.

Traditional System. The system of mathematical concept, structure, processes and calculation is different from the formal system. This typical(mathematical) system of Raute people is called traditional system.

Indigenous Knowledge. Indigenous knowledge is the basic for local level decision making in food security, human and animals' health, education, NRM & other vital economic and social activities.

Counting. This activity relates to what, how, and why people count and include a variety of counting systems developed by indigenous groups.

Practices. In this study practices means what types of activities do in their everyday activities. Specially in counting system, measurement system.

ZPD Theory. The theory which supports to develop the individual capacity in highest point.

Raute. The Raute are indigenous ethno-linguistic group of Nepal. The nomadic Raute tribes have not changed their rigid way of life for decades. The few nomadic forest tribes left on the planet struggle to protect their traditional way of life in balance with nature and their right to roam in the forests they depend on. One among such tribes is the Rautes, the last remaining nomadic people in Nepal.

Chapter II

Review of Related Literatures

In this section, I describe the literature to related to this are classified two types Empirical and theoretical. A literature review is an important source of the further research study. It helps to researcher better perspective and essential for guidance for the research plan. I have reviewed some kinds of literature, which are related to my study.

Empirical review

Adhikari (2002) Studied on "Development of Numeral System of Nower Civilization" and found that all the numerals are developed from Brahmi numerals in that civilization. There are different letters found to denote the numerals positional number systems since eleventh century. There are twenty types of numerals developed of different scripts without standard pattern.

Kandel (2005) did research "The basic mathematical concepts and processes of Chapang Community" shows that the Chapang community has their own traditional system of counting, measurement and mathematical process. These systems are very simple. They used these systems and process for daily activities. There numeral system is based on twenty

Karki (2017) has research on "basic mathematical concepts practiced by Hiyu community" the main objectives of this study to explore the counting system of Hayu community and to find out the rules of the four basic fundamental mathematical operations, measurement system used in Hayu community. He had used qualitative research design with ethnography approach. He had selected 10 people from Dadi VDC with purposive sampling. He used observation, in-depth interview, photograph, data collection. He founded Hayu people havenot their own script but have their own

language and their own name for numbers one to one hundred. Hayu people solve their addition and subtraction for based on 20 and they used and fingers unit kuret, bitta and hat. They used kosh to measure long distance.

Chaudhari (2017) had study on the topic “Mathematical practiced in Tharu Community” in this study the main objectives of this study to explore the pedagogical implications of mathematical practiced in Tharu community. The design of the study was qualitative in nature and ethnographic approach. He had selected Chandrapur Municipality at Rautahat district. He did purposive sampling method to select sample. He used the interview, observation, and photographs as a data collection tools and tried to find out real field data. And he found that a Tharu community was a source of mathematical practiced they used it in their daily life activities.

K.C. (2008) has studied on "Basic mathematical concepts and processes of Pahari community" the main purpose of this study was to find a document the counting system and carry out the measurement system practiced in Pahari community. His research was based on Pahari community at Sathigharvagawati V.D.C. of Kavrepalanchok district. He has used qualitative research design. He has selected 20 people from Kavrepalanchok with purposive sampling for the study. He has used interview, observation to collect the data. This research has been founded the numeration system of Pahari is base 10. It seems that their numeration system is same like as Hindu-Arabic numeration system. Pahari has no their own separate script. So there is no any specific symbol to represent the particular number.

Acharya (2016) Conducted research on the basic mathematical concepts and process use by Danuwar community in Sindhuli District. He used ethnography methodology to collect the data and analyze collected data and also used Vygotsky's

social constructivist theory and Piaget's cognitive constructive theory as data analysis. It was found that Danuwar community has been using many mathematical concepts in their daily activities without taking any formal mathematical education, although they are called backward caste, they had the concepts of count, addition, subtraction. They learnt from their culture and society. They learnt through their adult, working experiences and social interaction.

CERID (1990) research on "Elementary process of learning mathematical concepts and process of Rasuwa Tamang" the main purpose of this research was to study of the basic mathematical concepts used by Tamang adults with no formal mathematics education to identify traditional Tamang method of mathematics operation and to find out the implication Tamang processes and tune up the present learning situation. This research has that Tamang have their own system of measurement, counting, and their own Geometrical concepts and process are the base on the structure patterns and shapes of objects existing around this study has also shown the situation of children into formal system but it did not study the effect of ethno-mathematical practices in the classroom settings.

Sherpa (2018) studied on the topic "mathematical concept and socio-cultural practices in Sherpa community base 10 and base 20 numeration system have been practiced in Sherpa community for counting process. Sherpa have no their own script. However, they have been following the Tibetan script. They measured length and breaths by using hands and fingers. That this is the measuring units of length and breath. Moreover, the kosh is the measuring right units and distance. The units of volume measurement are muthi, chauthi, mana, kuruwa, pathi and muri. The units of weight measurement are chhatak, pau, Bisauli, Bhami, Aathpol, kg etc. He used qualitative ethnographic research design. He used interview and observation were

adopted as data collection methods. His research was based on Sherpa community at Beni V.D.C. with 10 People sample.

According to Grant Sleeter 2003 multicultural education has become the common term used to describe the types of pluralist education that its advocates are seeking for children receiving an education, pre-K through college. Supporters of multicultural education claim at the societal level, its major goals are to reduce prejudice and discrimination against oppressed groups and to effect an equitable distribution of power among members of different cultural groups (Cited in Jay 2003).

Millroy (1992) conducted an international research "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 to document the valid mathematical ideas that are embedded in the everyday wood working activities of a group of carpenters. The second objective was to examine and to give a first-hand account of the teaching and learning of mathematical ideas in the context of a researcher apprentice.

Majhi (2018) had a study on the topic "Basic geometrical concepts practiced by Majhi Community" in this study the main objectives of this study were to explore the pedagogical implications of basic geometrical concepts practiced by the Majhi community. The design of the study was qualitative in nature and ethnographic approach. He had selected Marin Village institution-6 of Sindhuli district. He used purposive sampling method to select sample. He used the interview, observation, and photographs as data collection tools and tried to find out realfield data. And he found that the Majhi community was a source of geometrical knowledge they used it in their daily life activities.

