MOTIVATING FACTORS IN LEARNING MATHEMATICS

A

THESIS

BY

MANJU PANTH

IN THE PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE

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LETTER OF CERTIFICATE

This is certify Mrs. Manju Panth, a student of academic year 2071/073 B.S. with campus Roll No. 540, Exam Roll No.28710304 , thesis number 1557 and T.U. Regd. No. 9-2-571-108-2009 has completed her thesis under my supervision during the prescribed by the rules and regulations of T.U. Nepal. This thesis entitled **"MOTIVATING FACTORS IN LEARNING MATHEMATICS"** embodies the result of her investigation conducted during the period of December 2019 to April 2021 at the Department of Mathematics Education, Tribhuvan University, Kathmandu. I recommended and forward that her thesis has submitted for the evaluation to award the Degree of Master of Education.

.....

Prof. Dr. Bed Raj Achrya

Head of Department

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LETTER OF APPROVAL

This thesis submitted by **Mrs. Manju Panth,** entitled on **"MOTIVATING FACTORS IN LEARNING MATHEMATICS"** has been approved as for the partial fulfillment for the requirement of Master Degree in Mathematics education.

Viva- voce committee	**Signature**
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RECOMMENDATION FOR ACCEPTANCE

This is to certify that Mrs. Manju Panth has completed her M.Ed. thesis entitled on **"MOTIVATING FACTORS IN LEARNING MATHEMATICS"** under my supervision during the period prescribed by the rules and regulation of Tribhuvan University, Kathmandu, Nepal. I recommended and forward her thesis to the Department of Mathematics Education to organize final viva-voice.

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Defense Date: 2021

DECLARATION

This research paper contains no material, which has accepted for the award of other degree in any instruction. To the best of acknowledgement and belief this research paper contains no materials previously published by any others except due acknowledgement has been make.

……..

Manju Panth

DEDICATION

This research paper has been dedicated to my parents, husband and my sister in honor of their support and confidence that enlightened me to get this work into fruition. Their moral, ethical competent and confidence guidance always empowered me.

ACKNOWLEDGEMENT

This research study is the culmination of efforts and contributions from many whom I remain grateful for their support and guidance. Primarily, I would like to express my heartfelt gratitude to my supervisor, Prof. Dr. Bed Raj Acharya for his consistent guidance, warm support, and kindling encouragement. This thesis would have taken the present form without his intellectual guidance.

Similarly, I would like to express my heartfelt gratitude to all the Professors, Readers, and Members of the Department of Mathematics Education for their suggestion and encouragement to complete this thesis.

At last but not least, my heartfelt gratitude goes to my father Mr. Tikanidhi Panth, my mother Mrs. Kalpana Panth who encouraged and supported me for this study with a strong faith in academic pursuit. They are the greatest source of inspiration for me. I am equally grateful to my family, my husband, Mr. Mohan Paudel, as well as my brothers, Nishant Tiwari, Ramesh Panth, and my sister Prakriti Panth who always inspired and supported me to complete the research work on time.

……..

Manju Panth

ACRONYMS

B.S.	: Bikram Sambat
ICT	: Information and Communication Technology
M Ed	: Master in Education
PTA	: Parent-Teacher Association
TU	: Tribhuvan University

ABSTRACT

The main purpose of this research was to find out the motivating factors of learning mathematics and the strategies taken by the teacher to motivate the students for learning mathematics. The research design of the study was qualitative. The research was conducted at Shree Samundra Secondary School, Nuwakot. The sample of this study were 3 students, 1 head teacher, and 2 mathematics teachers altogether six persons were sample of this study. These sample were selected through purposive sampling methods. The tools used in the data collection procedure were interview and classroom observation techniques. Data were analyzed and interpreted by coding, categorizing, and thematizing.

Then, it was found that interest of subject matter, good classroom environment, ,innovative teaching method, good behavior of teachers, peer group, appropriate home work, and good home environment were the main motivating factors for learning mathematics. In addition, teaching mathematics using ICT tools, teaching mathematics by using constructivism, teaching mathematics using different games, and teaching mathematics linking with students daily life context were the main strategies use by the teacher to motivate the students for better learning mathematics.

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Chapter I

INTRODUCTION

Background of the Study

Mathematics is the science that deals with the logic of shape, quantity, and arrangement. Mathematics is all around us, in everything we do. It is the building block for everything in our daily lives, including mobile devices, architecture (ancient and modern), art, money, engineering, and even sports. We live in a mathematical world, wherever we decide a purchase, choose an insurance or health plan or use a spreadsheet, we rely on mathematical understanding. The level of mathematical thinking and problem-solving needed in the workplace has increased dramatically. In such a world, those who understand and can do mathematics will have opportunities that others do not. Mathematical competencies open the doors to a productive future. A lack of mathematical competencies closes those doors. Students have different abilities, needs, and interests. Yet everyone needs to be able to use mathematics in his /her personal life, in the workplace in further study. All students deserve an opportunity to understand the power and beauty of mathematics. Students need to learn a new set of mathematics bases that enables them to compute fluently and to solve problems carefully and resourcefully.

The quality of teaching and learning in mathematics is a major challenge and for educators. General concern about mathematics achievement has been evident for the last 20 years. The current debate among scholars is what students should learn to be successful in mathematics. The discussion emphasizes new instructional design techniques to produce individuals who can understand and apply fundamental mathematic concepts. A central and persisting issue is how to provide instructional

environments, conditions, methods, and solutions that achieve learning goals for students with different skill and ability levels. Innovative instructional approaches and techniques should be developed to ensure that students become successful learners. Educators need to adopt instructional design techniques to attain higher achievement rates in mathematics (Rasmussen & Marrongelle, 2006).

To understand the factors associated with mathematics achievement, researchers have focused on many factors. (Beaton and Dwyer, 2002; Kellaghan and Madaus, 2002; Kifer, 2002). The impact of various demographic, social, economic, and educational factors on students' math achievement continues to be of great interest to educators and researchers. For instance, Israel et al., (2001) concluded that parents' socioeconomic status is correlated with a child's educational achievement. Another study by Jensen and Seltzer (2000) showed that factors such as individual study, parents 'role, and social environment had a significant influence on "further education" decisions and achievements of young students. In another study, Meece, Wigfield, and Eccles (1990) investigated cognitive motivational variables that influence high school students' decisions to enroll in advanced math courses. Their findings revealed that math ability perceptions affect students' valuing of math and their expectations for achievement. A growing body of research provides additional factors which could have an impact on students' achievement such as gender, family structure, parents' educational level, socio-economic status, parent and student attitudes toward school, and parent involvement (Campbell et al., 2000; Epstein, 1991; Fennema and Sherman, 1976, 1986; Fluty, 1997). Three factors or predictors in math achievement are divided into sub-factors: Demographic Factors (gender, socio-economic status, parent's educational level), Instructional Factors (teacher competency, instructional strategies, and techniques, curriculum, school context, and

facilities), and Individual Factors (self-directed learning, arithmetic ability, motivation). These are examined in the literature review below. A growing body of research findings indicates that demographic, individual, and instructional factors have an impact on the mathematical achievement of students. Identifying motivating factors that affect mathematics achievement is particularly important to effectively educate new generations in, what is for many, a difficult subject. It also provides instructional designers better inputs for their design decisions.

Statement of the problems

Problems related to learning Mathematics are a common phenomenon among students around the world. This holds in the Nepalese context too; several factors do influence students' Mathematics achievement positively or negatively. This research is undertake to examine factors that are associated with the student's achievement in mathematics. Today, other disciplines such as science, engineering, medicine, and technology may be handicapped without mathematics and the world cannot run smoothly without the application of mathematics. It has become a gatekeeper in the life of students for their career choice in further study. Therefore, mathematics is the central part of the curriculum not only in Nepal but also in the entire world. Most of the students in Nepalese schools are poor in mathematics. Almost all educational surveys of school education in Nepal so the poor achievement in mathematics. Moreover, mathematics is a multicultural subject so everybody should know mathematics. The following questions were raised to guide the study:

What are the motivating factors in learning mathematics of grade XI students?

