

Chapter I

INTRODUCTION

Background of the study

Nepal is a multicultural, multiethnic and multilingual country. The CBS provided data on 100 ethnic/caste groups in the 2001 census, whereas it provided data on 125 ethnic/caste groups in the 2011 census. These results revealed Nepalese society being increasingly plural. These diverse ethnic/caste groups can be arranged into five broad cultural groups: a) the Cast-Origin Hindu groups; b) the Newar; c) the Janajati, or nationalities; d) other (Dahal, 1995). Similar to this diversified caste/ethnic composition, Nepal is also characterized as linguistically pluralistic state. The 2011 census has identified 123 languages spoken as mother tongues. Besides, a number of languages have been reportedly used by 44.6% of the total population. Rest of the 55.4% population has their own mother tongue even if huge bulk of this population is bilingual so that is capable to use Nepali as second language. According to census 2011, the major-spoken other languages as mother tongue, according to CBS 2011, are Maithili (11.7%), Bhojpuri(6.0%), Tharu (5.8%), Tamang (5.1%) and Newar(3.2%).

The above composition of ethnic and linguistic diversity is also reflected in the school system of Nepal, though the proportion of ethnic composition varies from one school to another. Despite the diversity in student's ethnic, cultural and linguistic characteristics, the country has been adopting the national curriculum and uniform pedagogical approach throughout the schools. The similar case might be happened in mathematics teaching learning practices in ethnically plural classroom of Nepal. Some reports(Flash report of MOE, 2007) show the achievement of ethnic children in schools is still under satisfactory level comparing to the mainstream children. To be so, one of the independence variables might be mathematics which has been designed and taught in the form of mainstream language of the society.

In mathematics, there are a lot of vocabulary, terminology and technical terms. Some of them are simple and easy to comprehend. Most of them are specially related to mathematical concepts. In such cases, students of all school level face difficulties

in developing conceptual framework. Furthermore, text books are much more directive and irrelevant by the students.

With the variability in mathematics learning, it is difficult to estimate whether our school children irrespective of their castes, genders, cultures, geography and socio-economic background are getting equal learning experiences in mathematics is a striking question to mathematics teachers and students.

On the other hand in school level, the composition of classroom is obviously multicultural and multilingual in nature but our pedagogical practices are uniform in nature. Classroom is heterogeneous in terms of language, culture and ethnicity but teaching activities are homogenous in nature. The same principle may work in mathematics teaching learning activities. Such teaching learning activities or pedagogical practices of mathematics teachers may result in prejudice, inequality and discrimination for those ethnically, culturally and linguistically diverse children in classroom practices in order to gain equal learning experiences in mathematics. So, this study will be an attempt to bring out the classroom activities or pedagogical practices of mathematics teachers in terms of ethnically, culturally and linguistically different students.

Mathematics curriculum is also very much ambitious and it has to cover much vast course as compared to other subject. Teaching mathematics in class with these kinds of mixed ability group is often very difficult and ineffective. Some school does not have good classroom. A large number of student are packed so tightly that the teacher can never reach a student sitting at a distant corner window quite small or few in number, poor light and air-condition, shining black/white board sometime leaking roof. One can imagine how effective teaching can be expected in such class room. If a teacher does not know a particular student's weakness as the concept which he is not clear of how can the teacher make sure at the effectiveness of his teaching. This problem is mostly seen in schools when the teachers are frequently changed. Frequent change of teacher is also one of the main factors responsible for the poor result of math teaching.

With the development at several new branches of mathematics as well as new application of mathematics, the functions of mathematics curriculum seem to be development more than ever before on how we organize body of knowledge. We

organize mathematical learning experiences and on how we perceive the nature of mathematics effectively and meaningfully. But to achieve this objective is not as easy as one thinks, because there is no single best teaching approach to be prescribed. The best method is that which generates teaching for understanding and meaningful learning.

In mathematics, there are a lot of vocabulary, terminology and technical terms. Some of them are simple and easy to comprehend. Most of them are specially related to mathematical concepts. In such cases, students of all school level face difficulties in developing conceptual framework. Furthermore, text books are written on the basis of authority oriented. Text books are much more directive and irrelevant, lead to more learning at the recall with less thinking and participation by students.

In the initial, it was thoughts that mathematics and mathematics education are same. Now days, that mathematics and mathematics educations have the separate objective and process in academic. In other words, by nature, they are considered as the two distinct disciplines. The mathematics involved in developing theory and wanted to abstract it to other disciplines and fields. But the mathematics education involved with the appropriate methods, materials and presentation in every field of living being. It also deals mathematics from the philosophical aspect, psychological aspects and sociological aspects of education. The first international congress of mathematics education in Lyons, in August 1969, established mathematics education as a discipline. Mathematics education is a contemporary society relative to the intervention of science and technology in to it along with socio-political situation at the society.

Therefore, with this variability in mathematics learning it is difficult to estimate whether our school children irrespective of their castes, genders, cultures, geography and socio-economic background are getting equal learning experiences in mathematics is a striking question to mathematics teachers and students. On the other hand in school level, the composition of class room is obviously multicultural and multilingual in nature but our pedagogical practices are uniform in nature. Classroom is heterogeneous in terms of language, culture and ethnicity but teaching activities are homogeneous in nature. The same principle may work in Mathematics teaching learning activities. Such teaching learning activities or pedagogical practices of

mathematics teachers may result in prejudice, inequality and discrimination for those ethnically, culturally and linguistically diverse children in classroom practices in order to gain equal learning experiences in mathematics. So, this study was an attempt to bring out the classroom activities or pedagogical practices of Mathematics teachers in terms of ethnically, culturally and linguistically different students.

Statement of the Problem

Nepal is a multicultural, multiethnic and multilingual country. The country has recently promulgated the inclusive policy in major apparatus of the state by ensuring the right in interim constitution 2008. In spite of this provision, the state policy still neglects to see how our school system and culture affect the learning of diverse students group.

Further the existing practices in school system of Nepal have paid little attention to the learning needs of the varied composition of the classroom. Therefore it was worthwhile to consider the effect of micro-issues of pedagogical practices such as use of instructional materials, methods, medium of instruction, strategies of motivation, feedback, re-enforcement use of reward, punishment of learning of various groups of students.

The teaching materials, contents, methods and evaluation systems are sometimes questionable in terms of their stance to address the diverse need of plural classroom. In many cases the materials portrait the mainstream culture overlooking the identity and presence of diverse cultural groups. The poor representation of Dalit (3.4%) and Janajati (11.4%) group in teaching profession (MOES, 2008) is an issue whether the representation itself creates biasness and inequality in the learning outcomes. Therefore, it is fruitful to consider the extent to which teacher learning activities in classroom practices embrace the multicultural pedagogy in order to respond to the learning need of the diverse groups of the students.

The social justice theory argues that much of the cultural capital embraced in schools is supportive to the children who came from main stream society and partially available to the marginalized community (Corson, 1990). This is similar to Nepalese community. For example, the dominance of monolingual teaching strategies is a vital issue. It is evident that those students who have mother tongue other than Nepali

language are less than likely to survive in the classroom where teachers use Nepali as only medium of instruction.

In this point, there is little research done in Nepali in order to enquire the extent to which ethnic cultural and linguistic diversity is managed through pedagogical practices.

This study attempts to explore both pedagogical practices of mathematics teachers keeping in view of the issue and problem of ethnically, culturally and linguistically different students in the classroom. Specially, this research made an attempt to seek out the following research questions.

- What extent to existing pedagogical practices of mathematics teachers address the need of ethnically, culturally and linguistically different students?
- What teaching learning activities do mathematics teachers employ in classroom?
- How do mathematics teachers involve all these diverse students in classroom activities equally?

Objectives of the Study

The objective of the study was to find out the pedagogical practices of mathematics teachers in classroom diversity. However, the study carried out taking the following objectives into consideration. They were:

- To explore how mathematics teachers manage the students diversity (cultural, ethnic, linguistic) through pedagogical practices in the classroom.
- To investigate the learning need of different cultural, ethnic and linguistic groups of student in mathematics teaching learning activities.