Gurung (2014) has researched on titled, "Mathematics in the Gurung community". She used ethnography approach in her research. She found that Gurung community have their own mathematical practices such as counting number, number system, measuring system addition, subtraction, multiplication, division, and property of rectangle. Those were possible to incorporate in the school mathematical curriculum. The empirical research in diverged community, the researchers found that there are several ethno-mathematical practices and able to incorporate in school mathematical curriculum.

Mainali (2005) studied on "Development of numeration system of Limbu Ethnic Group" concluded that:

-) The scrip and numerals system of Limbu is influenced by Brahmin script.
-) Limbu numeral system is based on decimal scale.
-) Word numerals were widely used before the development of proper numerals in Limbu.
-) The numeral system of Limbu adopted ten basic symbols with positional number system.
-) All Kiranti people used some numerals including Limbu but vary in pronunciation and skill continue skill till now.

D' Ambrosio (1985) who is the father of Ethno- mathematics has used the expression "Ethno-mathematics" refers to the forms of mathematics that was a consequence of being embedded in cultural activities whose purpose is other than "doing mathematics." In everyday activities such as building house, exchanging money, weighting product, calculations and precise geometrical patterns. These applications of mathematics often look different from those used in school today.

Dhakal (2004) on the study "A carpenter developing mathematical concepts in his own surrounding" found that many conventional mathematical concepts are employed in the practice of the carpenter. He made extensive use of such concepts as plane, perpendicular straight line, and parallel line, area, congruence triangle and centre in his every day work. They used mathematical concepts to make cupboard, table, bead stand, rack, showcase, khapa and chaukosh etc.

Research Gap

From the above discussion of related literature, very few studies have been carried out around the field of ethno-mathematics with respect to Raute Community. Among these practices, some were directly related to learning strategies of mathematical concept different ethnic group. But this study tried indigenous mathematical knowledge used by Raute people. Nepal is one of the multi-cultural countries, where different ethnic groups are living and they have their own cultural system. These cultural groups perform their mathematical problems by their own style. The review of above literatures motivated me to study the mathematical Knowledge Practiced in Cultural activities of Raute Community.

Review of the Theoretical Review

There are many social learning theories, among them the following were used in this study:

Constructivism in the Learning mathematics

Constructivism holds that there is no knowledge that exists outside of the person, there is no objective reality. Constructivism claims that knowledge must be actively constructed by learners as they are already "knowing beings" who bring previous knowledge and experience to any learning events (Acharya, 2015).

Constructivist teaching is based on the belief that learning occurs, as learners are actively involved in a process of meaning and knowledge construction as opposed to passively receiving information. Learners are makers of meaning and knowledge. Constructivist teaching fosters critical thinking and creates motivated and independent learners. This theoretical framework holds that learning always build on knowledge that a student already knows; this prior knowledge is called a scheme. Because all learning is filtered through pre-existing scheme, constructivists suggest that learning is more effective when a student is actively engaged in the learning process rather than attempting to receive knowledge passively. A wide variety of method claim to be based on constructivist learning theory. Most of these methods rely on some form of guided discovery where the teacher avoid most direct instruction and attempts to lead the student through questions and activities to discover, discuss appreciate and verbalize the new knowledge. There are number of different forms of constructivism, but underpinning all versions are two premises;

-) Rather than being passively received, knowledge is actively constructed by learners.
-) Mathematical knowledge is created by students as they reflect on their physical and mental actions.

By observing relationships, identify the patterns and making abstractions and generalizations, students come to integrate new knowledge into their existing mathematical schemas. Learning mathematics is a social process where, through dialogue and interaction, students come to construct more refined mathematical knowledge. Through engaging in the physical and social aspect of mathematics, students come to construct more robust understanding of mathematical concepts and processes through process of negotiation, explanation and justification.

Constructivism recognizes that mathematics must make sense to students if they are to retain and learn mathematics. For students to develop appropriate knowledge, they must be provided with rich learning experiences so that their constructed meaning and understanding are in keeping with the discipline of mathematics (Ernses 1991, cited in Acharya, 2015).

Social Constructivism

L.S Vygotsky will be famous scholar who emphasizes on the social constructivism. Social constructivism is a theory among several theories on constructivism. I used Vygotsky's theory for this study that knowledge is socially constructed and children learn when they get contact with outer environment either verbally or observantly. Vygotsky's theory is one of them that regard social intersection between peers and adults as important aspects in creation meaning making sense and conveying culture within the heard context. Knowledge is being constructed is social situation of negotiations, rather than bringing the reflection of the objective reality, which is termed as social constructivism. Social construction believes on the multiple constructions of the world. In social constructivist theory, each human being makes sense of the world in unique way Vygotsky argue that the child's development cannot be understood by studying the individual that it needs to examine the external world.

According to social constructivist Vygotsky, knowledge is constructed in two ways in the social context. Firstly social interactions influence on the natural of knowledge that is constructed and processes of individual use to construct that knowledge. Thus the constructions are socially centred in value, process of knowledge on children to gain of knowledge is a process of observing, reflection

thinking, performing, practicing and creation to fulfil each and every mathematical need applied mathematical concepts knowingly or unknowingly.

Raute has lived with their culture, environment and society. As a rule a natural there is an intersection among the society, cultural and environment. According to social constructivism people gained knowledge from intersection among culture Society and Environment. Raute also gains knowledge from the interaction among society, culture and environment. They have to fulfil their needs to solve problem, which they faces during life process. They get knowledge and concept from experience. Their knowledge and concepts are transformed on junior persons. These processes of learning of mathematical concepts become a system after a period of time so that this theory is application in my study (Pandit, 2014).

Constructivism holds that's there is no knowledge that exists outside of the person, there is no objective reality. Constructivism claims that knowledge must be actively constructed by learners as they are already "knowing beings" who bring previous knowledge and experience to any learning events(Acharya, 2015).