What types of strategies taken by the teacher to motivate the students for learning Mathematics?

Objective of the Study

The study has the following objectives:

1. To identify motivating factors in learning mathematics of grade XI students
2. To explore the strategies use by the teachers to motivate the students for better learning mathematics.

Rational of the Study

As far as possible, the researcher will be a great endeavor to assemble his real experience, feeling, and thought. As his belief and great effort on this study, the researcher hopes that his finding will be fruitful for me as well as also productive for others. This study is helpful to the students who are teaching basic mathematics. Those teachers who are a novice in teaching career they may take benefit from this study. This study is helpful for the author of basic mathematic who will write the text of basic mathematics. Also, it could be beneficial how the basic mathematical contents associated with the curriculum. It is fruitful for the stakeholder and agencies to step further. In short, the following are the significance of the study.

- It would contribute to finding a way to decrease the failure rate of the students.
- It would help to guide the instruction on the basis of individual differences.
- It would help the curriculum planners, textbook writers, policymakers equally.
- It would help the government to adopt globally for the education level.
- It would beneficial to the math teacher and parents.

Delimitation of the Study

The study was limited to the following areas:

- This study was based on only one government school in Nuwakot district
- This study was including only grade XI students
- This study was limited to the Basic Mathematics of Grade XI

Operational Definition of Key Terms

Motivational factors. Factors that Affect Student Motivation, Student motivation can be affected by several factors. These elements include interest, environment, teaching method, teachers' behavior, facilities, etc.

Interest of subject matter. It refers to the number of students who like or dislike particular things like readiness to learn, active participation in quizzes, projects, and so on.

Good school environment. A school environment is broadly characterized by its facilities, classrooms, school-based health supports, and disciplinary policies and practices. It sets the stage for the external factors that affect students.

Innovative teaching method. The term teaching method refers to the general principles, pedagogy, and management strategies used for classroom instruction. The term teaching method refers to the general principles, pedagogy, and management strategies used for classroom instruction.

Good behavior of teacher . Teacher behavior is action, interaction, and communication of the teacher with the students.

Peer group. It is related to the behavior among student about mathematical problem and way of solutions. It helps to exchange their knowledge.

Appropriate amount of homework. It helps elementary students develop proper study skills which, in turn, influence grades. The national education association along with the national PTA suggests adding 10 minute of homework per night incrementally with each grade level, as a general rule of thumb.

Good home environment. Home environment is the components which describes about the reading room, parents and other education related behaviors. It is crucial component which is directly associated with learning of students.

Chapter II

REVIEW OF RELATED LITERATURE

A review of the related literature is an account of what has been published on a topic accredited scholars, researchers and paves a way to the research endeavor as it clearly visions the status of research conducted earlier to validate the study undertaken. All the research endeavors require knowledge of the previous background to clear the objectives and authenticate the research work. In this section, some of the research papers, books, journals, and the old thesis have been reviewed considering them as related literature also as evidence. There are different research studies concerning the affecting factor of learning mathematics which is directly or indirectly related to achievements of mathematics which had been reviewed in this study. There are so many books, report and related studies have been reviewed to explain the present problem of the study, few related works of literature had been reviewed as follows.

Empirical Literature

Pant (1978) did experimental research work on "Effectiveness of the use of unit test results in enhancing pupil achievement in mathematics" with the objectives to find out the effectiveness of unit tests as a teaching tool for enhancing achievement in mathematics at the seventh grade level of a secondary school in Kathmandu. He selected eight students from one school by systematic sampling and taught eight units from textbooks. Unit tests were given at the end of each unit in the experimental group. A comprehensive test has given multiple choices, completion items. He found that the achievement of the two groups differed significantly.

Rahman (1981) did his thesis for Master's Degree on "Achievement in mathematics by sex: A study of sex differences in achievement in mathematics of seventh-grade students in selected schools of Kathmandu Nagar Panchayat Area with the objectives to investigate whether sex influenced the achievement in mathematics. Achievement test (Knowledge, Skill, Comprehension, and Application) in Arithmetic, Algebra, and Geometry was prepared and administered in five schools. The t-test was applied to conclude that the superiority of the boys over the girls concerning achievement in mathematics as a school subject about achievement in mathematics by area and also cognitive levels.

Ghimire (1997), studied on 'A study on factors affecting teaching/ learning mathematics at secondary level' with the object to study the factors affecting the learning of schools in terms of the following: school environment, family background, motivational factors, physical facilities, the interest of the learners, instructional materials. The tools for the study were administered to a sample of ninety students and a test was applied to conclude the following results.

- The environment of schools in both rural and urban areas affects equally but the boys are more affected than those girls. Students of Argakhanchi and Chitwan were more affected than those in Kathmandu.
- Home environment affects more to the subject of rural areas and girls were affected more than boys.
- The students of Kathmandu were more motivated to study mathematics than that of Arghakhanchi and Chitwan.
- The students of urban areas were more interested in the study of mathematics and the girls paid more attention to this study.

- The students of the rural areas were more affected by the use of instructional materials and girls paid more attention to the use of instructional materials.

Guragai (2001) did research on "A study of achievement in mathematics of primary level students of Morang and Dhankuta districts" with the objectives to compare the achievement in mathematics of primary level students between Morang and Dhankuta districts resembling Terai and Hilly region of Koshi Zone. The researcher developed an achievement test from the prescribed curriculum of grade V. Four hundred students from twenty jour schools were selected. Z-test was applied to conclude that Morang district surpassed Dhankuta district students in every aspect male, female, rural and urban.

Pant (2001) did research work on "A study of achievement in mathematics at primary level in Doti district" intending to study the achievement level in mathematics of grade V students as a whole, by gender and location. Mathematics Achievement Test was prepared by the investor and administered to two hundred students, in six government schools. He concluded that the achievement level of fifth-grade students in mathematics o the Doti district was 44.16% and there was a significant difference in the achievement among the rural schools' students and urban schools' students in mathematics.

Pokhrel (2001) had studied entitled, "Mathematics achievement in school leaving certificate examination between public and private school student at Kaski district." The main conclusion of this study was to mean achievement scores and correlation of private school student in compulsory and optional mathematics was greater than public school student in Kaski district in S.L.C. examination he

concluded that the mathematics achievement of private school is better than public school

Neupane (2001) did his experimental research on "A Study on the Effectiveness of Play Method in Mathematics Teaching at Primary Level." His study intended to answer the question of whether the performance of the pupils of primary level taught by play-way method effect on the mathematics achievement as compared to the traditional method. He collected the data through pre-test and post-test in class one on addition and subtraction. Two equivalent groups were established based on pretest results and randomization. The researcher taught in experimental and control groups for the duration of one week and took a post-test to both groups in some way. The data was analyzed and interpreted statically with a t-test and discovered that the experimental group achieved better performance than the control group. Hence his finding is that the achievement of students taught by the play-way method was significantly different than the achievement of the students taught by the traditional method.

Poudel (2001) did research work on "A study on the effectiveness of class work while teaching geometry at the secondary level" to investigate if the classwork turns to be effective while teaching geometry. The research conducted experimental studies. The researcher taught geometry to both groups (experimental and control). The experimental group was taught the unit class works entwined with the regular classroom whereas the control group was kept detached as far as possible classroom work activities. An achievement test was given. The t-test was used to conclude that the experimental group did better than the control group.