Signification of the Study

The first significance of the study was to contribute to the knowledge domain of mathematics education. Such knowledge would be empirical information for mathematics in terms of classroom diversity. For this, this study would explore the pedagogical practices of mathematics teachers in ethnically plural classroom.

On the basis of finding, schools and mathematics teachers could manage the learning environment for mathematics focusing on equal learning experiences these diverse students.

Furthermore, the mathematics teachers can bring the changes in his teaching learning activities in the classroom in light of providing equal learning experiences for these diverse students through seeking more favorable learning environment in classroom as well as school.

This study was equally fruitful for school family to evaluate their roles and activities as to whether they are neutral or equal or bias for these diverse students who are from different backgrounds. On the basis of this evaluation they can modify their behavior and mind so that a more equal response and behaviors in teaching and learning activities could be ensured for these diverse students while dealing with the pedagogical practices.

The last significance of the study was to provide the finding of the study to all who would want to utilize the finding for their mathematics purposes. For this, planners, designers, decision makers related to the mathematics could be benefitted the information in their respective fields.

Delimitation of the Study

Due to researcher's constraints on budget, time, and logistic support, there were few limitations of the study. So the findings of the research were subject to limited generalization and reliability. However, the study was delimited in school with mixed population and community. The researcher delimited the study:

- This study was limited to merely in Kanchanpur District.
- In Kanchanpur district and ten secondary schools for mathematics teacher response.
- Among ten school and one school for class observation and students response.
- To mixed approach i.e. quantitative and qualitative approach.

Similarly, the pedagogical practices included the teaching strategies that the mathematics teachers had been carrying out in the classroom.

- Use and type of teaching methods and teaching activities
- Use and type of instructional materials-available in local or national level
- Medium of instruction in teaching mathematics

Definition of Term

Pedagogical practices: Teaching method and teaching learning activities, instructional materials-available in local and national level, medium of instruction in teaching mathematics, bias, discrimination, violence and prejudice in teachers and students behaviors and motivation, reinforcement, reward and punishment and feedback.

Ethnicity: Ethnicity implies people who have their cultural, linguistic, geographical and social identity.

Ethnically plural classroom: The classroom where the students come from many social, cultural, economic and organizational groups.

Learning Need: The desire and need of the learners to learn Mathematics.

Chapter II

REVIEW OF RELATED LITERATURE

Considering the diverse needs of Nepalese students, there is little research done in the issue of pedagogical practice for managing plural classroom. Few researches have done dealing with the issues of access, participation and dropout of Dalit and ethnic children (e.g. CERID/BPEP, 1999). Yet, there are substantial contributions made by many international scholars in this field focusing particularly in pedagogical interventions for managing multicultural classroom. The issue of multiculturalism they used in various form is ask in to the problem state in this study; therefore the major publication in international journal are reviewed here after.

In major literatures, multiculturalism in education is diversely viewed. According to Grant and Sleeter (2003) multicultural education has become the common term used to describe the types of pluralist education that its advocates are seeking for all children receiving an education, pre-k through college. Supporters of multicultural education n claim that at the societal level, it is major goal are to reduce prejudice and discrimination against oppressed groups to work toward equal opportunity and social justice for all groups, (cited in Jan, 2003).

Similarly a study done by wasonga (2005) entitled ‘multicultural education knowledgebase, attitudes and preparedness for diversity’ have an aim to investigate the effect of multicultural knowledgebase on attitudes and filling of preparedness to teach children from diverse background among pre-service teacher as the major finding results indicated that a class in multicultural education significantly increased knowledge about diversity, attitudes toward multiculturalism and levels of preparedness to teach children from diverse backgrounds. The finding showed that there was no correlation between multicultural knowledge and attitudes and between attitudes and preparedness to teach children from diverse background.

A similar study done by Johnson and Inoue (2003) entitled

Diversity and Pedagogy: An Analysis of Attitudes and Practices within an American Pacific Island University, explored the practice of multicultural education within a pacific island university, in order to find out the link between teachers

attitudes and classroom practices as well as the attitudes and perception of the faculty toward diversity and multicultural pedagogy in classroom and curriculum development through employing survey methodology and descriptive analysis. The findings of the research were that faculty ranked high on the willingness to engage and incorporate multicultural strategies in their teaching. Many teachers had the skills or knowledge regarding the multicultural classroom teaching strategies in their teaching. Many teachers felt that they were not equipped to deal with a multicultural environment. Data suggested that many teachers were willing and open to diversity and multiculturalism; they struggled with strategies to incorporate those attitudes in their teaching.

Similarly a study done by Wasonga (2005) entitled ‘Multicultural Education Knowledgebase, Attitudes and Preparedness for diversity’ have an aim to investigate the effect of multicultural knowledgebase on attitudes and feeling of preparedness to teach children from diverse backgrounds among pre-service teacher. As the major findings, results indicated that a class in multicultural education significantly increased knowledge about diversity, attitudes toward multiculturalism, and levels of preparedness to teach children from diverse backgrounds.

All the above study, however, reflect the problem and perspectives of multicultural teaching dealing with the issue of various western countries in particular. Because of the unique social ethic composition of our society, it is questionable to generalize the results in the contest of Nepal. Realizing a strong need to fill up gap of study in the context of Nepal, the present study contributes to enhance equitable pedagogy in public school in Nepal.

Pradhanang (2001) studied the children construction of knowledge mostly depended up on their communication with parents and their own innate qualities and the socio-cultural environment. The purpose of her study was to investigate the child construction of knowledge in social context and their learning process. The study under took ethno methodology and phenomenology approaches. The finding reminded vygotskian, plagitation and Bruner and Bee constructivist’s theories. In fact it was a combination of different theories that could best describe early childhood development, children construction of knowledge. The implication of the study can be

summarized as strengthening the communication with children through teacher representation and detailing down the resource materials.

A study conducted to find out the achievement of Gurung and Magar children of lower secondary level ,done by Shrestha (2004),shows the differences in the achievement of Gurung children was higher than Magar children . It was concluded that Gurung children differed significantly from Magar children with respect to mathematics achievement. On the other hand, the study also explained the intra achievement difference in both ethic groups, such as Gurung male children is achievement was significantly different from that of female Gurung children. The same result was found in Magar children. Similarly female Gurung children achievement differed significantly from that of female Magar children.

Regmi (2004) entitled “a study of achievement in mathematics of Gurungand Kumal students at primary level” discussed that the mean achievement between Gurung and Kumal boy students was not significantly differed. On the other hand, the achievement of Gurung girls differed significantly from those Kumal girls.

CERID (1990) studies the elementary process of learning mathematical concepts and process of RasuwaTamang. The purpose of the study was to study the basic mathematical concepts used by Tamang adult with no formal mathematical education to identify traditional among method of mathematics operation and to find out the implication of Tamang processes and tone up the present learning situation. This project work has showed theTamang have their own system of measurement, counting and their own mathematics process and geometrical concepts are based on the shapes and structure patterns of object existing around. This study has also showed the situation of children into formal system, but it did not study the effect of ethno mathematics practices in the classroom settings. It is a descriptive study with the aim to find out the mathematics achievement of primary schools children of various ethnic groups and to certain the predictive efficacy of mathematics of various ethnic groups of children.