Vygotsky's general genetic law of cultural development states: Any function in the child's cultural development appears twice of no two planes. First, it appears on a social plane, and then on the psychological plane. First it appears between people as an inter-psychological category, and then within the child as an inter-psychological category Social relations of relations among people genetically underline all higher functions and their relationships. The natural, lower, biologically based, psychological functions are “Basic geometrical concepts practiced by Majhi Community” in this st transformed into higher mental processes as a result of intrapsychic functions undergoing interiorization wherein they are wedded to the lower functions and transform them into the higher intrapsychic functions. In other words, the higher

psychological functions were first external, social, involving interpersonal relations before becoming internal psychological processes (Vygotsky, 1929/1989).

“Sociogenesis”, Vygotsky affirmed, “is the key to higher behavior” (1929/1989, p. 63). All that is internal in the higher functions was of necessity external at some point; it was social, a relation that was between two people, before it became an individual function. This idea achieved its fullest expression in Vygotsky’s general genetic law of cultural development. Vygotski (1934/1963) expressed the law as follows: All higher mental functions make their appearance in the course of child development twice: first, in collective activity, social activity, i.e. as interpsychic functions, second in individual activity, as internal properties of the child’s thinking, i.e. as intrapsychic functions. In social constructivism three main things which are below

Making meaning

Learners built up any things meaning from the society, which is the important role of society in learning.

Tools for cognitive Development

In society there are so many tools for the learners that are culture, ancestors, senior parents, Language are the tools of knowledge from them a learner can get a lot of knowledge in learning their mobilization and their natural towards education affects the learning.

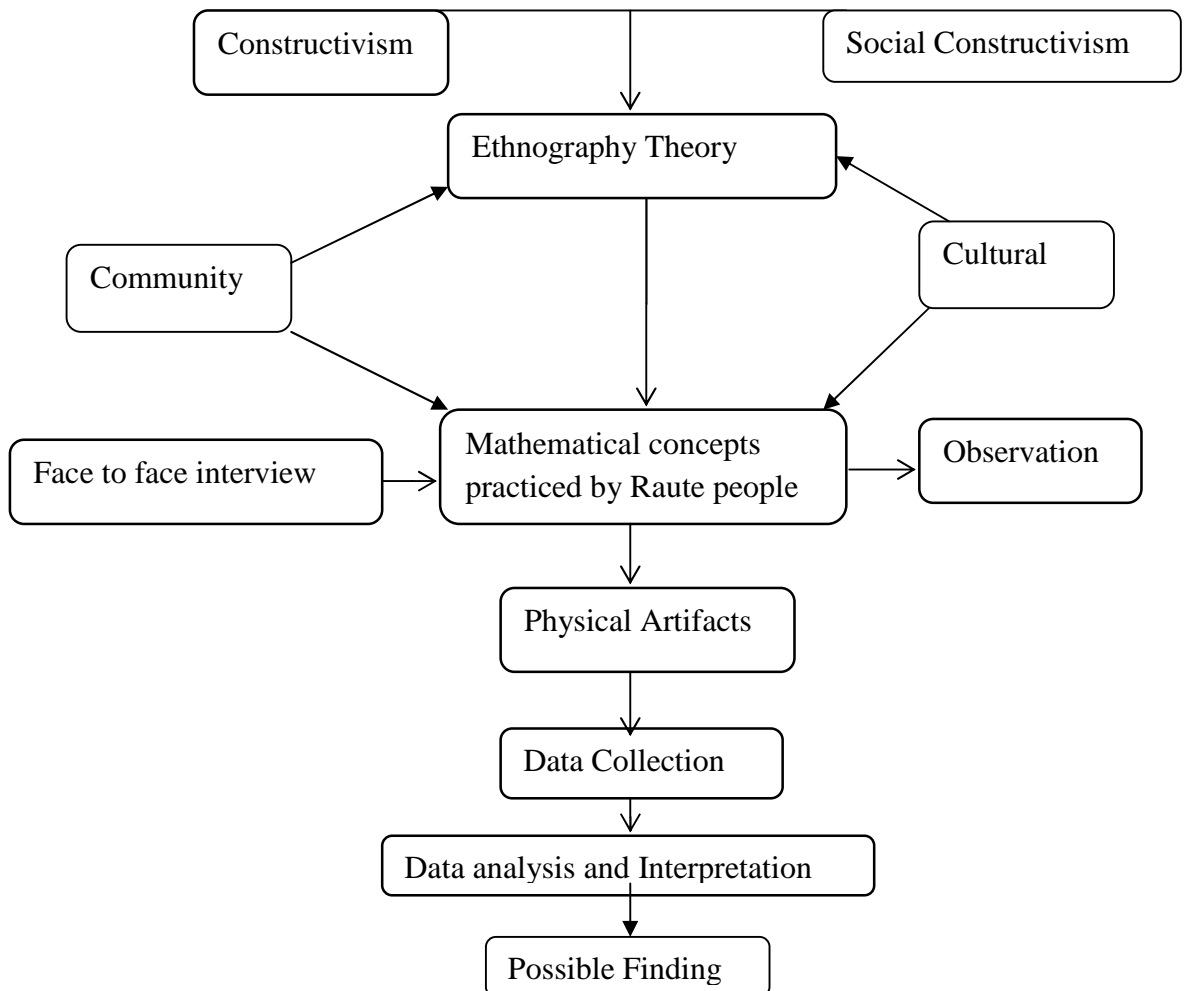
The Zone of Proximal Development (ZPD)

ZPD means different between the actual development level as determined by the independent problem solving and level of potential development as determined through problem solving under MKO(More Knowledgeable Other)and solving problem from the supporters of others. In ZPD provide scaffolding – master's task

remove (fading). Social interaction leads to increased knowledge. The development of the ZPD with social guidance of collaboration, social interaction (Acharya 2015).