Yadav (2001) did a survey type research carried out on the topic "A study on the effectiveness of the primary school teachers of the district of Siraha" with the objectives to explore the extent of effectiveness parameters in determining the effectiveness of primary school teachers and to compare the effectiveness of rural and urban primary school teachers. Twenty-eight teachers (twenty-two trained six semi-trained teachers) were as a sample. A questionnaire was prepared to solicit the opinions of the teachers. A classroom observation form was also developed to record the classroom situation and activities. U-test and z-test were applied to conduct that teachers were found to be effective. The effectiveness of urban teachers was not found to be significantly different from those of rural teachers.

Shrestha (2002) did research work depending upon the secondary data of the result of SLC examination on "A study of mathematics achievement of private and regular students in SLC examination?" With the aims to identify the trend in mathematics achievement of the students attempting the SLC examination privately and regularly and to compare the overall mathematics achievement of private and regular students. Data were collected from the Lalitpur district of the five years 2054 BS to 2058 BS. The t-test was applied to conclude that the trends in achievement of private and regular students in Lalitpur district in terms of mean scores were similarly decreasing in both cases. The study concluded that the mathematics achievement of the private and regular students did not differ in the examinations.

Subedi (2005), studied on "Factors Affecting Failure in Mathematics in SLC examination". The major findings of the study are given below:

The variable school environment has a strongly positive effect on the failure's mathematics achievement. The variables effective classroom teaching and time-

variable have a mid-positive effect on mathematics achievement. The physical interest of the learner has a low positive effect on mathematics achievement.

Nath (2007), did a study on the topic "A Study of Causes of Failure in Optional Mathematics in SLC Examination". The main findings of this study fir as follow, which are the causes of being a failure. Textbooks are more theoretical. Lack of teaching materials in teaching activities. Teaching without familiar with students' previous knowledge.

Giri (2008) "A critical analysis of SLC Compulsory Mathematics scores 2063." Intending well educational outcomes the state has finance large amounts of money, as well as guardian, also have invented their children education, but the result of SLC is still poor. Mathematics is being the major causes to make student's failure. There is a saying that the course content, the way of managing circumstances, evaluation system all are within the favor advantages group, which always ignores the marginalized and deprived group. Almost all research findings have shown that there is not a unique determination, with affects students' achievement. Factors or variable such as students' gender, parents' education, occupation, location of the school, students' religion, eco-status, teaching skill, environment, class size, medium of instruction is supposed to be the most influencing factors in mathematics achievement. This study was carried out with the view of finding among all variable states about which variable is most influencing.

Parajuli (2011) has studied entitled "Causes of failure in mathematics in S.L.C. examination in community school (A case study of Dhankuta district). In his study, he found school-related factors are peer group, class structure, school presentation, amount of homework and out of school-related factors are parent's

participation, the curiosity of learner, schedule, father's education affects the student's mathematics achievement by using one-way Anova at the significance level □ = 0.5 with the objective what are the causes of failure in mathematics in S.L.C. exam, to what extent school-related factors such as peer group, class structure, amount the homework affects the student's achievement. The tools for the study were administered to a sample of 100 students. The population of his study students' failure in mathematics in SLC examination of 2066 B.S. one way Anova was applied to conclude the following result:

- There was favorable opinion in parents in academic learning
- There was a significant difference in children in mathematics achievement on basis of parents' involvement.
- There was a significant difference in children's mathematics achievement of non-involved parents.

CERID did a national workshop (12 - 16 January 1987) and found the following factor play a great role in achievement in raising the performance level in primary education such as teaching strategies parental support, and school management. The student who completed secondary school can achieve differently in private and public S.L.C. examination but what is the influencing factor in private and public S.L.C. examination? What is the significance of influencing factors in mathematics examination? These are interesting questions the researcher will want to be comparing the mathematics achievement of private and public school student achievement.

Baral (2011) has studied entitled "Causes of failure mathematics in SLC examination (A case study of a school in Bharatpur)." In his study he found school-

related factors are associated with the school environment, physical facilities, teacher's behavior, peer's behavior, manageable library, classroom environment, regularity of teacher and student, instructional teaching materials, etc. and out of school-related factors are associated with family background, the interest of learner towards mathematics, amount of time student spent on school activities such as leisure reading, homework, discussion with peers economic condition, motivation, etc. affect mathematics achievement thorough qualitative as well as descriptive research. To explore the main cause of failure in mathematics in SLC examination and to suggest the main causes of bringing improvement in result by finding the improvement program that can be carried out at the school level. The population of his study student's failure in mathematics in SLC examination of 2066 B.S. in the public school of Saptari district. The tools for the study were administered to the sample of eighty students of eight school in which forty boys and forty girls from the population of the student failure in mathematics in the SLC exam which concluded the following result:

- The student was found to be indifferent in the study because the same teacher who taught more than two subjects (i.e. comp. mathematics, science, opt. math)
- The mathematics teacher was unable to address varied cognitive level's students in the classroom while teaching.
- The school was trying to reduce the problem of mathematics failure by managing extra classes in the evening.

Theoretical Literature

Many learning theories had been useful for the analysis and interpretation of data such as classical conditioning, operant conditioning and trial, and error theory, and so on.

Walberg Model (1981) has defined learning as a function of personal variables and instructional treatment. The learning and performance of learned behaviors are influenced by several factors. Walberg describes a theory of educational productivity requiring an optimization model, which mentions nine factors to influence the achievement of cognitive and effective outcomes. This model includes a paradigm connecting aptitude (ability or prior achievement, motivation or self-concept, and age), instruction (quantity of instruction and quality of the instruction), and environment (home environment, the classroom or school environment, the peer group environment, and the mass media) as inputs to learning (affective, behavioral and cognitive).

Walberg (1981) proposed a theory of educational productivity which has the theoretical foundation of Lewin (1963), formulation of behavior as a function of personality and environment. Walberg's theory requires optimization of nine factors to increase student's achievement of cognitive and affective outcomes. The nine productive factors the student's related variables

- Ability or prior achievement
- Age
- The motivation of self-concept; the instructional variables
- Quantity of instructions

- Quality of instructional experiences; and educationally stimulated psychological aspects
- Home environment
- Classroom or school environment
- The peer group environment
- The mass media (especially television)

These factors were classified into three general groups by Wilkins et al (2002) :

Personal variables, such as prior achievement, age, and motivation of self-concept

Instructional variables, such as the amount of instruction, and

Environmental variables related to the home, teacher, classroom, peers, and media exposure

Caroll Model (1982) mentions that students' achievement depends on the degree of learning. It is a function of the ratio of tasks to the total amount of time assigned. In the learning model, Caroll describes students' achievement, which is affected by five factors.

- Institute for particular kind of learning

According to carol, aptitude is the amount of time required by a learner to attain mastery of given learning tasks.

- Quality of instruction

This should be considered in terms of its effect on individual learns rather than on groups of learners.

- Ability to understand instructions

This is largely determined by verbal ability and reading comprehension. To meet student's need's instruction must be modified.

- Perseverance

Students vary tremendously in the amount of perseverance, they bring to a specific learning task. Perseverance can be increased.

- Time allowed for learning

This the key to mastery. The amount of time provided for traditional courses is too much for some and too little for others.

Bigg's Model (1985) his model mentions that student achievement is influenced by students' personal and situational factors. It directly influences students' performance. Students learn by three types of processes- deep achieving and surface. It also influences students' performance in a given subject. Student's ability and personality also affect the achievement process. The personal factor is affected by the ability, prior knowledge, personality, and home background of a student. The situation factors also remain influential in student achievement. The course structure, instructional methods, the time assigned to perform the task, and task demand are the relevant situational factors.