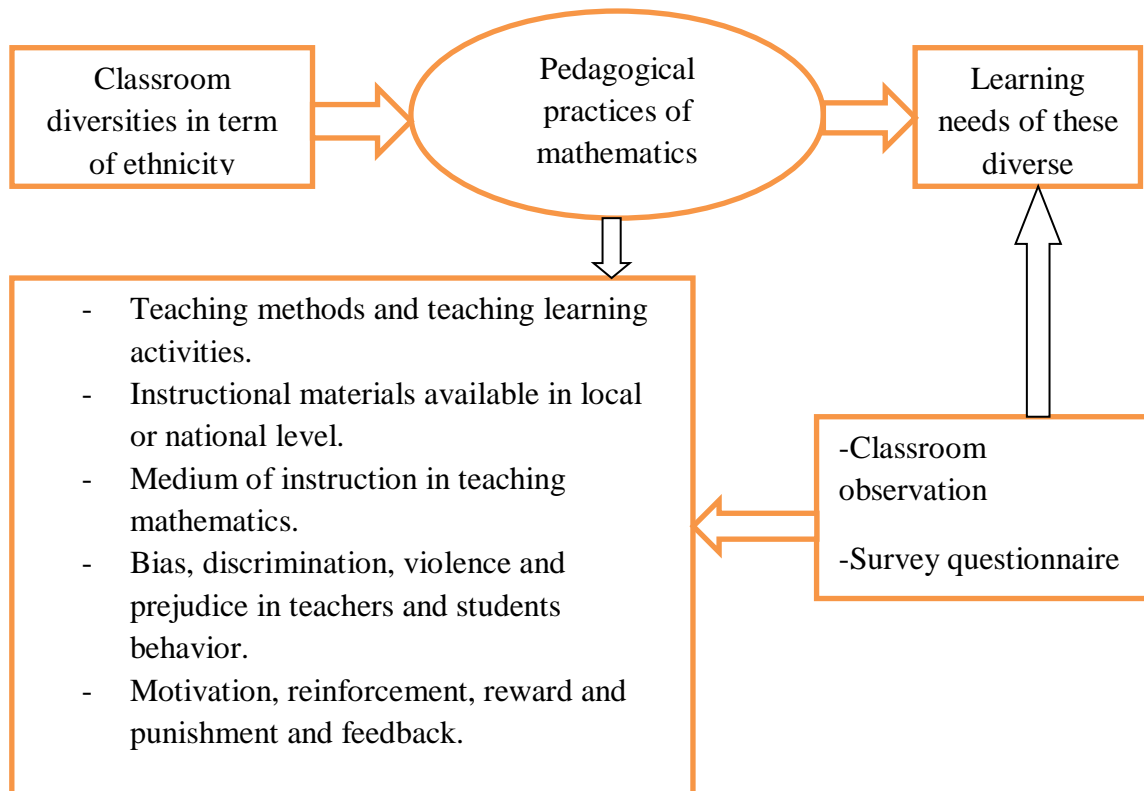
Shrestha (2003) studied the measurement system in Newar civilization with the objective to identify the numeral systems and its trends of gradual development. His research was asked on primary and secondary data consisting of the study of profile conducting with resource person and the study of related journals, books,

microfilms etc. secondary data were collected from several libraries, museum and person collected. His found from data all the numbers of Newar civilization were found as developed from the Brahmin the ciphered numeral system was introduced during the dark age of mathematics practices in real life mathematics of Newar.

The above mentioned empirical documents, related to mathematics education, have discussed the differences in achievement of mathematics in term of different ethnic students, they did not even show the interest in why those achievement gaps occurred in school is questionable. These documents show the simple and general results just focusing on student's achievement through statistical analysis but fail to touch other influencing variables that affect achievement gaps of students. These variables may be the teacher's teaching strategy, method, motivation, reinforcement, feedback teachers and students classroom behavior in light of classroom diversity. Therefore this study made an attempt to find out the pedagogical practices of mathematics teachers in order to cement the above mentioned gaps.

Conceptual Framework of the Study

As per the objectives of the study, the researcher surveyed the schools that represent ethnically mixed students. Accordingly the following charts had showed the frame work by which the researcher conducted the field of the study.



This above chart shows that as per the classroom diversities, the needs and expectations of these diverse children may be different. Depending on these differences, how a mathematics teacher performed his pedagogical activities for providing them with equal learning experiences was questionable. Pedagogical practices of mathematics teacher might be as teaching method and teaching learning activities, instructional materials-available in local and national level, medium of instruction in teaching mathematics, bias, discrimination, violence and prejudice in teachers and students behaviors and reinforcement, reward and feedback. To assess and find out these different pedagogical practices of mathematics teachers in light of needs and expectations of diverse students, the researcher carried out different tools and instruments namely they are classroom observation, survey questionnaire and interview. On the basis of these instruments, data was collected for reaching to draw finding and conclusion of the study.

Chapter III

RESEARCH METHODS AND PROCEDURES

Research is a science which determines how to complete the research systematically. This chapter includes design of the study, sampling, tools and instrument of data collection, data analysis procedure.

Design of the Study

The study applied descriptive research design because this type of research is used to describe the data and characteristics about what are being study. Therefore, it used qualitative method mostly and quantitative method partially. The design of the study was qualitative and quantitative in nature. It used qualitative and quantitative method partially. It used the quantitative method partially because they were certain structured questions for teachers and students. Besides, direct class observation was scheduled to observe the behaviors of the teachers and students in the classroom. Information obtained from the direct classroom observation was qualitative.

For the qualitative data were analyzed and interpreted finding the main theme in line with the objective of study. The events of the class observation were given in the box actually what had observed in the classroom. Similarly, the quantitative data were analyzed and interpreted using table, figure and percentage in order to give a clear meaning.

Sample and Sampling Process

The sampling of the study was as follows:

Schools

The researcher *selected* the schools on the basis of mixed characteristics of the community. For that purpose, one school was selected on the basis of purposive sampling in order to conduct the classroom observation of the teachers and the interview with students. And surrounding ten secondary schools was selected in order to conduct the questionnaires for mathematics teachers.

Sample

All mathematics teachers of all ten schools from all level were taken for questionnaires. And, all mathematics teachers of Santiniketan higher secondary were taken for class observation. After that, researcher found the number of students consulting the register of the school. My objective was to select the student of secondary level with mixed identities for the study, therefore, researcher chose 30 students, 10 teachers from that level. Students were selected from total number of students with several castes and ethnicity. Then, the researcher made strata of those students in order to include all the ethnic groups of the students as per the stratified sampling procedure.

Tools and Instruments of Data Collection

Three major tools of data collection-interview, observation and questionnaire were used along with the researchers own note taking endeavor. Tools and instruments were major means of collecting data. The validity and reliability of tools established based on piloting on the small population as for the suggestion, given by supervisor tools and were modified, changed and developed in a advanced form for the administration.

The researcher visited to the school principal and mathematics teacher for sought permission to start the purpose of the research with the help of principal and mathematics teacher.

The detail specification of each tool is discussed below.

Questionnaire

Questionnaires were constructed for mathematics teachers in order to get information regarding classroom, and pedagogical practices they employed in plural classroom. The prepared questionnaire included the issues such as practices of math teacher for addressing the classroom diversities, used teaching methods as per the student's identities, and teacher's effort for involving students in math teaching. It had included behaviors that teachers adopted as per the need of different ethnic identities, and wages for providing equal learning experiences for multi-ethnic students in mathematics learning.

Interview

The researcher had interviewed for students based on the need of information in order to meet explored the objectives of the study. The structured questionnaire has constructed in order to avoid difficulties to respond in length. Researcher took interview with students one by one in order to save the information to be identical with all students. The interview questionnaire has included the issues like medium of instruction, student's expectation from math teacher and school, view of student's view towards teaching methods adopted by mathematics teachers in classroom, encouragement of teacher for involving student in math teaching, status, reinforcement and feedback in mathematics learning. Furthermore, the questionnaire has involved the issues like equal questioning behavior of teachers to students, causes teachers partiality in question, status of teacher's help and support to students and need of student in mathematics class.

Observation

The researcher has constructed observation checklist to record the certain pedagogical behaviors of teachers and students in classroom activities. The participatory observation was employed to meet the goal with teacher's permission. For doing so, the researcher observed math classes

Researcher divided a class into three different phase i.e. 0-10 min, introductory phase, second 10-30 min, main teaching phase and last phase 30-45min evaluation and consolidation phase. Within all phases the teacher observation the teacher's activities and major behavior language, biasness and motivating factors.

Data Analysis Procedure

The researcher visited the sampled site in order to develop the rapport with sampled population. Through this visit, he explained the purpose of the study and gained their consent for the study. Similarly, he scheduled the time and place for administering the interview, filling the questionnaires and class-observations had finalized at the time of site visit. According to the scheduled time and place, interview with students and class observation was conducted. For this purpose, he manages the time schedule and place as per the selected population's consent and suggestion. It

was considerable that the research would conduct participatory class observation at first and other respectively.