Conceptual framework of the Study

A conceptual framework is used in the research to outline possible courses of action or to present a preferred approach to an idea or thought. Conceptual framework is a type of intermediate theory that attempt to connect to all aspects of inquiry (e.g. problem definition, purpose, literature review, methodology, data collection and analysis). It is the road map for conducting research. The following is the framework for this research.



Source: Rita Karki, (2017)

Constructivism is a philosophy of learning, It says all being has own understanding of the world. It says that people construct their own understanding and knowledge of the world through experiencing things and reflecting on these experiences when we encounter something new, Students make sense of the world by synthesizing new experiences into what they have previously understood.

Social constructivist says that child learns something first on the social level, then on at the individual level, Children develop their skills through playing or interacting with peers and other adults.

On the base of above theories researcher went to the study area to collect the data for completing the thesis "Basic mathematical concepts practiced by Raute community". Researcher participated in all mathematical knowledge of Raute people. Researcher Observed Raute is indigenous knowledge, activities and mathematical tools and practiced their mathematical work himself Researcher took face interview to know Raute concepts. By this, Research collected data which helped for completing this is objectives.

Chapter III

Methods and Procedures

This chapter comprises designation of the study, study of the area, selection of sample, data collection procedure and data analysis and interpretation.

Design of the Study

This is an ethnographic study. It is qualitative in nature. Qualitative research focuses on depth interview and observations. Qualitative research is inclined to limited quantification (for example counting the number of occurrences of an event) in general; qualitative research interprets data without numerical analysis.

The research has tried to explore the basic mathematical processes practiced by Raute. So this study is a descriptive in nature. It is an ethnographic in nature. To compose the research the researcher has to recognize the Raute caste and its value and assumption. Since the research is qualitative or descriptive in nature. The researcher used three techniques that are the critical procedure collecting qualitative data: observation which separated in to direct observation and participant observation, document review, in depth participant interviewing. The data was collected by respondent, which was taken differently. It is nonmathematical analytical procedure, which explore the basic mathematical concepts and processes of Raute.

Study site

Raute community does not stay permanently at any particular place. In Dailekh district, they stayed temporarily in twenty nine districts of highly dense forest areas. This study was carried out at Gurause municipality ward no. 5 there are 52 households and 146 populations of the Raute community. Among them, there are 69 female and 77 male populations.

Respondent of the Study

This study was conducted at Dailekha district. It was done only Raute Community. Among them, Gurause municipality was being selected as study area the sampling design purposive. I have chosen 8 people of Raute community in which one guideline teacher, other Raute people were the sample of this study.

Instrument of data collection

The tools of data collection would be observation, interview and photographs. The short descriptions of the instruments are as follows.

Observation

In qualitative research design, observation is one of the data collecting methods. Observing in setting is a special skill that requires addressing issues such as the potential deception of the being interviewed, impression management and the potential marginality of the researcher in a strange setting. To get required information, I observed the work place of Raute community individually and collectively during their working time.

Interview

Interview is the process of data collection from face to face with interaction. Interview is a two way interaction between interviewer and interviewee in interviewer creates situations that can attract the attention of respondents for a enough period of time in asking questions and answering the questions which interviewee put his/her understanding and meaning (Karki, 2017).

I have meets the Raute people individually. I would clear about my research propose of research and importance of their help. I would carry out the open ended interview along with unstructured and structured questions as well as observation.

Photographs

Photographs are most important tools for every research. I took some photographs about the culture, costumes of Raute community. They are especially engaged in making Khatiya, Madhus, Koshi, Para, Chakla etc. and their life- style.

Data collection Procedure

I have visit areaGurausemunicipality of Dailekha district for data collection. I had discussion with the Raute leaders, guideline teachers and other Raute person. I had visit their work field in Raute community for the information. At that time, I had taken photos with field note. The data was be collected by participant observation and interview. I had taken one months for data collection in related field.

Data Analysis and Interpretation Procedures

The study would be depended open the construction of indigenous mathematics knowledge, activities in Raute people. First, the ways of learning mathematics would be find out to investigate the acquired mathematical skill from in Raute community. The research has focused on 8 selected in Raute people in this case study to find mathematical reception in which the information have been collected from observation, interview and positional photographs. For the purpose of the study, Vygotsky's an theory of social constructivism is used and the findings are interpreted. In this ethnography study, basic operation of mathematics counting, measuring, and calculating (addition, subtraction, multiplication and division) are taken into account while research was conducted.

Chapter IV

Analysis and Interpretation of Data

This chapter deals with analyse and interpretation of the data collected field of observations, interviews method. This chapter of analysis and interpretation has been divided into two parts according to the objectives of the research. The first part concerns with number concept and counting system, second with indigenous knowledge, activities and objects that are relevant to mathematical concepts.

Number Concepts and Counting System

Mathematics is an impotent discipline to all human as they use it to solve their daily life problems. I asked the Raute people Mahin & Surya. Raute about idea of numbers and counting system of Raute.

He replied that Raute people mostly use their native counting system but the people are not educated they use formal counting system. Raute counting below: Daha for 1, Ni for 2, Suna for 3, Pari for 4, Paha for 5, Turka for 6, Satah for 7, Athah for 8, Nauwa for 9, Dasha for 10. The other counting system of Raute people are given in appendix (1) from the above interview I claimed that I. They have their own counting system of number.

The field note of observation and interview that many kinds of mathematical knowledge were crated through their experience and practice. It was found that the Raute acquired some knowledge by seeing others while doing the work, what they see others doing and hearing what say. Observation and interview showed that mathematics is socially constructed in course of socialization, daily activities, and cultural transformation through the means of communication. So Vygotsky's theory of social constructivism supports above mentioned way of learning.

Raute acquired mathematical knowledge through his experience and practice. Some knowledge and mathematical concept are obtained from observation, exploration and through the medium of mathematical communication. Creativity also helped to construct knowledge. Constructivist theory advocates the people construct their own understanding of knowledge of the world through experience things and reflection on those experiences. Constructivism assumes that the learners construct their own knowledge on the basis of interaction with their environment.

