TEACHING PERFORMANCE OF MATHEMTICS TEACHERS

A

THESIS

BY

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LETTER OF CERTIFICATE

This is certify that **Mr. Hari Man Nepali,** a student of academic year 2066/067 with T. U. Regd. No. 9-2-29-1021-2005, campus Roll Number 1033(066), thesis number 779, and exam Symbol Number 281269(067) has completed his thesis under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. The thesis entitled **"Teaching Performance of Mathematics Teachers"** embodies the result of his investigation conducted during the period of 2012 – 2016 under the Department of Mathematics Education, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward that his thesis be submitted for the evaluation and for awarding the degree of Master of Education.

…….. ……

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LETTER OF APPROVAL

Thesis Submitted

By

Hari Man Nepali

Entitled

"Teaching performance of Mathematics Teachers" has been approved as a partial fulfillment for the requirement of Master Degree of Education.

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.....

(Hari Man Nepali)

ABSTRACT

The purpose of the study was to identify the performance of mathematics teachers and to compare the teachers' performance of public and institutional school at pre-primary level in Tanahun district. The study was of mixed model, survey type and descriptive in nature. By using stratified random sampling method, 60 teachers were selected from thirty schools. Among those schools, thirty schools were public and fifteen were institutional. One student was selected from each public school and two students were selected from each institutional school. In this study, the research instruments were questionnaire, class observation form and interview schedule. The research instruments were pilot tested before finalized it. The collected data were analyzed and interpreted by using percentage scale, Likert's Five Point Scale, and statistical t-test. The collected data had been analyzed and interpreted on the two areas namely classroom management, and instructions and teaching learning activities.

The study found that teachers had good performance on the basis of participation in the classroom; classroom environment was good, teachers were qualified on the basis of academic qualification and teaching experiences. But the teachers had unfavorable performance about instructional materials, size and quality of writing board, use of motivation, reinforcement, and feedback, planning and preparing the lessons, used of mother tongues, and use of suitable teaching methods. The statistical t-test shows there was no significant difference between teachers' performance in public and institutional schools.

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ACRONYMS

CERID	Research Center for Education Innovation and Development
HSEB	Higher Secondary Education Board
Inst.	Institutional School
M. Ed	Master Degree of Education
MOE	Ministry of Education
M. V.	Madhamik Vidhyalaya
MW	Mean Weightage
NESP	Nepal Education System Plan
Pub.	Public School
SD	Standard Deviation
UNESCO	United Nation Educational Scientific and Cultural Organization

Chapter I

INTRODUCTION

Education is the process through which knowledge is transmitted from one individual or section of society to another individual or section. Teacher is an important part of teaching learning process. S/he plays a vital role in school as well as in society. Teacher is the pivot of any education system. S/he is the strength of any nation.

The importance of teacher is recognized throughout the world. Good teachers are essential for the effective teaching. They help to improve the quality of education. It is necessary to be high satisfaction and morale for teachers. But, recent reports in educational journals about teachers' stress and burnout indicate that teachers' job satisfaction and morale merit has increased attention (Usop, 2013).

Teachers develop their performing styles and characteristics in different ways. A person is, therefore, likely to act in a way that maximizes the use of his/ her aptitudes. Teachers' positive attitude towards teaching, higher aspiration level determines their positive perception with environments. An effective teachers' development design should have an exhaustive measure of these factors so as to foster necessary skills and attitudes amongst prospective teachers.

A performance generally comprises an event in which a performer or group of performers behave in a particular way for another group of people. It is the act of performing; the carrying into execution or action; execution; achievement; accomplishment; representation by action; as the performance of an undertaking of a duty. It is also the ability to work well and the act or process of doing a task or action.

Teaching performance is the product of a combination of an individual's motivation and ability. There are many factors that influence the teachers' teaching performance such as aptitude, attitude, subject mastery, teaching methodology, personal characteristics, classroom environment, general mental ability, personality, relations with students, preparation and planning, effectiveness in presenting subject matters, relations with other staff, self improvement, relations with parents and community, intellect, teaching techniques, interactions with students, teaching competence demonstrated, motivational skills, fairness in grading and teachers' attitude toward the students.