The researcher analyzed and interpreted the data employing table, charts, graphs and bar-diagrams as well as using percentage to explain the data. For qualitative data: the researcher has used logical analysis and thematic analysis technique by using coding, categorizing and schematization methods. For quantitative data: the data has been analyzed using charts, diagram, figures and some statistical methods.

Simple tabulation of the data has been made and analyzed using percentage. According the nature of the data, cross data analysis has been conducted. For this, the responses of the teachers, students have been collected. To validate their responses, information achieved from the direct class observation have been matched. From this cross analysis, the information of the teachers is matched with the students, and the information of the teachers and students have been matched with the information obtained from class observation.

Chapter IV

DATA ANALYSIS AND INTERPRETATION

For meet the objectives of the study, data were collected from students studying secondary level student of Shree Shantinikentan Higher Secondary School Aithpur-6 Kanchanpur and from teachers teaching in different schools such as Shree Nignlashaini Higher Secondary School Gobariya, Shree Shiv Gyanesswor Hss Bhagatpur Kanchanpur, Shree Purna Higher Secondary School Kanchanpur, Shree Baijnath Secondary School New Tilakpur Kanchanpur, Shree Mahendranagar Secondary School Katan-18, Shree Maheshwor Secondary School Sukashal Kanchanpur, Shree Mahakali Jansewa Higher Secondary School HaldukhalKanchanpur, Shree Baijnath Higher Secondary School Janakitol Kanchanpur, Shree Mahendranagar Higher Secondary School Kanchanpur. The data were collected and grouped and found the similarity and difference to analyze and interpreted them systematically. For seeking status of mathematics teaching behaviors of math teachers, the information has been triangulated in order to reach the conclusion of the study. Therefore, the information given by the teacher has been matched with the information provided by the students and then information given by teachers and students has been judged based on the class observation.

Therefore, this chapter deals with data as per their nature. For this data were tabulated and analyzed by employing percentage to give a clear meaning as per the following heading

- Mathematics Teacher's Ways of Addressing the Need of Classroom Diversities.
- Methods for Addressing the Needs of Students Identities.
- Practice and Effort of Math Teacher for Equal involvement of Multi-Ethnic Students.
- Potent Behaviors that Lead to Bias, Discrimination, Prejudice and Violence in the Classroom.
- Teacher's Awareness and Conscious about Bias, Discrimination, Bias and Violence.

- Mathematics Teaching Behavior as per the need of Different Ethnic Identities.
- Student's perception on the problems of Mathematics teaching.
- Ways of providing Equal Learning Experiences for Multi Ethnic students in Mathematics Learning.
- Teacher's Perception on Hindrances to Teaching Different Students

Math Teacher's Ways of Addressing the Need of Classroom Diversities

Most mathematics teachers claimed that they used educational materials and conducted group activities more frequently. Teachers reported that they often generated the feeling of co-existence, justice and equity among the students.

"We make students involve in various groups work. To bring the change in behavior we use maximum materials. We provide chance to them on the basis of this equal values and behavior."(Teacher's view)

"Our duty is to develop the social consciousness in students. It is found way useful, if we teach the diversity using effective teaching method and game. Student will be more active in teaching method and game. Students will be more active in teaching learning activities. Such teaching method we use generally supposed to be social justice"(Teacher's View")

According to J. Banks (2006), multi-cultural education is an idea an educational reform movement and a process. Banks believes that an idea multi-cultural education seeks to create equal educational opportunities for all students, including those from different social ethnic and social groups.

"Mathematics is the queen of science while we have been teaching in multiethnic class; we always address the learning problems of all students according to their behavior, activities and interesting."(Teacher's View")

Multi-cultural education tries to create equal educational opportunities for all students by changing the total schooling environment so that reflect diverse culture and groups within a society and within the nations' classroom.

Therefore to give an equal opportunity to all the students, group was divided depending upon the capacities of the students and such group divisions accelerate learning experience of those students who were poor in mathematics.

“We sometimes make students learn by creating the different group of talented and non-talented students. We change our behavior depending on the diversities of students.” (“Teacher’s View”)

According to teachers group division not only accelerated the learning experience of those students but also developed a group belongingness which was very essential in ethnically plural classroom for equal learning.

In the perspective Neito (2005) argues that multicultural education is based on the need to provide all students with a high quality and equitable education. Similar to the social activities, teachers argued that they attempted to activities so that all students could experience an equal treatment, behavior and help from the part of the teachers.

The following episode in different whatever the teacher explained.

Episode-1

The mathematics teacher goes to the classroom and then researcher also enters the classroom following teacher. Student of that class stand up and they say good morning sir, and the researcher tells them to have a seat. There are 40 students in a classroom. Desk and bench are not in a proper place. They are very short and the blackboard is seeing white even it is low placed. The topic for today’s discussion is “Unitary Method”. The class starts without linking with the previous days’ subject matter and homework. Students are seemed in dilemma. The teacher begins with the exercise no. 1 in his own way without having enough discussion which is important for the student. Condition of the classroom for students is totally in bizarre situation. Nobody can understand the voice of teacher. All the students are busy in copying the matter written in the blackboard. The researcher doesn’t find any kinds of study materials in his used teaching methodology. Then teacher order the students to do the exercise no. 1 but student are busy in copying only by the force and fear of the teacher. Though the student which are active in class do the job given by the teacher but other are finding the way to pass out from this task.

In classroom observation no materials was found to be used in the classroom so that student couldn't get benefit and respond to the student diversities. Teachers used only traditional methods as writing on the blackboard when student asked to solve problems. Teaching materials were not found covering the need of the classroom.

Methods for addressing the needs of Students' Identities

The responses of teachers and students regarding the teaching method used by teacher in teaching diverse students have been described below.

Figure No. 4.1: View of Teachers about the Used Methods

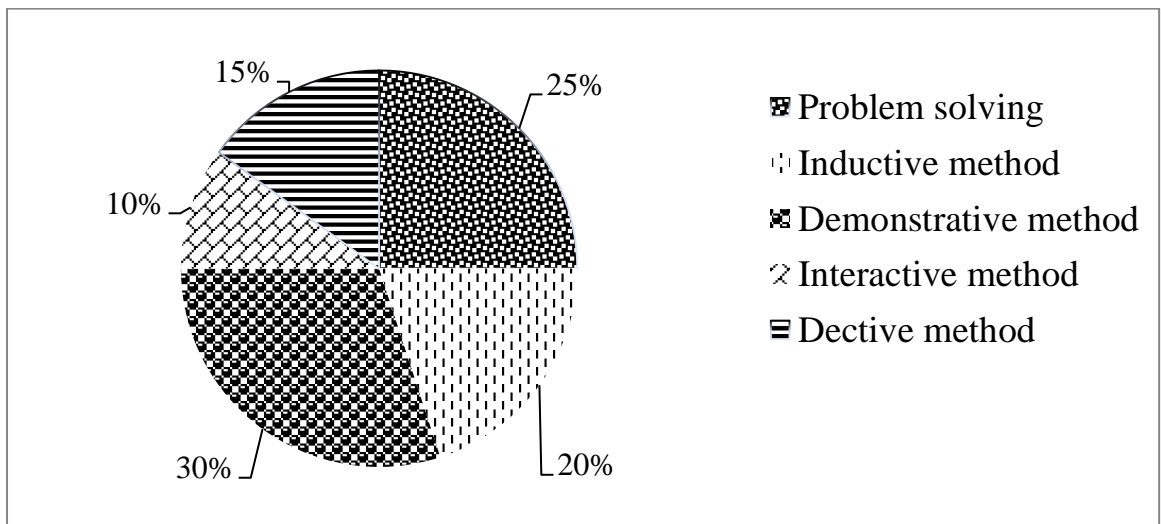
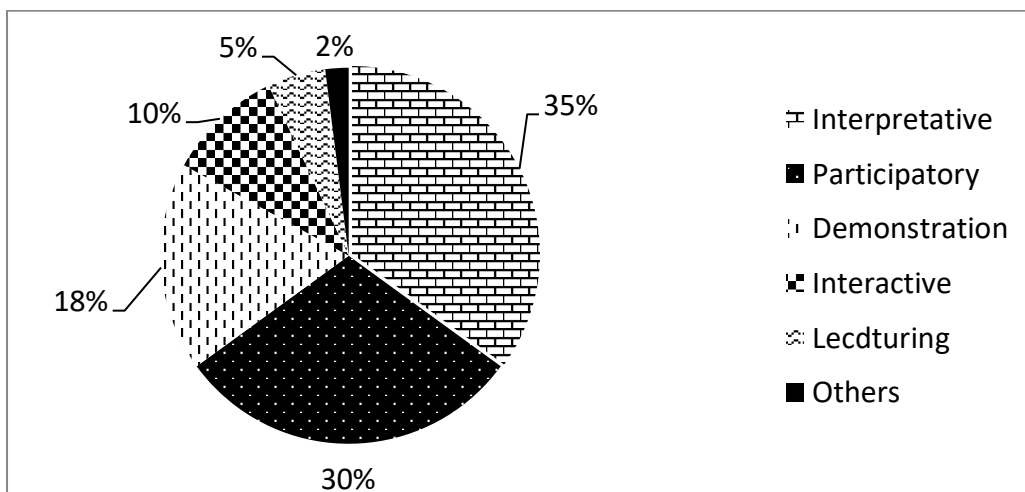