The concept of mathematics began with the concept of the counting in the ancient period. The people at the time might have used to count their family members and cattle by different things using one to one correspondence. Number ideas and special language for their expression are important discipline to all human as they use it in their daily life problem. People in different community use mathematics differently. One of the most influencing factors to use mathematics in community where each person starts to learn.

I asked to different Raute people about counting system and numerical process. All of them had the idea of counting. The old middle aged people mostly used their native counting system (which is in practice from long period of time). Counting is a multi- purpose technique such as it can be used for finding the cardinal number of given set; for making a set of given (by counting on); for subtracting (by counting back); for multiplying (by counting groups treated as units); and for dividing (using a similar method in reverse). I asked to the respondents to count the numeration system in their native language. The respondents DhanBahadurshahi counted as below: Daha, Ni, Suna, Pari, Paha, Turka, Satah, Athah, Nauwa and Dasha I didn't find their own script to record their number.

They use their counting system to count their animals, family members, money and other things. Mostly they practice to count their hand finger and lines of finger. And they are also used pieces of stone, sticks to count the number. They use more than twenty numbers such as

Twenty = Dabisha

Forty = Nibisha(Chhalchha)

Sixty = Sunabisha

Eighty = Paribisha

Hundred = Pabisha and

One hundred twenty = Turkabisha; so on.

Basic mathematics operations

In this subsection the researcher has analysed & interpreted the Raute mathematics operations in this local life. Here the research pointed to deals how Raute people used the addition, subtraction, multiplication and division problem of the daily life activities.

Addition

Raute takes addition as a concept of collection or accumulation. They use addition to get sum of things. Addition takes place in different fields of Raute such as sum of animals, sum of money, sum of stick and sum of grain etc.

In the case of addition

He explained that the add two numbers first they express the number on the group of 20 according to the natural of the given number. If you give the two numbers less than 20 then the most of the Raute people used figure line of figure, animals, stone, stick to add the number. But for grater then 20 they expressed in group 20.

Again, I asked questions related to the addition as below:

I asked the question "If you have Rs.25 and some one give you Rs.23 then how much money do you have?"

In this question" The first expressed both number in the group of twenties base and remainder, the number of first 25(dabishapaha) and second 23(dabishasuna). Then the puts together groups of 20(dabisha) in one side and sets of remainder in another side. Group and 20(dabisha) and 20(dabisha) make 40(nibisha) and 5(paha) ones and 3(suna) ones make 8 (athah).So in total 48(nibishaathah)." Thus its mathematical expression is

$$\begin{aligned} 25 &= 20(\text{dabisha}) + 5(\text{paha}) \\ + 23 &= 20(\text{dabisha}) + 3(\text{suna}) \\ \hline 48 &= 40(\text{nibisha}) + 8(\text{athah}) \end{aligned}$$

Also case

I asked question as "If you have Rs.65 and someone gives on Rs.63. Then how much money do you have?"

In this question, Mahai Bahadur Shah solved by following way "65 is equal to 60(sunbisha) and 5(paha). And 63 is equal to 60(sunbisha) and 3(suna). Then the added of 60(sunbisha) and 60(sunbisha) in one side and set of remainder in another side. Group of 60(sunbisha) and 60(sunbisha) make 120(turkabisha) and 5(paha) and 3(suna) make 8(athah).So in total 128(turkabishaathah)."

Thus its mathematical expression is

$$\begin{aligned} 65 &= 60(\text{sunbisha}) + 5(\text{paha}) \\ + 63 &= 60(\text{sunbisha}) + 3(\text{suna}) \\ \hline 128 &= 120(\text{turkabisha}) + 8(\text{athah}). \end{aligned}$$

From the above data I concluded that their addition system was based on 20 and above 100 additions system was based on 100 so on.

Subtraction

Subtraction means to remove some number or to give some number of things from the total set of things or money. Raute people use hand figures, line of figures or sticks, stones of subtraction. They have no any concept of negative number and they understand only positive number. According to the respondents, I found that they understand negative number as debt. I asked questions related to the subtraction to the respondents as below;

In this regard, I asked my participant *SamjanaShahi and Surya Shahi* question as,

There are 15 stars, if you remove 8 stars, how many stars are remaining?



Samjana : *There is remaining 7(satah) (by using finger of hands)*

Surya : *There is remaining 7(satah).*

From above conversation the researcher comes to know that *Samjana* and *Surya Shahi* had simple concept about subtraction. By the response of respondent researcher try to checked their response himself. For this researcher make discussion in a stick player and find the correct response their counting ability.

For the next concept, I asked question as, "if you have 9 mangos and 5 mangos are sold then mangos do you have?"

In this question, *SuyraShahi* solved by following way : First he count 9(nauwa) from 1,2,3,4,5.....,9 on the figure and remove from 5(paha) figure said that 4(pari) mangos.

Multiplication

The multiplication process means repeated form of addition. I found that the multiplication process was done by addition methods in their daily use. I asked questions related to the multiplication to the respondents as below;

I asked question as, "If two chocolates cost Rs.1 then how many chocolates you can buy with Rs.9?" to know the multiplication knowledge in this regards my respond Surya Shahi solved the question and answered 18 chocolates could be bought.

Again I asked, "How?"

He first said 1 rupee(Daa) = 2 chocolates

$$2 \text{ rupee(Daa)} = 4 \text{ chocolates}$$

$$3 \text{ rupee(Daa)} = 6 \text{ chocolates}$$

$$4 \text{ rupee(Daa)} = 8 \text{ chocolates}$$

$$5 \text{ rupee(Daa)} = 10 \text{ chocolates}$$

$$6 \text{ rupee(Daa)} = 12 \text{ chocolates}$$

$$7 \text{ rupee(Daa)} = 14 \text{ chocolates}$$

$$8 \text{ rupee(Daa)} = 16 \text{ chocolates}$$

$$9 \text{ rupee(Daa)} = 18 \text{ chocolates}$$

From this discussion it was found that he can easily add the number of 2, 5, 10, 20, 50 etc. equivalent grouping method without the concept of multiplication.