The period of birth to five years is foundation for the whole life (Poudel, 2005). Pre-primary education is defined as a process of providing educational experiences to early age children before going to primary school, community based pre-school centre, shishu kakshya, child care centre, and other services centre are established to give the pre-primary education(CERID,1998).

In Nepal, many private institutes are running with the name of kindergarten in pre-primary level education. Until 1992 there was no official pre-primary level of schooling and the very few private nursery school that existed mainly in the urban areas. Under the five year plan (1992-1997), ministry of education introduced a total 781 shishu kakshya to 10000 by the end of 2002 and the government emphasized on the need of the trained teachers of all level and the NESP in consonance with the aim of maintaining qualified teachers to improve the service condition of teachers.

In old days, young children under the age of six were generally forced to read and write. They were simply supposed to play and learn by experiences. Today the situation has changed completely. Most people can be found to be very serious about sound

physical and mental development of children. They share the common feeling that the children learn something before they attain the school.

Now a day, pre-school education is considered as necessary factor for every society. Languages, arts, mathematics, social behaviour and relationship have become some of the basic components of early childhood education. Young children are supposed to know something about personal, social, emotional, communication, language, literacy, mathematical knowledge development, physical development and creativity.

Today, education has been regarded as one of the birth rights of people and the programs of formal education have been expanded all over the world. This is the results of establishment of vast organizations of educational institution where millions of students are taught by thousand of teachers every day. It is at this point where the efficiency of the education system has been regarded as necessity, and program of teachers training are organized and expanded on the assumption that efficient teacher is a prerequisite for efficient operation of education system. Competent teachers apply broad, deep, and integrated sets of knowledge and skills as they plan for implementation and revision of instruction. Technology proficiency is one dimension of teacher competence. About the various aspect of teaching, Bhatia & Bhatia (1986) said,

> *Teaching is establishing a harmonious relationship between teacher, pupil and subject, it gives useful information, causes the child to learn, stimulates and directs the learning, helps the child to make effective adjustment, guides the pupils ' activity and trains of his emotions.*

Teaching is the holistic development of human life. Mathematics instruction today has been broader and more inclusive. It meets the increasing demands made on the

mathematical competence of students. The mathematics instruction must do more than develop the basic skill and techniques, although the goals of mathematics include these skills and techniques. It must develop vocabulary, facts and principles, ability to analyze the problem or situation, logical structure of mathematics. In the context of Nepal, the quality of teaching mathematics in school education does not seem to have improved with the availability of trained teachers. They may have some problem in classroom teaching behaviour.

National policy of education emphasizes that it is urgently desirable to raise the quality of the teachers and the teaching profession for the quality of school education. To raise the quality of the teacher, it is necessary to improve the teacher's classroom teaching behavior. The role of teacher in the formal school system has been regarded as very important.

To become a successful teacher, it is not just sufficient that he/ She is well versed in his/ her subject but he/ she needs wide experience and should study the science and art of pedagogy. Teacher training should, therefore, be made compulsory. It is only way to inspire in him/ her professional spirit to provide him/ her with the fundamentals of education and to invest him/ her with the techniques.

Teacher behavior by its nature exists in a context of social interaction. The acts of teaching lead to reciprocal contacts between the teacher and the pupils, and the interchange itself is called teaching. Techniques for analyzing classroom interaction are based on the notion that these reciprocal contacts can be perceived as a series of events, which occur one after another. Each event occupies a small segment of time, and the chain of events can be spaced along a time dimension.

A school is a complicated social environment in which people play different roles. Even if we focus exclusively on the classroom and particularly on the teacher and students, it is extremely difficult to sort out and make sense of everything that happens within its four walls. A classroom is an extremely busy place. Classroom observation is not easy. It is physically and mechanically impossible to record everything that occurs in a classroom. One possibility is to limit the observation to specific instance: physical appearance of teachers, classroom management, planning and preparing the lessons, initiation of lesson, teaching methods, teaching learning activities, students' participation in the class, closing of the lesson etc.

Pre-primary level is the initial stage of organized instruction, designed primarily to introduce very young children to a school-type environment, to provide a bridge between home and a school-based atmosphere. Its programs should be designed to meet the educational and developmental needs of children at least three years of age, and have staffs that are adequately trained to provide an educational program for the children.