Figure No. 4.2: View of students about the used methods



The figures 4.1 and 4.2 demonstrated that in teachers' view the most frequently used method was problem solving but students claimed that interpretative method was frequent used. Similarly, inductive method in teacher and participatory method in students got charming in teaching mathematics in ethnically plural classroom.

On the other hand, inductive method for teaching the classroom diversity for teachers were used but students claimed that demonstration method were used in teaching classroom identities. Most of the teacher (30%) said that they had used interactive method but the students said that the teacher used interpretative method in class. It is seen that the teacher gave priority to problem solving, inductive and deductive method respectively and students gave priority to the participatory, demonstrative, and interactive and lecture method.

Whatever the teacher and students said regarding the use of teaching method in class, it is seen by class observation that teachers are using mostly the lecture and interpretative method. Other methods like inductive, deductive and problem solving method has got least priority.

Practice and Effort of Math Teacher for Equal involvement of Multi-Ethnic Students

Following are the responses of teachers and students on how a math teacher makes all students equally participated in all classroom activities. As we visit the table, it is found that all teachers wanted to be conscious themselves and made conscious to their students for the class to be against the discrimination and violence that could be seen in classroom and to teach in class with ethnical balance.

Table no 4.1 Table Math Teachers' Ways for Involving Students in Teaching and Learning Activities

Student's Response	%	Teachers' response	%
Concerning all in problem solving	(40%)	Involving in activities by making ethnical balance	(30%)
Equal questioning	(25%)	Making students conscious about the discrimination in classroom and violence and themselves too be conscious	25%
Encourages to be participated in extra-curriculum activities	(15%)	Involving in group activities	18%
Encourages in individually	(10%)	Practicing in asking equal question in class teaching learning activities	15%
Group activities	(10%)	Encouraging to involve in class teaching learning activities and extra-curricular activities equally	16%

As mentioned above 16% of teachers encouraged the student to participate in different classroom activities but according to the students only 10% teachers included them in different activities. 40% of students suggest to their teacher to use the problem solving method and also to provide the chance of equal questioning as these method focus all and enhance the capacity of students.

Regular class observation showed that the main way of making class inclusive and participatory was only the use of blackboard. The mathematics teacher writes some problem and tried to engage all students within the problem of blackboard where the above mentioned method of teaching could not be seen. In this respect the appropriate use of teaching method in math class seem to be very weak.

Potent Behaviors that Lead to Bias, Discrimination, Prejudice and Violence in the Classroom

Following are the responses taken over the question that what kinds of math teacher's behavior create discrimination and violence in mathematics class. The

following views make clear that most of the teachers said that the violence and discrimination could be created in mathematics class when the teachers used the teacher oriented teaching method; perform classroom behavior being based on single caste or ethnicity and also the use of teaching materials which could not represent the multi-ethnic students. Such kinds of classroom teaching would be unable to do justice to all students.

“We use teacher oriented teaching learning activities which may result bias, discrimination and violence in the classes”.

“We make activities without considering ethnical balance which generates bias teaching behaviors”.

Similarly, the students’ responses regarding the violence and discrimination created in classroom are as follows according to them most of students said that the teacher did not have knowledge of questioning to all students equally which created violence in classroom. Some of the students said that teacher does not like some particular students in class, so violence was created in classroom.

“Teacher does not have knowledge at question to all students equally. Sometime, they discriminate us because we are not belonging to his/her castes and races.”

Rest of the students said that most of the violence and discrimination were created in classroom as their teachers were not serious about their language.

“They are not serious about our language so they don’t like us”. (student’s view)

As classroom was diverse, there were student who used to speak different language but class was performed only in single language which was responsible to create the discrimination among the students.

To justify the above statement the following exposed clarifies the analysis more clearly.

Episode-2

It is in the observed class; one day teacher enters the classroom with daily using study materials and write a topic 'profit and losses'. At the lesson and review the previous lesson about few minutes. It is not seen that the students are known about the concept of profit and loss for previous class then the teacher solve a problem related to the exercise by using the problem solving method. There are 41 students in the class room. It is seen that only talented and upper caste students are sitting in front of the class and poor students and low caste students are sitting in the backside of the classroom. Teacher is in his own way while solving the problem. He is focusing only to the front seated boys. He is making the subject matter clear only to the talented students. Rests of the students are not asking the question. The teacher is only solving the problem on the blackboard by neglecting the creativity of the students.

Class observation showed that most of the math teacher used the problem solving method is used only among talented students but neglected the sexual bases. As a result discrimination between talented and poor students was seen. The being the case, other multi-ethnic students also did not pay attention in teaching learning activities. This proved the discrimination among students.

Teacher's Awareness and conscious about Bias, Discrimination, Bias and Violence

Potent violence, discrimination, prejudices and biases that the teacher may carry in classroom and classroom activities play a significant role in students' impression in teaching and learning. With these potent factors teachers may not be aware and conscious while dealing with multi-ethnic children. In this regard, the following frequent repeated responses were available in the box. According to the teacher, almost teacher (100%) revealed that they were conscious about the potent violence, discrimination and prejudices.

Table no. 4.2

Yes	100%
No	0%
No idea	0%

However, Gramsci (1996) gives the concept of hegemony which describes how people agree to do things under the pressure of invisible cultural power (Cited in Corson 1998). This reflects that whatever the math teacher deals with the classroom or whether their behavior are discriminative or impartial, students supposed that such behaviors of teacher are for their well being, for their favor, and not for the teachers. So the students do not see the discriminative and violence behaviors of teacher towards them due to the power, privilege and right of the teacher. Therefore, student gave their responses about the possible violence and discrimination that happened in the classroom, which they responded as follows:

“Teachers give clear concept with examples and including different methods. When we make mistakes, they solve the problems, and sometimes provide us with good remarks” (Students’ view)

According to the students, math teacher were all conscious about the violence, discrimination and partiality that might occur in class and they diminished such kinds of violence and discrimination by solving the difficult problems in class. In doing so, teachers took some practical example to simplify the problem. For new subject matter teacher used their maximum capacity to give knowledge to their students. Also the student agreed that the math teacher used different teaching methods while teaching new subject matter. That means, the teaching method varied as per the topic and subject matter. They said that their teacher diminished the violence and discrimination as they equally paid their attention to the mistakes made by student.

“Teacher helps us in our difficulty with providing materials related to mathematics. Along with this they use to solve our problems using problem solving methods such as in notation and verbal problems”. (Student’s view)

They said that teacher used enough teaching materials while teaching the class, and also made them involve in many classroom activities. Teacher managed the reward for the students securing highest mark in the final exam and reinforced to

other student in class as well. Math teacher used problem solving method to teach different mathematical figure and verbal problems in simple way. These were the factors that could minimize the violence, discrimination and partiality that arose in class.