Conceptual Framework

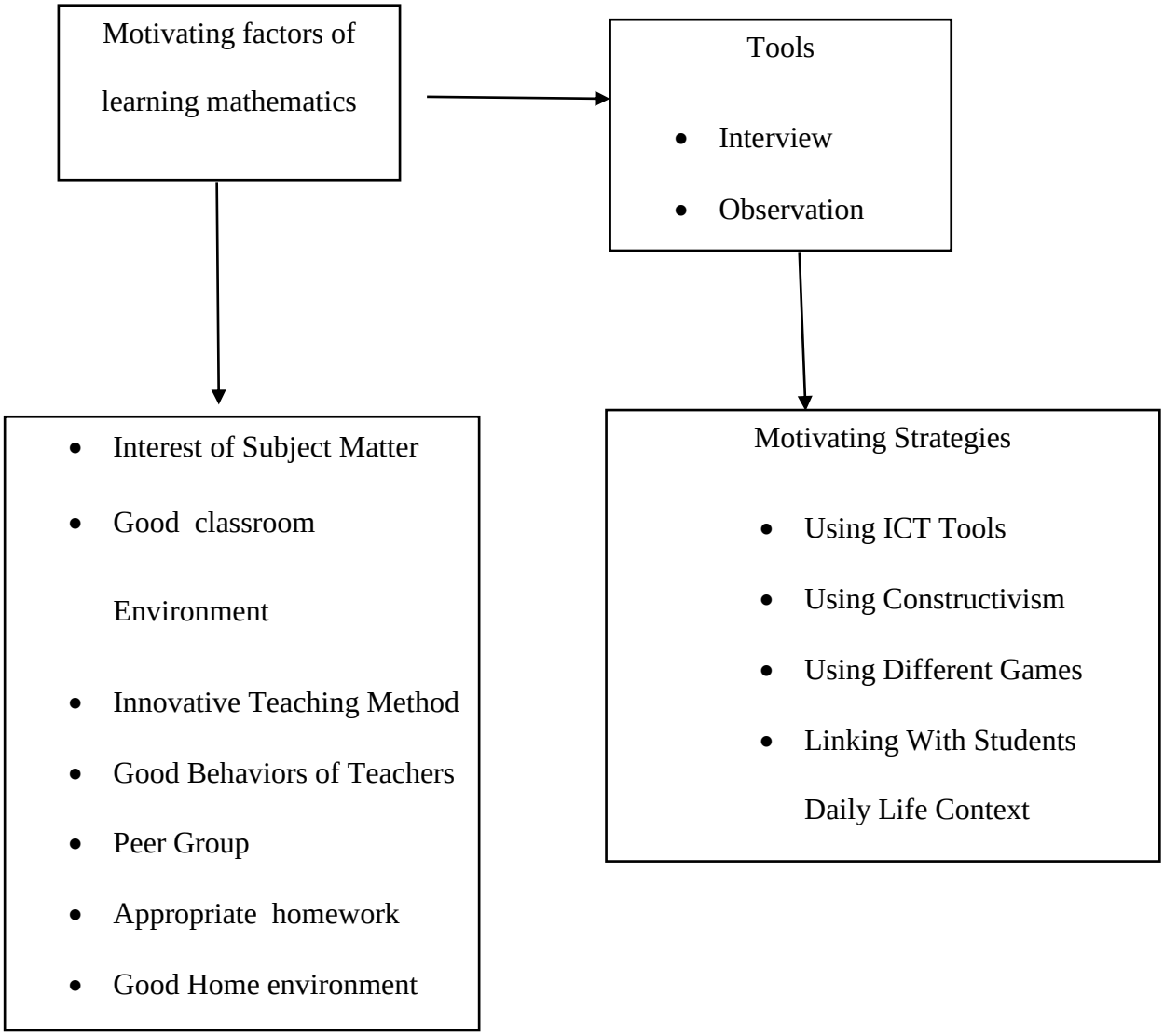
This section deals with the conceptual framework for research. The conceptual framework was established based on the topic's possible areas to fulfill the objectives

of the theoretical framework with the help of a review of empirical literature for the study of motivating factors of learning mathematics. Since the topic is; 'Motivating factors in learning mathematics at Grade XI'. Therefore, the demand of this study was supposed to be those factors, which exactly fulfill the objectives. The responses given by respondents were supposed to be fallen under the following headings:

- Interest of Subject Matter
- Good classroom Environment
- Innovative Teaching Method
- Good Behaviors of Teachers
- Peer Group
- Appropriate homework
- Good Home environment

Based on the above headings, the framework is presented in diagrammatic form below:

Figure: 1 Conceptual Framework



The main theoretical basis of this study was developed from the models of Walberg Model (1981), Caroll Model (1982) Bigg's Model (1985). The purposed model of mathematics, a conceptual framework of motivating factors was established in this research work.

Chapter - III

RESEARCH METHOD AND PROCEDURE

This chapter deals with the research design, population, sample, and sampling strategy, tools for data collection procedure, and data analysis and interpretation procedures. The researcher adopted the following methodology to fulfill the objectives of this study.

Design of the Study

Research design is a plan and strategy of investigation concerned to obtain answers to the research questions. The research design is the detailed plan of the investigation. In fact, it is the blueprint of the investigation. In other words, it is the blueprint of the detailed procedures of analyzing the obtained data (Singh, 2008, p.450). The learning in basic mathematics, which is directly or indirectly related to the different factors. The study is designed to determine the motivating factors in learning mathematics at grade XI. Later, it is qualitative to describe findings. I used the interview schedule and observation notes. The design of the research is a case study with a qualitative approach as well as in descriptive nature.

Study Area

The study was conducted in government school situated on Shivapuri of Nuwakot District. The selected school is Shree Samundra Secondary School. The researcher herself visited the study site to collect information.

Sample

Every research needs a sample. Without a sample, research cannot be conducted. It has a crucial role. So the researcher made the sample where studied.

The population of this study was all mathematics students of one government school in the higher secondary level of Nuwakot. Among them, three students, one head teacher, and two mathematics teachers altogether six people were the samples of this study.

Sampling Procedure

I was taken to one school of Nuwakot was selected by purposive sampling. 3 students were taken from school. One head-teachers, two mathematics teachers and 3 students all together six participants were selected through purposive sampling method.

Data Collection Tools and Techniques

The study intended to find the motivating factors in learning mathematics at grade XI students and to explore the strategies use by the teachers to motivate the students for better learning mathematics. For this, I used the following instruments to gather the data that short description is given below:

Interview

The way of having a face-to-face conversation in specific subject matter between more than one people is called an interview. It is done to get the real and actual data from the research area. It is carried out by the researcher to prove his subject matter logically. It is more important because it gives real and accurate data for the research study. The interview is one of the major sources of data collection, and it is also one of the most difficult ones to get right. In qualitative research, an interview is a form of discourse. According to Mischief (1986), its particular features reflect the distinctive structure and aims of interviewing, namely, that it is discourse shaped and organized by asking and answering questions. An interview is a joint

product of what interviewees and interviewers talk about together and how they talk with each other. The record of an interview that we researchers make and then use in our work of analysis and interpretation is a representation of that talk. Two types of interviews are used in qualitative research in-depth interview and group interview.

An in-depth interview is used basically in a qualitative study design. With the same respondents, several interviews are taken at different times. The term in-depth suggests that one after another interview, new themes, perspectives, or issues are explored and these newly generated themes/issues are followed in the next interview. So in-depth interview attempts to draw the very inner meaning of phenomena from the perspective of the respondents. It is taken periodically in different settings, and different circumstances of the respondents but the settings all the time in nature. It is administered to know head-teachers, mathematics teachers, and students' views about the motivating factors in learning mathematics.