Mathematics is a subject which deals with the creativity of human mind to think and organize various things logically and systematically incorporating various ideas, processes and ways of reasoning. It is not limited to either arithmetic or algebra or geometry. Mathematics is exploding field of the dynamic knowledge and its rapid growth is evident in the quantity as well as quality of mathematics that came into existence in recent time. As a result, the mathematics teaching is a challenging and adventure in itself.

There are curriculum, instructional materials, textbooks, teacher's guides and audio visual devices and other teaching materials to conduct the regular teaching activities in the classroom. It is not easy to learn mathematics or to be mathematics

teachers. Besides for the successful teaching, it is important to focus on the selection of the most adequate and efficient method of teaching.

The teacher can motivate the pupil and arouse their alternative method, when used in teaching. There are many teaching methods that can be applied in teaching mathematics. If the teachers apply suitable teaching methods, the results of their teaching performance can be improved. Such methods are essential to break monotony and boredom and give insight to the student to take any challenge in the learning process. The present study was carried out to judge teachers' performance in pre-primary schools.

Statement of the Problem

Mathematics is an essential in daily life. The achievement of students in mathematics seems very poor. Mathematics has become a great wall in school as well as higher education level. In the present situation, mathematics teacher has great challenges in teaching profession. This study is concerned with the teaching performance of mathematics teacher at pre-primary level. The study was intended to answer the following questions:

- Is there significance difference between the teaching performance of public and institutional schools?
- What are the teachers' performances in Public and Institutional schools at pre-primary Level?

Objectives of the Study

The study had the following objectives:

- To compare the teaching performance between the teachers of public and institutional school mathematics teachers.

- To analyze the performance of mathematics teachers at pre-primary level in Public and Institutional schools.

Significance of the Study

Mathematics is an essential part of human life. It has been included as compulsory subject at school level curriculum. Many students feel mathematics as a difficult subject. The study would help to answer the following statements:

- It would analyze the teaching performance of pre-primary teachers.
- It would direct the educational policy maker, curriculum developer to select the effective teaching approach for better classroom activities.
- It would help to use appropriate teaching methods in teaching learning activities.
- It would help to improve the performance of mathematics teachers.

Statement of the Research Hypothesis

The formulated research hypotheses for this study were as follows:

Null Hypothesis: There is no significance difference between the teaching performance of public and institutional schools' teachers.

i.e., H_0: $\mu_1 = \mu_2$

Alternative Hypothesis: There is significance difference between the teaching performance of public and institutional schools' teachers.

i.e., H_1: $\mu_1 \neq \mu_2$

Where, μ_1 and μ_2 are the means of teaching performance of public school teachers and institutional school teachers respectively.

Delimitations of the Study

Each study is not rigorous perfect and free from limitation. They have some sort of limitations. This study had some limitations which were pointed as follows:

- The study was limited in Tanahun district.
- The study was based on analyzing the teaching performance of mathematics teachers at pre-primary level, and comparing the teaching performance between public and institutional schools.
- The study included 60 teachers from 45 schools.

Definition of Terms

The frequently used words for the study were as follows:

Teaching Performance

Teacher performance is the activities of mathematics teachers exhibited during teaching learning period in the classroom. It includes physical management, psychological management, and instruction and teaching learning activities.

Mathematics Teacher

It includes all the teachers who teach mathematics at pre-primary level.

Montessori Method

Montessori Method is a teaching method developed by Dr. Maria Montessori in 1907 that uses independent, self-correcting activities to develop and advance a student's natural ability and intellect.

Pre-Primary Level

It is the initial stage of school level education consisting the age between 3-5 years.

Chapter II

REVIEW OF RELATED LITERATURES

This chapter introduces major related literatures used by researcher, and theoretical and conceptual framework used for the study

A researcher must have deep knowledge of already established theories and research, which is closely related to the problem chosen by him or her. A review of related literature provides the knowledge of what has been established, known or studied and what has not been attempted yet. In other words, review of related literature is necessary to find out a gap in research for further study. The purpose or review of related literature is to expand upon the context and background of the research. The various related studies, reports and books have been reviewed to justify the present problem of the study. The main literatures reviewed by the researcher were as follows.