In the class observation, the classroom behaviors of both teachers and students are given in the following episode.

Episode-3

It is in the observed class in mathematics teaching, one day the mathematics teacher enters the classroom with the daily using materials. He writes the topic. He is teaching the theorem -1 from geometry. Teacher writes the statement of the theorem solve the problem in his own way. The multi –ethnic student are busy in copying the blackboard. They are unknown to the subject matter. When a janajati student asks a question, the teacher gives the answer discouraging him. Other students are having side talk in the class. After solving the theorem the teacher gives a problem that is to take out the geometrical value but only the front seated talented students performed it and the rest of them are in dilemma. The teacher scolds to the students as they do not do the class work but does not try to find out that why do so. At that time the students do not give any responses rather they are seeing to the teacher as he is a philosopher and the teacher also thinking same.

Whatever the teacher and students responded, regular class observation showed that teacher did not pay attention to the needs and interest of multi-ethnic students rather they taught on their own way. As a result, only some of the talented and forwarded students were benefited and rest of the students who usually sit in the backward benches could not get any knowledge from the classroom learning. Among them some of the students were busy in copying the other's writing and some were in talking each other with tricking the teachers. Apart from that, teacher also used to scold the students when they asked even a general question which showed that the teacher was not paying attention towards the violence and discrimination created in classroom. And, students were also unfamiliar with such kinds of violence and discrimination happened in the class.

Mathematics Teaching Behavior as Per the Need of Different Ethnic Identities

While discussing the need of the ethnic students, there were different things to be considered. Among them the teachers were to be trained in terms of ethnic and linguistic diversity. Following are the responses given by the question that which kinds of teaching behavior are essential as per the necessity of multi-ethnic teaching behavior are essential as per the necessity of multi-ethnic students.

“We want to be managed classroom by using the teaching method based on justice and multi-lingual and multi-ethnic training”. (Teacher’s view)

The above responses proved that teacher focused on the management of class to teach as per the needs of multi-ethnic students. They also said that the equal learning experiences could be given to the multi-ethnic students only when using the teaching method based on justice performed the classroom teaching. Furthermore they saw the necessity of training for teacher regarding the cultures and language of different castes, as they are unknown to it.

“We want class performance in group by balancing different caste and teachers should encourage the students to take part in teaching learning activities and extracurricular activities by avoiding partiality, bias, and violence and also should make them participate in equal group activities”. (Teacher’s view).

The teacher felt the necessity of teaching behavior that encouraged the students to be participated in teaching learning activities and other extra-curricular activities by balancing the multi-ethnic students in a group. Additionally, the teacher said that the behavior against the violence, Discrimination and partiality were necessary among the teachers.

“Teachers should be multi-talented person with inclusive and intricate class teaching who should be able to manage the multilingual and multi-ethnic curriculum by giving emphasis on problem solving method”. (Teacher’s view)

They insisted on the management of multi-lingual and multi-ethnic curriculum in order to address the necessity of diverse students. Teachers themselves should be the multi-talented person and should focus on problem solving method while teaching in classroom.

Students Perception on the Problems of Mathematics Teaching

Following are the responses given by teacher on the question that what are the problems may the students feel in teaching and learning of mathematics in class.

“Teacher said that, the problems in mathematics class are due to the different learning way and quality of students where as some of them commented on the teaching learning behavior of teacher as well”. (Teacher’s view)

“Cultural difference among student and unsuitability of teaching learning materials are also some the problems of mathematics teaching.” (Teacher’s view)

By analyzing the above views, it was seen that about most of teachers had felt that the student’s individual differences in capacity and learning styles had created the problems in learning. And, other teachers had taken the cultural differences as the main factor to create problems in learning. Some of the teachers insisted on the unsuitability of teaching materials and teaching learning behavior for creating problems in learning. They had accepted that the behavior and culture of teacher, lack of educational materials that were suitable to represent the culture were the facing factors for creating problems in classroom. They argued that this kind of problems could be decreased if teacher understood the multi-talent of students and their individual differences. Followings are the views of students:

“They find problem in mathematics class due to the difference among the cultures of students and also due to the partial behaviors of teacher. Apart from that the difficult subject matter and problems in language are some of the causes to create problems.”

As mentioned above, it was proved from the views of students that almost students were from different community sharing different cultures. So for these students cultural difference was the main issue that had created problems in learning mathematics class. Similarly, some of students said that the problem in math class was created due to the different kinds of behavior performed by teacher in class resulting to the unequal achievement of learning experiences. And, few students claimed that it was all due to the difficulty level of subject matter. Rest, very less said the problem was created in class due to the unclear language used by teacher in class.

About the used methods, the class observation had the following episode:

Episode-4

It is in the observed class of the mathematics teaching. One day the teacher enters the class with his regular materials. He does short discussion over the previous day's lesson by writing the today's topic on the blackboard. The topic for that day is compound interest. It is found that the teacher has tried to make the students clear about the compound interest. But only the teacher is active and the students are passive audience. Also the teacher eyes are only in the front seated students. After that the teacher solves a problem of simple interest and compound interest but while solving these problems the teacher used the traditional method. It is found that the teacher is not dedicated towards his profession. He has discriminated to the students while questioning them. It seems that he is only trying to pass the time. Both, teacher and students are passive.

Whatever the responses of teacher and students might be, it was seen from the direct class observation that teacher oriented method and descriptive method were being used in class teaching which were full of partiality. Teachers were not motivated in their teaching profession. Unequal questioning in classroom was only for the sake of questioning and it was all only to pass the time. Not only teachers but also students motivated towards education. They only copied the blackboard. These all showed that, the multi-ethnic students were facing problems in mathematics class.

Ways of providing Equal Learning Experiences for Multi Ethnic Students in Mathematics Learning

Providing equal learning experiences to ethnically plural class is hard work to the teachers since different hindering factors affects the learning of these different ethnic students. In this connection UNICEF (1999) states that there is sample research showing that students are quicker to learn to read and acquire other academic skill when first taught in mother tongue language. They also learn a second language more quickly than those initially taught to read in an unfamiliar language. With this reference the followings are the views given by teacher for the question that what should be done to provide equal teaching learning experiences to multi-ethnic students:

“We want refer multi-lingual curriculum and also the teacher training on them including changes in entire environment of school.”

After analyzing the above views it was found that, teacher argued that the equal learning experiences could be provided to the multi-ethnic students only by making multi-ethnic and multi-lingual curriculum. They also insisted on the necessity of training based on teaching multi-ethnic and multi-lingual class for teacher.

“Teachers are to be trained using teaching methods based on the social justice as well as material are to be prepared representing ethnicity and culture”

Less of them forced in the classroom performance by using the teaching methods based on justice and rest of the teacher said that using the teaching materials that can represent the multi-cultural, could provide the equal learning experiences to the multi-ethnic. And, also suggested these all could be done by bringing change in the entire environment of the school. Similarly, following are the views of students:

“We want teacher use student oriented teaching methods and use of reinforcement and motivation in order to build a classroom democracy”.

The above student’s responses proved that students felt that the equal learning experiences could be gained if the teacher used student oriented teaching method. The role of reinforcement and motivation in education was high. So if teacher became well informed and knowledgeable to use such kinds of motivating factors in classroom then the equal learning experiences could be achieved. The democratic environment of class and the appropriate use of language help to achieve the equal learning experiences.

“We want curriculum and educational materials based on multi-lingual and the teacher should play role of facilitator not of decision maker”.

Furthermore, the role of teacher should be only of facilitator but not of as decision maker. Apart from theses all, if the curriculum could be improved as multi-ethnic and multi-lingual then the students could achieve the equal learning experiences. If above described things were applied in classroom for effective teaching and learning then the students could get the equal learning experiences.