For the next concept, I asked question as, "If 1 kg rice cost Rs.50 then how much does the 4 kg rice cost?"

The illiterate Raute people (DhanBdrShahi) multiply this problem by the following ways:

$$1 \text{ kg rice} = \text{Rs.50 (Daa)}$$

$$2 \text{ kg rice} = \text{Rs.}50 + \text{Rs.}50 = \text{Rs.}100 \text{ (Daa)}$$

$$3 \text{ kg rice} = \text{Rs.}50 + \text{Rs.}50 + \text{Rs.}50 = \text{Rs.}150 \text{ (Daa)}$$

$$4 \text{ kg rice} = \text{Rs.}50 + \text{Rs.}50 + \text{Rs.}50 + \text{Rs.}50 = \text{Rs.}200 \text{ (Daa)}$$

Total amount of 4 kg rice price is Rs.200

The Raute people still use addition methods to solve multiplication problem.

Division

Raute people have a no concept of division but they use distribution in the place of division to distribute equally. They do division to distribute some money, goat, hen, rice, banana, mangoes etc. among then person.

To distribute equally they first estimate that how much/many amount will be got by each and if there is a left some amount after distributing then they again estimate or distribute one –one , one by one each. For dividing money, they decompose that total amount of money into different groups such groups: 5,10,20,50 and 100 etc. After the dividing the groups, they divide the reminders and make result. Mainly the group 20, 50, 100 are used only in economic transaction. Some people made mistakes two-three times to solve the division problem. Most of the Raute people felt difficult to the division work. I asked questions related to the division to the respondents as below;

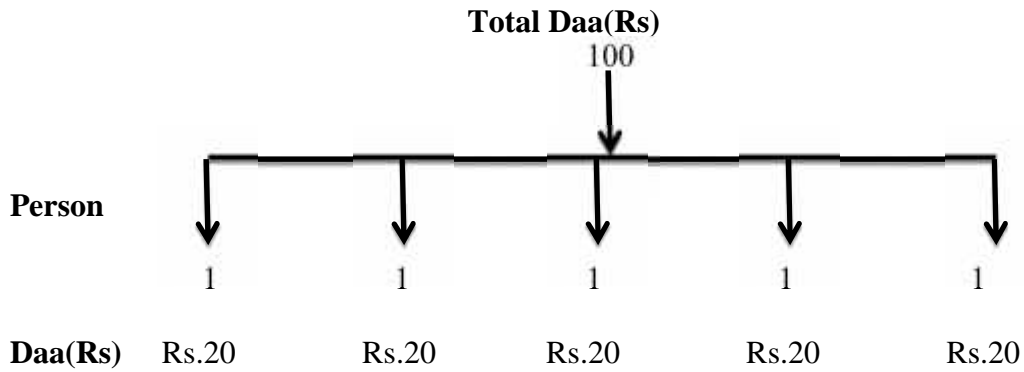
I asked question to my respondent Mahin BahadurShahi as "If you have Rs.100 then you want to distribute 5 persons how much rupees will each get?" to know division knowledge and respondent answered the question as below;

Mahin BahadurShahi solves this problem as follows, "First of all he thought about total amount and distributing number then he distributed the total number in to different group according to distributing number. He distributed the total amount Rs.100 according as distributing number 5. First of all he divided the number 100

into 20's group in five equal parts. Then he added one equal part and side that 20 rupees distributed 5 persons.

Thus its mathematical expression is

$$100 \div 5$$



$$20+20+20+20+20:-1+1+1+1+1$$

From the above example, I conclude that division is different and takes long time. They use such types of example in their daily life also.

The researcher observed their daily activities and interview wherever required, it was concluded that they had gained such concept of addition, subtraction, multiplication and division especially from their peers, family and other elder of society.

The field note of observation and interview that many kinds of mathematical knowledge were crated through their experience and practice. It was found that the Raute acquired some knowledge by seeing others while doing the work, what they see others doing and hearing what say. Observation and interview showed that mathematics is socially constructed in course of socialization, daily activities, and cultural transformation through the means of communication. So Vygotsky's theory of social constructivism supports above mentioned way of learning.

Raute acquired mathematical knowledge through his experience and practice. Some knowledge and basic mathematical operation are obtained from observation,

exploration and through the medium of mathematical communication. Creativity also helped to construct knowledge. Constructivist theory advocates the people construct their own understanding of knowledge of the world through experience things and reflection on those experiences. Constructivism assumes that the learners construct their own knowledge on the basic of interaction with their environment.

Vygotsky feels that the child thinks syncretic ally about unfamiliar situation on objects. Vygotsky emphasized on interaction. For him mind as an active, organizing principal collaborating with the environment in transforming through toward an increasingly delicate adoption of through to things

Measurement of Volume

Raute community the concept volume is the amount of things which takes place in the vacant pot. They use volume to measure their agriculture product. Raute people use different kind of traditional pots, made of wood, to measure volume such as Theki, Dhakiya, Chitre Pathi etc. These pots are made by themselves according to the equal measure with traditional copper pots.

Conversion of Volume

1 Mana = 10 Muthi

8 Mana = 1 Pathi

20 pathi = 1 Muri

1 Chauthi = $\frac{1}{4}$ Mana

Geometrical Knowledge Use by Raute People

Mathematics in Koshi.

Koshi is a traditional object used in Raute community for different purposes. The respondents side that, "Koshi is used for storing rice, paddy, corn. It is made from

wood in the shape of cylinder. At first, they used the process of circle, parabola, rectangle and then foldscircularly to construct it.