Observation

The class observation note has been prepared to observe classroom management and physical environment, acquisition of learning used of materials, closures of the lesson, and current evaluation of students during teaching-learning activities.

Data Collection Procedure

For the study, I visited my selected sample school in the Nuwakot district. Then, I conducted interview to head teacher, mathematics teachers, and students to collect the required facts. I had organized an interview schedule in which teachers, students for the teacher knowledge in the subject matter. Then, I had prepared an observation note to observe the class and I had observed the class.

Data Analysis Procedure

For this study, the researcher used the qualitative method for analyzing the data. The data collected in different ways. The researcher collected data through interviews of teachers, students, and observation. The collected data in qualitative research is not of structured form and it is time the research has to do a lot in making the workable structure of the collected information and blending the theories for analysis the data.. The various themes were generated and used triangulation of field, literature, and my experience interpretation and analysis of data were done.

Quality Standards

After completing the construction of the research tools, it is necessary to maintain quality standards. For quality standards, I used cross-match, triangulation, member checking, prolong stayed in the field. For quality standard, I followed the following ways:

Credibility

This concept replaces the ideas of internal validity, by which researchers seek to establish confidence in the truth of their findings. To maintain the credibility of my research I tried to spend much time at the observation needed and engaged with their work. After getting the information I wrote notes, I asked similar types of questions to others people and tried to find real practices from that information.

Transferability

Transferability replaces the concept of external validity. This criterion refers to the applicability of findings are context to other contexts or settings. To maintain transferability, I had explained mathematical practice found in different community

students briefly. I had tried to capture most of the scenario by using the thick description of observation, interview, and earning making.

Dependability

The concept replaces the idea of reliability. This is the third standard for judging qualitative standards and refers to the stability or consistency of the inquiry processes used over time. To maintain it, I had presented the logic used for selecting people and events to observe, interview, and in clued in the study. I would try to maintain credibility and transferability to ensure dependability.

Conformability

A fourth standard is a conformability which refers to the quality of the results produced by inquiry in terms of how well they are supported by informants who are involved in the study and by events that are independent of the inquiry. I am also a part of students. Therefore, to maintain conformability before concluding information, I reviewed all the information myself several times so that results contain conformability.

Ethical Consideration

Various ethical issues may arise in course of carrying out research. A researcher should be conscious of the ethical issues and takes responsibility for the whole research. As a researcher, I will be conscious of the following ethical responsibilities while carrying out the research.

- I had kept the responses of participants safe.
- Confidentiality of the responses had been protected.

- I had been conscious about the small sub- information that specifies respondents while analyzing and interrelating data.

Chapter - IV

ANALYSIS AND INTERPRETATION OF DATA

This section is related to the analysis and interpretation of the collected data. In this chapter, I had addressed my research questions: what are the motivating factors of learning Mathematics in grade 11? Besides, which strategies are taken by the teacher to motivate the students for learning Mathematics in grade 11?

To achieve the objectives of my study, the qualitative research method was used to collect data. It was a case study research design, which searches for the motivating factors in learning mathematics and the strategies taken by the teachers to motivate the students in learning.

To achieve the objectives, I reached Shree Smundra secondary school Shivpuri-6, Samundradevi Nuwakot which is my sample school. I met the head teacher of the school and informed him about my purpose for visiting the school. The head teacher permitted me to observe the class and to take interviews of selected students, a mathematics teacher of grade 11, and the head teacher himself.

The collected data were analyzed and interpreted by coding, theming, categorizing, and triangulation. The themes were set up from the information of teachers, mathematics teachers, and head teachers. Based on interviews of mathematics teachers, students, head teacher, and classroom observation with the students, the main themes were generated below:

Motivating Factors of Learning Mathematics

Interest of Subject Matter

Student interest is one of the motivating factor for learning mathematics. Factoring for student interests works well with instructional planning based on readiness and learning profiles. One example is student watching videos, listening to speakers, and journaling to make comparisons between social injustices from the past and forms of bullying that occur in today's schools and communities. The first step to differentiate for interests is to find out what students care about and like to do student surveys and learning profile cards are two methods for collecting data. Parents and students providing these details send the message that their experiences matter. That is a powerful message to start the school year or semester. Interest is associated with the success and failure of life and achievement. Here interest of the learner indicates the willingness of students toward the subject, behaving with basic mathematics. The researcher has asked the question and noted them in their respected voices as below:

"Interest of learner plays important role in learning. So, make the classroom effective. But most of the students are not interested in their study because of their home environment."

[Head teacher]

"We try to make the classroom effectively learning environment. Talented students are interested in their study but poor students are not focused on their studies. It is not that all of the poor students are not interested towards mathematics but as mathematics is a subject of logical and analytical thinking many students find it difficult at first try due to which they neglect the subject."

[Math teacher]

We are interested in learning mathematics because it is important in our future work but sometimes it is difficult to study that those protons like geometry, calculus, etc. [Student]

From the above information I found that the interest of learners is an essential part of learning mathematics. It helps to gain knowledge. It depends on the competency of students. Talented students are focused on their learning but poor students neglect their studies. Thus, the students are less interested in learning mathematics. Hence, there is a need for motivation to reduce less interest in learning mathematics. Students' interest in learning mathematics as factors which motivate them to learn mathematics. In this consideration, teachers might provide more materials related to these skills to incite students' motivation in learning mathematics. In this line Skinner (1990) claimed learning is motivated through providing feedback and positive reinforcement.

Good Classroom Environment

The classroom environment is one of the motivational factors of student learning. The environment provides relevant contents, clear learning goals and feedback, opportunities to build social skills, and strategies to help students succeed. We all know the factors that can threaten a positive classroom environment. A positive classroom environment helps improve attention, reduces anxiety, and supports the emotional and behavioral regulation of students. When educators foster positive learning culture; learners are more likely to acquire higher motivation that leads to wonderful learning outcomes. Teachers should design the environment by organizing its spaces, furnishings, and materials to maximize the learning opportunities and the engagement of every child. Another important responsibility of

the teacher is to develop a learning environment where students feel motivated to learn within the boundaries and expectations of a safe classroom. By modeling and encouraging a safe environment and purposeful rules, students feel motivated to do the right thing and help one another. Teachers need to emphasize intrinsic motivation in the classroom to keep students interested and invested in their own learning goals. Here, the researcher has asked some questions to teachers and students and noted their answers as below:

"Classroom environment is a most important factor in learning mathematics. In our school, here is a peaceful environment and desks, benches and toilet facilities are sufficient, the classroom environment is so good. But we cannot manage trained and professional teachers due to the poor economic background of our school. School has limited sources and teachers. So, students may be weak in mathematics"

(Head Teacher)

"School and classroom environment are good. Here are peaceful environment and desks, benches and toilet facilities are sufficient, the classroom environment is so good. But here are limited sources due to the poor economic background of our school."

(Mathematics Teacher)

"Our teacher encourages us to work together with our classmates during lessons. Our teacher makes us feel that we can ask him/her for help or advice if we need it. Here is peaceful environment and desks, benches and toilet facilities are sufficient but here are limited sources due to poor economic background of our school."

(Student)

From the above opinion, I found that the environment is an essential part of learning mathematics. It helps to learn everyone. But some students were worried about their inappropriate classroom environment. Due to the poor economic environment, they couldn't learn. Thus, it needs better classroom management to motivate the students in learning mathematics. In this line Al- Samadi and Rashid (2017) claimed good classroom interaction and environment teaching learning process is more fruitful and student desire to learn mathematics.