But the regular class observation showed that teacher was unable to share the teaching experiences while teaching in class. Teachers had not discussed about the various cultural factors of different multi-cultural students, for example while solving the problems of mathematics, the teachers just wrote on the blackboard and tried to make understand the student only by the lecture method. They scolded the students in class when the students made noise but never tried to understand the causes of making noise. And, the students also did not ask question to the teacher due to the fear of being scolded, and they completed the homework also only in the pressure of teacher.

Teacher's Perception on Hindrances to Teaching Different Students

Followings are the response of teacher on the question about what are the hindrances that a math teacher faces in classroom while teaching mathematics. In this regard, UNESCO (2003) states that at elementary level instruction through home language has psychological, sociological and educational strategies.

"We feel difficulty due to language while teaching students who are different in terms of language and ability". (Teacher's view)

Therefore, it is natural for the teacher to feel the difficulty in teaching students who are from different cultural and linguistic background. If students were taught in their language they would have educational, psychological, and sociological impact on their study. But the present teaching of mathematics showed that teacher were teaching in mainstreaming language so that not only student were facing difficulty but also teachers were facing difficulty but also teachers were experiencing uneasy. The response of teacher as given above proved that the problem of language was the main hindrance to contribute equal learning experience in multi-ethnic class. For example solving verbal problem students felts difficult.

"Ethnic student do not take part in various activities therefore we feel difficulty in providing equal learning experience to all" (teacher's view).

Similarly, each individual coming from different societies had individual quality. The culture among them also differed from one another which always created a kind of conflict among them resulted in difficulty in socialization. These factors hindered the teachers to manage the environment so that the teacher could make all students

equally participated in different activities. As a result, it had been difficult to manage the class and contribute an equal learning experience among all students.

“We practice hard to make ethnics students involving different activities but they feel shyness and feeling of humiliation and low speaking automatically”. (Teacher’s view).

Additionally, the characteristics of students like less speaking, low presence in class, and feeling of humiliation while questioning and less concerned over the subject were the factors that created difficulty and hindrance in class room.

Similar to that, following are the responses given by students:

“We want qualified mathematics teacher who are clear in mathematics and language, can give examples related to ethnic culture and diversity and have knowledge of cultural diversities”. (Student’s view).

In teaching multi-ethnic class the examples given in a class should represent different caste and culture by making the class justifiable. Furthermore, they desired to organize new curriculum for the multi-ethnic student and the variability in classroom teaching.

Whatever the response of teachers and students, it was seen from the class observation that there was a difficulty in managing the class which was very large. Teacher had adopted a teacher centered method as a traditional practice and exposed the idea on students, shyness, afraid, to speak in class with teacher and imbalance within the students regarding caste ambiguity over subject matter were found in the teacher. It was found, teacher were not being able to make all student participate equally in classroom activities. It is also found that there was difficult to manage the multi-ethnic class due to lack of knowledge about managing multi-ethnic students. While making all students equal participate in classroom activities as a effort made by teacher, only talented and forwarded student used to pay attention to the teacher and rest of the student were in their own atmosphere.

Chapter V

SUMMARY, FINDINGS, CONCLUSION ANDRECOMENDATION

After the analysis and interpretation of the collected data, according to design an attempt has been made to summarize and enlist the findings, providing some recommendation for pedagogical purpose.

Especially, this chapter presents the following four sections.

1. Summary
2. Finding
3. Conclusion
4. Recommendation

Summary

Mathematics learning deals with the practical life of human beings. Therefore Mathematics is taught in all level as compulsory subjects in school level, and optional subjects in higher education. This being the case, it is necessary behavior of students and teacher in the classroom. So that Mathematics teaching and learning would make effective. Thus this study focused the following area.

- Teaching and learning behaviors of mathematics teacher in order to address the need of diverse students.
- Teaching learning mathematics teachers to involve all the diverse students equally in learning activities.
- Potent discrimination, prejudice and violence that mathematics teacher carry while dealing with different students.
- Problems and obstacles that mathematics teachers experience while dealing with different students in the classroom teaching.
- Student's expectation in mathematics teaching in line with their needs and interest.
- Ways of improving the pedagogical practices that teachers and students perform in the classroom.

The Major objectives of study was to find out the Pedagogical practices of Math teacher in the culturally and linguistically in plural classroom. For meeting the objectives the study was delimitate in ten schools of Kanchanpur Districts purposefully. One school, Shree Santiniketan Higher Secondary school was selected for the class observation and students responses. Other four schools were for the teachers responses. Three different tools were employed for meeting the purpose of the study; they were questionnaire for the teacher interview for the students and class observation for observing the class behavior. The tools were administrated in sample population in the consent of the population. After collecting the data using tabulation, figures and percentage quantitative data were analyzed and interpreted. Qualitative data were analyzed finding out the theme and describing the direct event of classroom behavior.

Findings

Methods for Addressing the Needs of Classroom Diversities

- Disconnected teaching activities and traditional oriented teaching methods and materials.
- The method is basically used in teaching the diverse class is lecture method and descriptive method. Teachers' efforts for Equal Involvement of multi-ethnic Students
- Traditional ways of Using Blackboard, and Chalk as regular practice for involving in classroom activities.
- Lack of appropriate knowledge in mathematics teacher to make all students equally involve in classroom teaching.
- Positive behavior of teachers but indifferent to poor students as well as partly bias, discrimination and violence.
- Unconsciousness and lack of knowledge in teacher is the potent sources of the bias, violence and discrimination in the classroom.
- Language as a barrier to understanding the mathematics results in asking and verifying the difficult problems.
- Less competent math teacher with traditional teaching method practices.
- Psychological barrier such as humiliation, inferiority, shyness and fear in students reduces the behavior of math learning.

- Difference in learning styles of different cultural students as major problems.
- Unrepresentative of teaching materials and classroom behaviors as the problems of teaching mathematics.
- Management of Multi-lingual and multi-ethnic classroom teaching and curriculum.
- Social justice in classroom teaching for equal learning experiences.

Conclusion

Teaching multi ethnic student in the classroom like ours is challenging. Therefore, it is essential to explore the methods and materials that meet needs of the students in mathematics teaching are very urgent. Along with this, teachers need to understand the classroom diversity and their diverse needs and expectation. For this, teachers are to be involved in different cultural traditions of the community. For this schools should manage extra-curriculum activities related to the cultural traditions of the community so that not only teachers but also students could take a direct benefit of the program. Lack of necessary training and experience in math teachers it is difficult for them to make all students equally participate in multi-ethnic classroom teaching. Then they are facing several problems such failure of the students, comment from parents, and blame of partiality, bias, discrimination. Encouragement only to talented and capable students, neglecting other students on the basis of culture, language and caste are the main factors for causing problems in math teachers. It is due to their ignorance rather than the intended bias, discrimination and prejudices in math teaching. It seems that as per the students' identities, and different learning styles, math teachers are not trained, updated so that violence and discrimination are occurring naturally. In math teaching the teacher often assigned the task on blackboard and asks all to solve the problem but not give the attention to the students who are poor, who are sitting back of the classroom and who are sitting on the place where teacher often does not reach the students in the classroom. Therefore, training, orientation, multi-ethnic teaching skill, knowledge of local community and cultural variability, and changes in the teacher teaching culture will be a positive back up for the math teaching in teachers in the days to come.

Recommendations

After conducting this study, the researcher got some finding. On the basis of those findings, the researcher would like to suggest some recommendation as follows

- It is essential to redefine the philosophy of mathematics education with reference to global practice and local needs so that every student could take benefit.
- It is necessary to find out the necessity of multi-ethnic students and for this different kinds of research and studies are necessary.
- It is seen that training and orientation is necessary for math teacher in order to manage multi-ethnic or diverse classroom.
- Educational program should be organized to enhance the capacity of math teacher to identify the necessity and learning capacity of multicultural students in math class.
- Language is not the major issues of mathematics learning rather it is to be used to convey the information where students feel difficulty and should give the flexibility in using the language as per the easiness of the community.
- The curriculum of mathematics should be made relevant to the everyday need of multi-ethnic students.