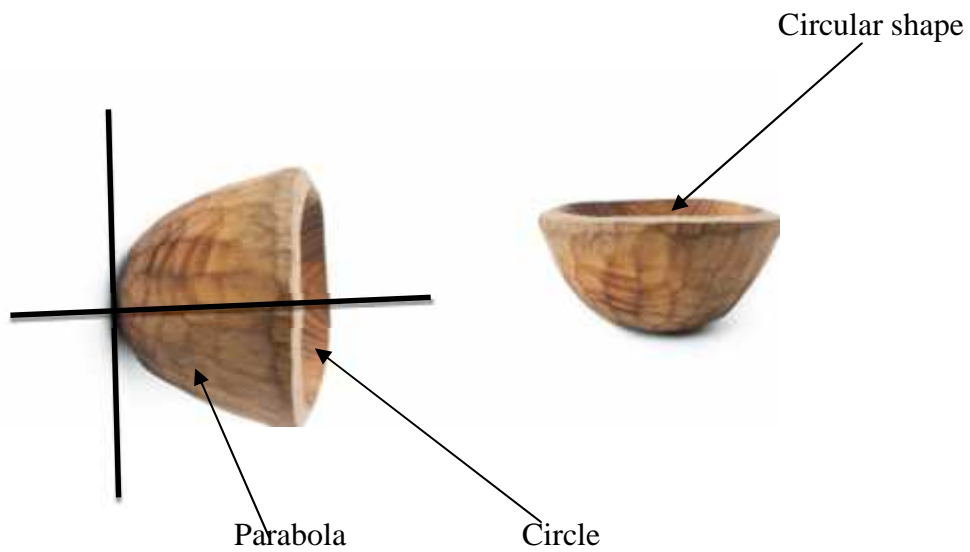


Figure 1 (Koshi)

Mathematics in Nanglo.

Nanglo is a very useful object in Raute culture. According to the respondents, "Nanglo is used cone, rice, wheat etc. from the waste of stone. It made from small pieces of bamboo in the shape of circular. It is use the concept of parallel line, perpendicular line & then circular to construct it. In Nanglo we can see so many mathematical concepts such as quadrants, parallel line, perpendicular line, circle and Nanglo itself is in circle shape."

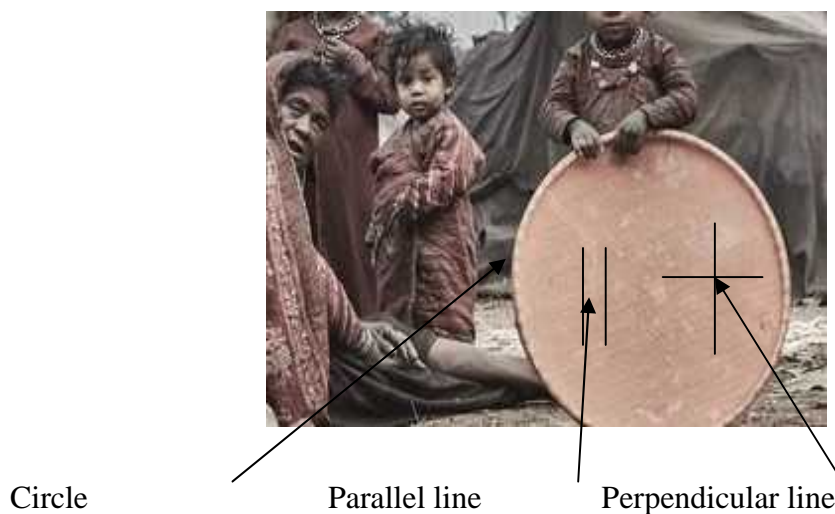


Figure 2 (Nanglo)

Mathematics in Madhus.

They know the concept of rectangle as "Madhus" are four sides. They used Madhus time to time in their daily activities. Madhus used for storing rice, paddy, corn etc. It is made from big wood. At first, they used the process of rectangle, parallel line, angle Madhus has four sides are opposite side are equal.

The rectangular shape of madhus. Which has show in figures.

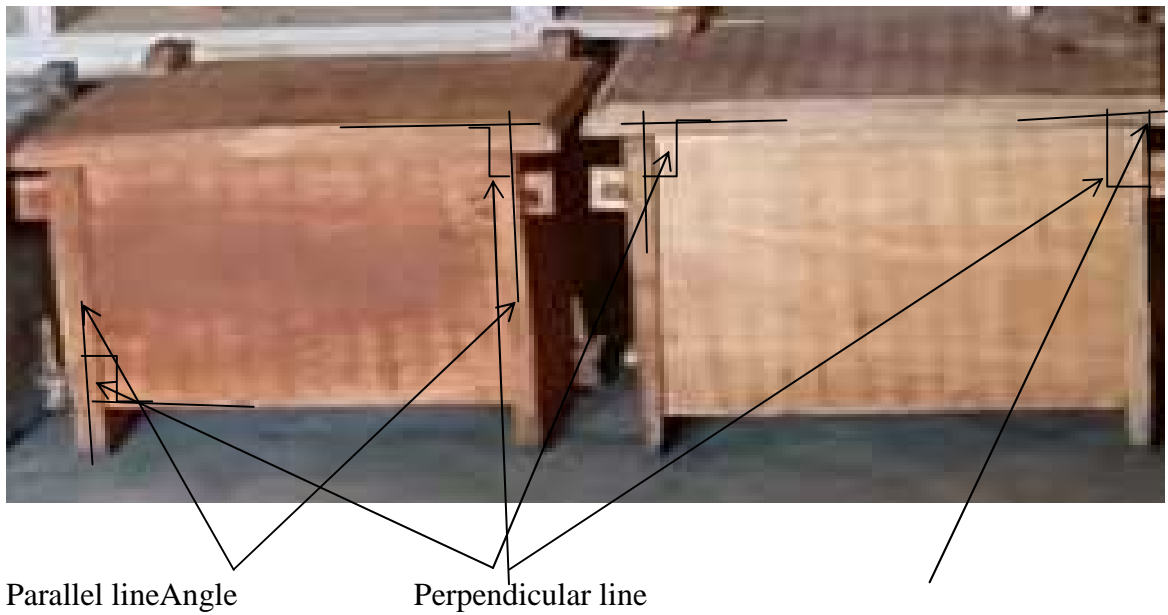


Figure 3 (Madhus)

Chapter V

Summary, Findings, Conclusion and Recommendations

This chapter summarizes the collected data from the sources like primary and secondary as the findings of this research study and carries out the conclusions of this study. Finally, Implications of this research study and recommendations for further research are highlighted.