Empirical literatures

Lamichhane (2001) conducted a thesis entitled “A study of problem faced by the secondary level mathematics teachers in teaching mathematics". He concluded that there were many problems that make the teacher inefficient and unenthusiastic to execute their duty properly inside and outside the classroom. Most of the problems appeared because of inadequate of textbook and teachers guide, lack of instructional materials, irrelevancy of teacher’s training, lack of supervisor help, lack of physical facilities, poor to learn, mathematics on the part of the students.

Riaz (2000) measured teachers’ performance on teaching competence, demonstrated, motivational skills, teachers’ attitude toward students and fairness in grading. Aptitude is used to refer to a potential rather than an attainment. Special

abilities, such as mathematical or sporting powers, are often referred to as aptitudes. Specialized area of performance may also be referred as aptitude. An aptitude is an innate inborn ability to do a certain kind of work. Pre-primary education is commonly used to denote a process of providing educational experiences to the young children before going to formal school. Pre–primary education aims to provide environment for the holistic development of the children. Early childhood education emphasizes preparing a child academically, socially, emotionally, and physically during these age ranges and the focus of protesting and caring the child in the absences of his/her primary care giver.

Paudel (2002) Conducted a research study entitled "A comparative study of the mathematics achievement of primary level students with and without pre-primary education". He concluded that there were significant differences between achievement of students who attended pre-primary level and who did not. The study found that the pre-primary education given a positive impact on the children, in mathematics of primary level. It was noted that the children, who did not attend the pre-primary education, were not able to secure the better achievement than that of the students who attainted the pre-primary education. The study clearly indicated that pre-primary educations have a positive impact on the achievement of the children at the primary level.

Shrestha (2005) conducted a thesis entitled "A study on the mathematics teachers' teaching performance of secondary level at Rautahat district". He selected 31 secondary level mathematics teachers from 17 schools. He observed teachers classes using the class observation form and interviewed with the teachers. Statistical indicators such as mean weightage and percentage scale (yes (affirmative) and no (negative) types questions)

were used for the analysis of the performance. Researcher concluded that teaching performance is not satisfactory.

Chen (2005) did a study entitled "The relationship between mathematical beliefs and performance about the study of Students and their teacher's in Beijing and New York". The purpose of this study was to investigate cross-culturally the relationship between student's performance and student's beliefs as well as teachers' mathematical beliefs. A student's mathematical beliefs questionnaire, a teacher mathematical beliefs questionnaire, and a student math test were constructed and used for data collection. A total 576 fourth grade students and 64 math teacher of these students in New York City and participated in this study. Analysis of these data using a hierarchical linear model showed that across cities there was a positive but non-linear relationship between students math performance and students as well as teachers' beliefs in problem solving between –city comparisons found that students in Beijing held stronger problem solving beliefs and performed better on the math test but the correlation between performance and beliefs are stronger in New York city than Beijing. This study suggests that beliefs in mathematics play an important role in students' mathematical learning but the relationship between math beliefs and performance in more complicated.

Tripathi (2008) conducted a study entitled "Teaching performance of mathematics teacher at secondary level". She found that almost of the teacher used lecture method in teaching, they are not using teaching materials properly, and she concluded that teaching performance has to be seemed similar in both public and institutional schools mathematics teachers.

Theoretical Literatures

Theoretical literature is a collection of interrelated concepts like a theory but not necessarily so well worked out. This study is sought to draw the teachers' performance of mathematics teaching at pre-primary level. There are various theories in the field of teaching and learning among them this study is mainly based on the Montessori teaching method.

Montessori Method is a teaching method developed by Dr. Maria Montessori in 1907 that uses independent, self-correcting activities to develop and advance a student's natural ability and intellect. It is a method of education that is based on self-directed activity, hands-on learning and collaborative play.

In the early 1900's, Italian educator and physician Maria Montessori developed an innovative teaching methodology for children that left an indelible mark on education curricula throughout the world. Montessori education is a sensory-based pedagogy that is based on the belief that children learn at their own pace through manipulation of objects (Lopata, Wallace, & Finn, 2005).