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Appendix -1(0-10) Minutes

Teachers Activities

- The talented students were asked to solve the problems coming before the classroom
- Asking the formula
- Punishment was given being based on the homework done
- The priority was given to the students who corrected the problem first
- Single problem was assigned to all students
- Reward and punishment
- General punishment to the poor students
- Depending on the previous lesson opportunity is given to the all students about the content
- Partially teacher was bias and discriminative question to the students
- Students feel discomfort when they did not understood the language of teacher
- Encouraging all the students in classroom activities
- Grouping all the students without discriminating them
- Equal behavior was seen to all the students
- Some language of teachers were rude and vulgar and directed towards particular caste or race

Appendix-2 (0-10) minutes

Student's Activities

- Some were busy on talking
- Some were busy in discussing the previous content
- Backward students or students of backward caste were busy in copying without understanding
- Students were accusing and dominating each other
- Teachers make students aware about the content that were

Appendix-3 (10-30) minutes

Teacher's Activities

- Linkage of subject matter with practice
- Solving the difficulty problem by writing on the board
- Writing formula on the board unclearly
- Discussion only focusing on talented students
- Discussion with related contents matter
- Solved problems demonstrated in a card board
- Solved problems were discussed only talented and high caste students
- Students are directed to solve the problem on the blackboard when they don't solve teacher shows rude behavior
- Problem was solving putting on the table of discussion
- Teacher performed the roles as a facilitator
- Problem was solved providing equal opportunities for all
- According to the content of the course class was initiated

Appendix-4 (10-30) minutes

Student's Activities

- All engage in discussion,
- Some were confused and some were busy in copying others writing
- Some were taking attention to teacher and some were talking
- Talented were busy in discussion and poor were busy in copying
- Poor students were unnecessarily feared
- Less interested in solving the problems
- Teacher did not care the students variability
- Students presented to be understood due to teacher's fear
- Partially were active

Appendix-5 (30-45) minutes

Teacher's Activities

- Use demonstration and deductive methods frequently
- Evaluation was conducted on only talented and first rows students
- A single problem was assigned to all the students
- Teacher did not know whether all students had solved the problem
- Homework was assigned
- A single talent students were assigned a problem to solve coming before the class
- Some problems was assigned writing on the blackboard
- Related questions was asked to the students
- Students who did not solve the problem were behaved negatively
- Teacher behavior partially help
- Simple question were asked as an evaluation

Appendix-5 (30-45) minutes

Student's Activities

- Busy in copying other sides
- Talented were busy in giving answer
- All students were busy solving the problems
- Some students did not answer, teacher did not help
- Some students were frustrated due to teacher's behavior
- Students were engaged in evaluating teacher

Student's Name

1) Hem Raj Bhatt	26) Jyoti Bam
2) Sujan BK	27) DiptiRegmi
3) RambhaLuhar	28) HiraParki
4) TejDhami	29) PriyaThapa
5) Ramesh Sunar	30) DhambarBhat
6) Mohan Choudhary	31) Sanjay Thakur
7) ShyamLalRana	32) Sheila Rai
8) Chandra Dev Bhatt	33) Kunsang Lama
9) SherBahadurChoudhary	34) Dikshya Chand
10) Min BahadurChoudhary	35) DiyaMalla
11) Sanjay Tamata	36) PoojaSah
12) RajuLuhar	37) Adesh Bhatt
13) SharmilaThapamagar	38) Surya Gurung
14) SanjuRanamagar	39) DilipMagar
15) SrijanaGurung	40) Raj Lama
16) GautamRana	41) SupriyaGiri
17) SushilDhami	42) Gita Rai
18) Sagar Kami	43) AkashChettri
19) SouravSunar	44) Ram Paswan
20) Sagar Bhatt	45) Rukshar Ansari
21) NishaKalouni	46) Rajesh Sunar
22) MansiLuhar	47) PhaltuRana
23) Dhij Raj Bhatt	48) Sunil dhangora
24) Harsh Bahadur Chand	49) Sunil Rana
25) Man BahadurRana	50) PriyaTamang

Teacher's Name

- 1) Dharma Raj Joshi
- 2) NirmalaKumariPaneru
- 3) Dharam Raj Joshi
- 4) Nav Raj Bhat
- 5) LaxmiDatt Bhatt

- 6) Ghanshyam Bhatt
- 7) Nabin Singh Dhami
- 8) Chakra Singh Pwali
- 9) ChudamaniAwasthi
- 10) Shiv Datt Joshi
- 11) Lok Raj Pant
- 12) Harish Chandra Joshi
- 13) Ghedu Ram Rana
- 14) Mahesh Chand
- 15) Bahadur Chand
- 16) Kamala Kalouni
- 17) Mahesh Rana
- 18) Krishna Bahadur Chand
- 19) Ghanshyam Pant
- 20) KalyanLuhar

Teacher Questionnaire

Teacher name:.....

School name:.....

Time:.....

Level:.....

1. The type of class where you have been teaching?

-uni-ethnic group class

-multiethnic group class

2. If, you have been teaching in multiethnic class how have you been addressing the learning problem of all type students?

.....
.....

3. What are the techniques that you have been applying while teaching in multiethnic classes?

-Lecturer method

-Demonstration method

-Interactive method

-Inductive method

-Deductive method

-Problem solving method

4. What is the most useful technique that you have been applying in multiethnic class and why?

.....
.....

5. How do you make the students in multiethnic class involve equally in teaching learning activities?

- Participating group activities
- In a group with balance of all the ethnic group students
- Keeping balance in teaching learning and answer question activities
- I encourage all in curricular co curricular activities
- Making all the students aware of discrimination

6. What sort of teaching learning activities may be biased, discriminating and violent?

.....
.....

7. Are you always aware of discrimination, biasness and violence that may take place in mathematics class?

- Yes
- No
- I don't know

8. What type of obstacles and difficulties you have felt while teaching multiethnic students?

.....
.....

9. What sort of behavior do you think is suitable according to the multiethnic group students need?

.....
.....

10. What sort of problems do the students of multiethnic group may feel?

- Teachers teaching learning behavior
- Inappropriate use of teaching learning materials
- Students multi abilities and learning capacity
- Cultural differences among students

11. What should be done to provide balance teaching learning to the students of multiethnic groups?

- By managing multilingual and multiethnic curriculum
- By managing teaching learning material that can reflect multiethnic and multicultural needs
- By providing training based on multiethnic and multi lingual students need base
- Through overall change in the school environment

a) Becomes angry when I question him/her.

b) He does not care my question rather question to the students belong to his/her casts.

c) He/she punished me if I question him/her.

d) I do not feel comfort questioning in teachers language.

4. Do your teachers make question equally to you in mathematics classroom?

a) Yes

b) No

-If yes, does your teacher ask question to all of students

a) Yes

b) No

5. What problem do you feel frequently experience in mathematics class?

a) Difficult subject matter

b) Problem in language

c) Partial behavior of teacher

d) Difference among the culture of students.

6. If your teacher used to ask question only a particular group of students, what do you think that he/she avoids you or other friends in asking the questions?

a) Because, I am not belonged to he/she caste or race.

b) Because, he/she is not serious about my language.

c) Because, he/she does not like me.

d) Because, he/she does not have knowledge of questioning to all students equally.

7. Do your teachers help you while you are in difficulty for learning mathematics in the classroom?

a) Yes

b) No

- If yes, what kind of help do the teacher provides you?

.....
.....
.....
.....

-If no, what reasons you think responsible for not helping you in such situation?

.....
.....
.....

8. In what ways does your teacher equally involve you in mathematics learning?

- a) Group activities
- b) Equal questioning
- c) Encourages to be participated in extra-curriculum activities
- d) Concerning all in problem solving
- e) Individual helped by teacher

9. Finally, what are your proper of teaching in terms of?

- a) Medium of instruction.
- b) Teachers behavior.
- c) Nature of contents you study.

OBSERVATION FORM

Name

/

address:-

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Time interval	Teachers activities and major behavior language, biasness motivating	Students activity	Examples	Teaching materials	Remarks
0-10 min Introductory and warm up phase					
10-30 min Teaching phase					
30-45 min Evaluation and wrapping up phase					