Summary

This is the ethnography study related to find the basic mathematical concepts practiced by Raute community. In this chapter, I have presented the findings of the study, conclusion of the study and implications of the study. The objectives of this study were on the indigenous knowledge, activities and objects that are relevant to mathematics concepts. The study area was Gurause municipality of Dailekha district as the field of research and sample size selected by the purposive sampling methods for the study 8 members. During the analysis and interpretation periods of my research work in the previous chapter, I have answers collected from respondents to my research questions. How do you know counting system of your community? How many members are there in your family? How do you count money? For this purpose, I visited the Raute community and observation, interview and informal discussions & at the time. On the basic in their information and field data I have presented the following findings, conclusion & implications of the study.

Finding

The findings of the study are as follows:

- 1) The numerical system of Raute is based on 20.

- J Raute native counting system such as; Daha for 1, Ni for 2, Suna for 3, Pari for 4, Paha for 5, Turka for 6, Sathah for 7, Athah for 8, Nawa for 9 and Dashaa for 10 so on..
- J Money was counted by making groups of Rs.5 and Rs.20. Age is counted by on the basic of 12. Now a day they use other groupings as 5, 10, 12, 20, 50, 100, 500 and 1000. These grouping are used according to the individual and conditions. These grouping are used in four basic mathematical operations.
- J They still use stone, stick, figures to the four basic mathematical operations and to be sure their operations. They used one to one correspondence to record their number of things.
- J Addition is easily conducted then the other basic mathematical operation.
- J Addition is operated by gathering and counting in a whole one by one using fingers specially for small numbers. Nowadays they use different grouping of 5, 10, 20, 30, 50, 100, 500 and 1000 for decompose the numbers.
- J Subtraction is calculated by counting remaining things. They use fingers and grouping method to solve the problem. Nowadays they use different grouping of 5, 10, 20, 30, 50, 100, 500 and 1000 for decompose the numbers.
- J Multiplication problem is done in the form of addition.
- J Division was limited on distribution by subtraction methods one by one. It is still practiced in the community. They try to estimate the amount of division; the estimation is going to strong according to their

experience. In the problem they usually decompose the numbers in the groups of 5, 10, 20, 50, 100, and 1000, and then divide one by one.

-) The four basic mathematical problems are done traditionally by them other time they solve their problem like as normal methods.
-) Measurement systems are traditional in Raute methods.
-) The volume is measured with different types of pots. The units of the volume are mana, kuruwa, pathi, and muri.
-) Geometrical objects that they mostly prefer to construct such as :Dalo, Nangalo, Dhakiya, Madhusa, Khatiyaetc like the circle, rectangle, rhombus, cub, etc. in Raute community.

Conclusions

The present study of Raute community has found their own system counting, basic four fundamental operations and measurements systems. Most of the old Raute people solved addition and subtraction problems by grouping methods. They generally make the group of twenty. They sometime make the group of 5, 10, 20, 50, 100, and 1000 according to the nature of numbers. Most of them solve multiplication problems by respective additional method. So they took long time solve multiplication problems. They also use grouping methods to solve division problems.

They measure volume in their community using mutthi, mana, kuruwa, pathi and muri. It is concluded that Raute people use geometrical objects that they mostly prefer to construct such as: Dalo, Nangalo, Dhakiya, Madhusa, Khatiyaetc like the circle, rectangle, rhombus, cub, etc. in Raute community. This practice can be integrated in our formal education system.

Recommendations

This study took short time period, small number of respondents & limited in several aspects. The finding of this study may have covered certain field of mathematics of Raute ethnic group. So consider these limitations of the study the following suggestions & recommendations have been made for further research.

-) This study was limited in Gurause municipality, Dailekha which is a small for best achievement of the study. So the study can be done by taking other municipality as well.
-) Raute has the underful skills and process in their production on wooden stuffs and many mathematical thinking are hidden. So this reach is implacable stimulated to reconsider the value of their cultural heritage.
-) To many indigenous people living close to their traditional lifestyles, the reality of their science and its expiation tied up with their cultural responsibilities. In this field of Raute can facilitated to on freezing their indigenous knowledge.
-) This study was limited to counting system, measurement system and basic mathematical operations. This similar study can be done in geometrical concepts of Raute community.
-) Nepal is a multicultural, multi-ethnic and multilingual country. So researcher recommends another Ethno-mathematical study by taking any other caste.

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Appendix I

Raute Native Counting System with Equivalent to Devengari and English System

Devengari/Nepali	Raute System	English System
Eka	Daha	One
Dui	Ni	Two
Teen	Suna	Three
Char	Pari	Four
Paach	Paha	Five
Chha	Turka	Six
Sat	Sathah	Seven
Aath	Athah	Eight
Nau	Nawa	Nine
Das	Dashah	Ten
Bees	Dabisha	Twenty
Chhalisa	Nibisha	Forty
Shathee	Sunbisha	Sixty
Ashie	Paribisha	Eighty
Ekasaya	Pabisha	Hundred

Appendix II

Interview Guidelines with Raute People

- a) How do you know counting system of your community?
- b) How many numbers can you count in your own language?
- c) How do you know measurement system of your community?
- d) How many members are there in your family?
- e) How many members are there in your community?
- f) How do you count money?
- g) How old are you?
- h) How do you measure, cone, rice, wheat, etc?
- i) If you have Rs.25 and some on give you Rs.23 then how much money do you have?
- j) There are 15 stars, if you remove 8 stars, haw many stars are remaining?
- k) If 1 kg rice cost Rs.50 then how much does the 4 kg rice cost?
- l) If you have Rs.100 then you want to distribute 5 persons how much rupees will each get?
- m) How do you make your, Koshi, Dhakiya, Madhus etc?

Appendix III

Photos Related With My Study



Koshi



Madhus



Nanglo



Dhakiya



Dholak



Koshi&Chhapro