Innovative Teaching Method

The term teaching method refers to the general principles, pedagogy, and management strategies used for classroom instruction. The choice of teaching method depends 4on what fits you and your educational philosophy, classroom demographic, subject area (s), and school mission statement. Teaching methods of mathematics include lecture, inductive, deductive, and heuristic or discovery, analytic, synthetic, problem-solving, laboratory, and project methods. Teachers may adopt any method according to the specific unit of the syllabus, available resources, and the number of students in a classroom. It plays a vital role in learning mathematics. If teacher use suitable method in learning students are motivating to learn. . Here, the researcher has asked some questions to teachers and students and noted their answers: "*Mathematics teacher uses only limited sources and method in classrooms, he is unable to use ICT due to the poor capital investment background of our school."*

(Head Teacher)

"I make worksheets, tests are conducted on regular basis, practice books are given more focus rather than just being limited to books, and different logical and analytical questions are also given. To make mathematics more interesting different

games are being made played where students get points when solving a problem, they get certain points and are prized accordingly. On the other hand, due to the lack of capital we are unable to use ICT and ICT tools in the classroom."

(Mathematics Teacher)

"Yes, worksheets are being made but the worksheet is being made by prioritizing the talented students only, we average student's abilities are being neglected and we are not being able to do the worksheets. The test is being conducted on regular basis but after the test result is published only the talented and higher marks getting students are being prioritized and again we average students are being neglected. The mathematical games are also being made in such a way that only talented students can do it." (Student)

Based on the above-mentioned views of these respondents, teachers apply traditional teaching-learning, methods. The teacher did not address student's needs and interests in the classroom. There is no child-friendly environment in the classroom. School has limited sources. The school has been bound by traditional teaching methods. This argument argues that students who pass in mathematics depend on teacher attitude, teaching-learning environment, and the physical structure of school. Those schools did not apply these things obviously student pass rates getting low. In this regards, Acharya, (2017) claims that teaching mathematics is fruitful if we used students center approach and use of ICT in appropriate ways.

Good Behavior of Teachers

Teachers' behavior play important role in students' motivation. Many scholars suggest that when teachers treat students with respect and seek out, listen to, and value their opinions, students are more willing to commit themselves to the hard work

entailed in learning. It is truly believed that when students' needs are met, they will have a good element in classroom activities with their teachers and peers. When teachers treat students with care and affection, students will have the feeling of belonging to the school. As a result, a Connection between students and teachers would be well established, and feeling safe at school would also be increased. When such things occur, the success of the teaching and learning process would be successfully achieved and the goal of education would be easily obtained.

In contrast, when poor relationships occur in the classroom, not only hard on student but also as the source of stress for teachers. Students could have difficulties in learning lesson materials and teachers could have problems in delivering lesson materials. The researcher has asked the question and noted them in their respected voices as below:

"*We have very talented and well-experienced teachers. I don't think there might be any problems to the students with the teacher's behavior except the time limit of period."*

(Head Teacher)

"I try my best to teach the students and make their doubts clear. But due to the limitation of time (40 minutes only), I am not always able to give proper attention to every student and also make their doubts clear. Sometimes because of some major and minor disturbance, the students are also not able to pay attention in class."

(Mathematics teacher)

"There is no doubt that our teacher teaches us in a very well mannered. But sometimes the teachers are not able to be punctual in class. Due to the limitation of

time, solving the queries of talented students take more time and we the average students don't get to ask the questions."

(Student)

From the above statement, I found that time limitation is a common problem for everyone. The teacher is unable to give proper attention to each and every student. The teacher is not punctual. There was a lack of interaction and lack of use of modern technologies in the classroom and a lack of teacher-student friendlier relationships. Thus, teacher behavior demotivates the students to learn mathematics. Thus, to motivate the student to learn mathematics teacher behavior must be equal to every student. In this regard Moreno (2015) states that the teacher raised the question to the student and motivated to give the wright answer of the question. The role of teacher as a mentor.

Peer Group

A peer group is both a social and a primary group of people who have similar interests, ages, backgrounds, or social statuses. The member of this group is likely to influences the person's beliefs and behaviors. A Peer group is both a social group and a primary group of students who have similar age, background, interests, and behaviors. In other words, a peer is a group of students of similar types in their age, class, feelings, behavior, etc. Does peer group affect learning is the desirable questions? For this, I made questions and asked the same group, and noted their respected voices.

"*Talented students have their own groups. They will be busy with their group. But other students are from poor economic backgrounds so we cannot make discipline tight. So they are not serious in their study*."

[Head teacher]

"*Yes definitely, I have made group of talented students. I give them task to solve. Talented students solve easily but poor students are careless*."

[Math teacher]

"*We have all students' friendship. We have a group of talented students. They cooperate with us in our study. They are helpful but few students are jealous*."

[Student]

I found that the different voices such they are from the poor economic background. It helps to learn properly and effectively. They have their group. I also found that talented students have their own group where only students who are serious towards their study are involved. But the poor students who are not so talented have the group where there are not so many students who try to learn. This group mostly have the students who come school just to attend the classes but not so interested towards it. In this line, Vygotsky's sociocultural theory (1934) claims that learning is an essentially social process in which the support of peers plays a crucial role in the development of higher psychological functions.

Appropriate Amount of Homework

It helps elementary students develop proper study skills which, in turn, influence grades. The national education association along with the national PTA suggests adding 10 minutes of homework per night incrementally with each grade level, as a general rule of thumb. Thus a first grader gets a total of 10 minutes, a second-grader 20 minutes, a third-grader 30 minutes, and so on, not to exceed two hours per night total in high school. More than 30 minutes of homework per class may

be an exercise in futility because the student can feel overwhelmed by the quantity of work, get distracted or bored and end up giving it a halfhearted effort just to get it done. Homework is the task which makes the students busy at home about their classroom task. They search the materials, read the book, write the answer, solve the problem, etc. The researcher made questions related to this. He noted them as their respected voice.

"We give them too much homework. We have made strict rules. Talented students solve easily but poor student don't solve because most of the time they will be busy in their cornfield."

[Head teacher]

"Homework makes them busy in their classroom. They will solve which will shape their learning. So we focus to give homework."

[Math teachers]

"Homework is not necessary to give. The teacher will not check our solving even classroom. So they are all time wasn't to be free, out of checking their classwork, homework copies."

[Student]

I found that from the respected voices as they are given amount of homework which is necessary. They made them busy in the classroom. But students' voices are different. Homework is necessary for the students but the teachers should give homework to students according to their level. If teacher gives too much homework to students they feel stressed and the teachers give homework according to their level they motivated in learning.

Good Home Environment

The home environment is the component that describes the reading room, parents, and other education-related behaviors. It is a crucial component that is directly associated with the learning of students. Some parents are educated while others are not. So they could not make the home environment according to the will of students. Because they are poor. I asked the question to the head teacher, mathematics teacher, and students and noted them as below.

"But the home environment is a very essential part of learning. Most of the students are from a poor economic background so that they don't have a safe and good home environment."

[Head teacher]

"A home environment is a crucial part of learning so that it helps to boost up their learning. They are busy with their field in their surroundings."

[Math teacher]

"We sit together with our family members. We don't have the proper home environment in our home. We can't concentrate our mind to study. So we cannot solve all homework properly..."

[Student]

I found from the above statement that the Home environment is an essential part of learning. It helps to learn everyone. But some students were worried about their home environment. Due to a poor economical home environment, they couldn't learn. The effect of the home environment can be taken very seriously for several reasons. Control-group studies corroborate many correlational findings. The home

effect is far larger than apparent socioeconomic effects. Something can be done about home environments: School– parent programs can help parents academically stimulate their children by reading to them, taking 18 them to libraries, guiding and discussing leisure television viewing, cooperating with home visitors and teachers, and similar practices. I also found that those students which had very good home environment were talented in mathematics as they could give enough time to it. But those students who had bad environment did not have enough time to do mathematics. As they have to do different household works. Because of it I found that they were poor in mathematics. In this line, Walberg, (1984) Cooperative efforts by parents and educators to modify alterable academically stimulating conditions in the home have had beneficial effects on learning.

Classroom Observations Episode

It was December 5, 2019, my sample school is Shree Samundra Secondary School, Nuwakot. I reached that school by 11 a.m. First I met the head teacher of the school who welcomed me tenderly. The head teacher arranged for me the necessary classes for the observation after having a short information introduction about the main purpose of my visit. I got to class 11 'A' with the mathematics subject teacher. It was the third period of a 40-minute time duration.

The classroom was medium not so big. There were 18 students in the co-educational class; the math teacher entered the class and what he was going to teach that day, was taken from the textbook, the topic was Trigonometric function. First, he was asked students about Trigonometric function and some of them had answered themselves. After that, he wrote the function of Trigonometric on a whiteboard. The classroom was silent. He was using the Lecture method mostly. He did not use any kind of material. So, students were not so motivated. After describing the lesson, he

said to students to practice some questions. Some Students were following the teacher's direction but some students were no. After that, the teacher checked some students' answers. Due to the time limitation, a teacher was unable to check all student's answers. After checking some students' answers, he gave homework to students. After that time finished then we went out.

The above classroom observation shows that the teacher demonstrated positive practice teaching behavior in motivating the students during classroom interaction. However, it was also found that the teacher talked too much and less interaction among the students. In general, it was seen that the teaching technique applied in the classroom was the teacher-centered model, and most of the classroom activities were done by the teacher. It was the teacher's dominant classroom typed. After observing I also found that the teacher gave few questions to solve. It was not sufficient to practice the taught lesson. After observing we found that there was no extra time for students from the teacher's side. Students only finish their homework but they did not work seriously and practice extra exercises. There were not motivating activities for students. Students were not curious to solve homework but not classwork. They were coping with talented students. They had no interest in learning. Students were not interested in mathematics subject. There was a traditional teaching strategy therefore students felt bore in their study.

It was the day of December 9, 2019 I again went to my sample school Shree Samundra Secondary School, Nuwakot. When I reached the school, it was 11:30 a.m. At that time second period was going on, at noon the bell was rung. Then, the Fourth period was started, Mathematics teacher entered the 11'B' all student students stood and said good afternoon sir! The teacher replied good afternoon class! And tell "how

are you? “All the students in one voice “fine sir” then teacher tell to sit down. The teacher started to teach the topic “Matrices and determinants”.

The teacher wrote the topic “Matrices and determinants” after that told us to turn in yesterdays’ homework. He asked students about the unsolvable problem then he did one problem on the whiteboard. He had not any materials related to Matrices and determinants. He just writes formulas on Whiteboard and explains about matrices. After that, he told to the students to do problems with their copy. He was using the lecture and discussion method. The classroom was a little noisy, and then he did one different problem. At last, the teacher summarized verbally the whole lesson of the day then, he gave some problems as homework and we went out.

From the above observation, it was found that the teacher motivated the student to learn. Also, the teacher gave opportunities for students to do solve the problem themselves as well as evaluates the student work. The characteristics of effective teaching are lesson clarity, instructional variety, teacher task-oriented, and engagement in the classroom instruction. The classroom is the place where teachers and students work collaboratively to achieve the goals of teaching and learning.

Strategies used by Teachers to Motivate the Students for Good learning Mathematics

Dealing with second objective I interviewed my Head teacher, Mathematics teachers and students.

Teaching Mathematics Using ICT Tools

Information and communication technologies (ICT) are an essential portion of teaching learning process. The use of ICT in teaching mathematics can make the teaching process more effective as well as enhance the students’ capabilities in

understanding basic concepts and logics. Technology significantly affects the everyday life and, therefore, the teaching process. ICT can lead to improving students' learning and better teaching methods. Mathematics teachers can use ICT to motivate the students in learning mathematics.

In this line one of my head teacher participant shares his view as:

" Mathematics teacher couldn't use ICT in mathematics class, because there is not enough access to computers and projectors, lack of time in college schedule for projects involving ICT, lack of knowledge about how to integrate ICT to enhance curriculum, lack of technical support for ICT tools, students as well as teachers do not have access to the necessary technology at home, lack of training, seminar, workshop and talk program in ICT. There is no provision of providing computers by the government. If government provides computers to all teachers then we can practice ICT in mathematics class. Instead of this, if the teacher could use different types of ICT tools such as projector, PowerPoint, YouTube, Google search then obviously the students can be motivated towards learning mathematics, they will enjoy and can do better performance in mathematics. "

In this line mathematics teacher shares his view as:

"In my opinion, if I could use different types of ICT tools such as projector, PowerPoint, YouTube, Google search than obviously the students can be motivated towards learning mathematics, will enjoy and can do better performance. But there is no proper infrastructure in school to use ICT. There is not enough access to computers and projectors, lack of time in college schedule for projects involving ICT, lack of knowledge about how to integrate ICT to enhance curriculum, lack of technical support for ICT tools, students do not have access to the necessary technology at home, teachers do not have access to the necessary technology at home,

lack of training, seminar, workshop and talk program in ICT. If the school management provides the computer and projector we could learn recent trends in mathematics and use ICT as well."

In this line one of the student shares his view as:

"The teacher never uses ICT in the classroom. If he used ICT we would learn easily."

Finally, I concluded that teaching mathematics through ICT motivates the students in learning mathematics. It was also found that the teachers think ICT is useful and helpful in mathematics teaching and learning but major problem is that there is a lack of training and workshop for teachers to develop their technical capacity on mathematical software. There is not enough access to the computers and projectors. So, the school should develop ICT policies and guidelines to support school teachers in their academic work. And the government and local government must provide training for a mathematics teacher to use ICT. All the mathematics teachers should apply techniques and trends to develop globally which they have taken by the training. The school management committee should manage an appropriate classroom environment and proper teaching materials to use ICT in the classroom.

Teaching Mathematics by Using Constructivism

Constructivism theory says that learners construct knowledge rather than just passively take in information. As people experience the world and reflect upon those experiences, they build their own representations and incorporate new information into their pre-existing knowledge (schemas).

In this sense one of my head teacher participants said that;

"In the process of constructing the mathematical knowledge the role of teacher is as a mentor or facilitator. It is the collaborative way. The mathematical cannot be

transferred from one person to another person. But it is the process of transformation Also learners build new knowledge upon the foundation of previous learning *Information may be passively received, but understanding cannot be, for it must come from making meaningful connections between prior knowledge, new knowledge, and the processes involved in learning.*"

In this sense one of my mathematics participant's teacher said that; "*Constructivism says that knowledge cannot be transferred from higher educator to low educator but knowledge can be constructed by learners themselves. The role of teacher is as facilitator or as a mentor. In my opinion students themselves should do the planning, group discussion, and collaboration with others and gain the knowledge. For example: An elementary school teacher presents a class problem to measure the length of the "May flower." Rather than starting the problem by introducing the ruler, the teacher allows students to reflect and to construct their own methods of measurement*."

From the above information I came to know *that knowledge cannot be transferred from higher educator to low educator but knowledge can be constructed by learners themselves.* Learners build new knowledge upon the foundation of previous learning *information may be passively received, but understanding cannot be, for it must come from making meaningful connections between prior knowledge, new knowledge, and the processes involved in learning.* The mathematics cannot be transferred from one person to another person. But it is the process of transformation. In the process of constructing the mathematical knowledge the role of teacher is as a mentor or facilitator.

Teaching Mathematics Using Different Games

The use of games is a motivating, interesting, and encouraging way of teaching. Games have the potential for teaching complex new information to students and, both academic performance and interpersonal relationships are likely to be enhanced through the use of games. Although active learning with plenty of student involvement is the norm, and games are fun, some college instructors feel that if learners are laughing and having fun, they could learn very well.

"In my opinion game is one of the motivating strategy of teaching mathematics. The use of games is a motivating, interesting, and encouraging way of teaching. Also *rather than just being limited to the traditional method of teaching and textbooks if we conduct games then the students become more motivated towards mathematics In our school, math teachers conducts worksheet games every Friday and submits us the points obtained by the students. We publish the results in the last day of the month and prize them accordingly."*

"*In my experience I found that rather than just being limited to the traditional method of teaching and textbooks if we conduct games then the students become more motivated towards mathematics and also help them to understand the topic very well. We conduct game each and every Friday of the month. In this Friday, we give them worksheets where they do it in certain time. After that, we check the worksheets and send the points to the School Management Committee. In the last day of the month the School Management Committee publish the points. And the students who get higher points overall are prized. In this way I think we can motivate the students to learn mathematics."*

In this sense one of my student's participants shared his view:

"In my opinion, I feel mathematics class more interesting than any other subjects. I am an average student and I am not so good in playing with numbers. But our mathematics teacher makes us worksheets due to which just in order to win the prize I become motivated towards mathematics. Because of the game also I understand the topic very well and it helps me a lot in academic as well as daily life."

From the above data, I found that the use of games is a motivating, interesting, and encouraging way of teaching. In order to motivate the students towards learning mathematics teachers should also make some of the creative games. I also came to know that rather than just being limited to the traditional method of teaching and textbooks if we conduct games then the students become more motivated towards mathematics and also help them to understand the topic very well. By using games also I found that it helps students a lot in academic as well as daily life. In this regard Dainey learning theory claimed that; "If the teacher can teach mathematics using different types of game, dance, and song then it is easy to understand mathematics quickly."

Teaching Mathematics Linking with Students Daily Life Context

Mathematics was originated to solve day to day problems. If mathematics is taught by linking it with daily life then it will become fruitful.

In this line one of my head teacher participant said that;

"*We teach mathematics by linking it with daily life as well as cultural life of our own community then we can teach them in a meaningful way. For example; we teach mathematics by linking it with kitchen materials. And by using 'Doko, dalo and supo' we can teach students about parallel line, sequence and series, circle, volume of pyramid etc*."

In this line one of my mathematics teacher participant said that;

"*In my opinion if mathematics is taught by linking it with daily life then it will become fruitful. We teach mathematics by linking it with daily life as well as cultural life of our own community then we can teach them in a meaningful way. For example; we teach mathematics by linking it with kitchen materials. And by using 'Doko, dalo and supo' we can teach students about parallel line, sequence and series, circle, volume of pyramid etc*."

From the above given statements I came to know that if mathematics is taught by linking it with daily life then it will become fruitful. I also found that it is necessary for mathematics teacher to link mathematics with daily life and teach them. In this line Achrya et.al (2021) suggest that teaching in mother language, contextualized ethno mathematics and incorporate local knowledge in curriculum then it is helpful for making mathematics culturally relevance.

Chapter - V

FINDINGS, CONCLUSIONS AND IMPLICATIONS

This chapter deals with the major findings of the research and conclusions and implication for further study. The first section reveals the summary, the next sections list the major findings and conclusions derived based on research analysis, and finally presents a recommendation for further study.

Findings Related with Motivating Factors of Learning Mathematics

- It was found that interest of subject matter, good classroom environment, and innovative teaching method, good behavior of teachers, peer group, appropriate home work, and good home environment were the main motivating factors for learning mathematics.

Findings Related with the Strategies Use by the Teacher to Motivate the Students

- Teaching mathematics using ICT tools,
- Teaching mathematics by using constructivism,
- Teaching mathematics using different games,
- Teaching mathematics linking with students daily life context for better learning Mathematics

Conclusions

The present study analyzed the motivating factors and the motivating strategies for learning mathematics. From this study, I found that the interest in subject matter, good classroom environment, and innovative teaching method, good behavior of teachers, peer group, appropriate homework, and good home environment

were the motivating factors of learning mathematics, which affects mathematics learning. Similarly, there were different types of motivating strategies of teaching mathematics like the use of ICT tools, use of constructivism, use of different games, and link mathematics with daily life context. If teachers use these types of motivating strategies students can learn well. So, every teacher should use these types of motivating strategies in the classroom while teaching mathematics.

Implications

Every research has implications for different sectors. The study entitled "Motivating Factors in Learning Mathematics" also has educational implications, which are follows;

- This research focuses the motivating factors in learning mathematics. Therefore, it is helpful for mathematics teachers, textbook writers and curriculum planner to develop their professional field.
- It is helpful for teachers, students, researchers, institutions, educationist and policy makers.
- It is helpful to every teacher to understand the motivating factors and strategies of learning mathematics and to apply them inside the classroom.
- To develop the curriculum that would create motivation for students.
- This research directly contributes to classroom practices and school leadership. This study created an opportunity for these students to talk about their mathematics difficulties.
- Teacher can act more as a facilitator to learning, rather than with direct instruction, so students are guided through the concepts they need to learn.

- To know the motivating factors, the teacher should apply strategies to motivate the students.
- Teachers should develop and use proper useful teaching materials that encourage mathematics students.
- The teachers should motivate and support students to overcome factors affecting them learning mathematics.
- Effective interaction, two- way communication between teachers and students should be conducted.
- Physical environment of the school should be improved taking support of the community.
- Students entering behavior should be improved by planning special classes for those students who lack such behavior at their lower grades.
- Modern techniques and technology should be linked to the classroom.
- This research opened the door for more researchers to study the motivating factors and strategies of learning mathematics.

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APPENDICES I

Interview guidelines for Head Teacher

Teacher's Name:

Age:

Qualification :

Teaching Experience :

1. What types of facilities do you provide for the mathematics students ?

2. What is your opinion towards mathematics learning in classroom ?

3. What types of Policies do you made for motivational learning in the classroom?

4. How many mathematics students are there in grade 11?

5. How is your mathematics students' achievement in grade 11?

APPENDICES II

Interview guidelines for Mathematics Teacher

Teacher's Name:

Age:

Qualification:

Teaching Experience:

1. What are the motivational factors in learning mathematics?

2. How motivational factors affect mathematics learning?

3. What types of motivational factors do you use to motivate the students for learning?

4. How do you manage your classroom?

APPENDICES III

Interview guidelines for Mathematics Students

Students' Name:

Grade:

School's Name:

1. How is your school's environment?

2. What types of facilities provided by the school for you?

3. Why do you choose mathematics as a major subject to study in grade 11?

4. Do you think motivation is the important factors in learning mathematics ? Why?

5. What types of motivational techniques use by your mathematics teacher in classroom?

6. How is your teachers' behavior for students?

APPENDICES IV

Observation Checklist

Grade: **Period:**

Subject: **Time:**

Lesson:

Topic:

S. N.	Teachers' & students' behaviors to be observed	Yes	No
1.	Worried and confused in the class		
2.	Shy and fear to involve classroom activities		
3.	Follow direction		
4.	motivated		
5.	demotivated		
6.	Participate actively in the class		
7.	Ask questions actively		
8.	Answer question actively		
9.	Uses any motivational techniques to maintain interest and involvement of the students		
10.	Provides guides for practice		
11.	Encourages relevant discussion.		
12.	Checks for individual understanding		

13.	Communicates the methods of the increasing the ability of thinking topic, formulae, etc.		
14.	Utilizes questioning techniques.		
15.	Provides corrective feedback.		
16.	Provides assignments/homework/project work relevant to the learning that has been practiced with guidance.		