In Montessori classrooms children make creative choices in their learning, while the classroom and the teacher offer age-appropriate activities to guide the process. Children work in groups and individually to discover and explore knowledge of the world and to develop their maximum potential. The Montessori classroom is designed around three key points: the teacher, the child and the environment. Each child works at his own pace, and any help from other children happens spontaneously. There's no pressure from teachers to work faster, and teachers offer guidance for building on skills as needed. Montessori classes consist of children of different ages, which more closely resemble a

real-world environment. The younger children (ages 3-5) focus their 'work' on materials that develop cognition through seeing, tasting, smelling and touching through direct experience.

Montessori classrooms are beautifully crafted environments designed to meet the needs of children in a specific age range. Dr. Maria Montessori discovered that experiential learning in this type of classroom led to a deeper understanding of language, mathematics, science, music, social interactions and much more. Most Montessori classrooms are secular in nature, although the Montessori educational method can be integrated successfully into a faith-based program.

Every material in a Montessori classroom supports an aspect of child development, creating a match between the child's natural interests and the available activities. Children can learn through their own experience and at their own pace. They can respond at any moment to the natural curiosities that exist in all humans and build a solid foundation for life-long learning.

The Montessori Method of teaching is a modern educational movement that encourages teachers to view children and classroom education differently than the common teacher-student relationship. Instead of focusing on academic education, the Montessori Method focuses on respecting and encouraging each child's individual differences, providing a nurturing environment to teach social interaction and emotional skills. The Montessori Method is most often applied at the pre-school level due to its focus on early child development.

The philosophical tenet behind the Montessori Method is that children each have their own internal guidance for self-directed development. The teacher acts as a guide,

watching over the classroom to remove obstacles from learning but not participating as a direct instructor. Lessons given by the teacher often involve how to use or play with the various instructional toys in the classroom.

According to Dr. Montessori, each child develops through several stages, each unique and requiring a slightly different teaching strategy. The first occurs between birth and age six. This stage represents the time when infants, toddlers, and children acquire language and begin to experience the world for the first time. It includes the development of the ego, where the child begins to first differentiate between self and other. The second stage occurs between the ages of six and twelve, during which children begin to develop the capacity for independent thought and abstract reasoning. This stage is marked by the desire to interact socially and emotionally with others. The last stage in development is adolescence.

Instead of instructing with rote lectures, handouts, worksheets, and lesson plans. A Montessori teacher will offer guidance, but the child is ultimately responsible for his or her own individual learning. The classroom will often contain several stations, each containing toys which allow children to explore and learn. For example, a common station in a Montessori classroom will have a bucket of Lego blocks and several pictures of simple objects like an apple or a house, which the children can build if they want. Other stations might have books, crayons, a xylophone, or other engaging activities. The whole idea behind the Montessori classroom is allowing children to learn through playing.

Another interesting uniqueness to Montessori classrooms is age grouping. Children are separated by ages and grade levels, interacting primarily with children their

own age. A Montessori classroom will often be a mixed-age class, for example, containing all children between the ages of three and six. This is important because children are always at different stages in their development, and younger children can learn by watching older children play.

One underlying premise of the Montessori Method is that each child possesses an inner power that motivates them to seek out specific activities and interactions (Crain, 2004). The purpose of the classroom was to create a prepared environment where the student was free to discover and advance his or her unique power while disciplined enough to stay focused on a specific series of tasks. With this progressive approach, learning becomes "a complex process of making sense of new information through reflection and interaction" (Weissglass, 1999, p. 46). Common manipulators, or manipulative materials, used by Montessori included wooden letters and numbers, cylinders, blocks, beads, rods, puzzles, gymnastic equipment, metal objects, and household items.

According to Montessori, the goal of education is "to be able to find activities that are so intrinsically meaningful that we want to throw ourselves into them" (Montessori, 1967, p.14). Crain (2004) confirmed this assertion by noting that "when children find tasks that enable them to develop their naturally emerging capacities, they become interested in them and concentrate deeply on them. They possess a serenity that seems to come from the knowledge that they have been able to develop something vital from within (Crain, 2004, p. 4).

Montessori education is an educational approach developed by Italian physician and educator Maria Montessori. It is characterized by an emphasis on independence,

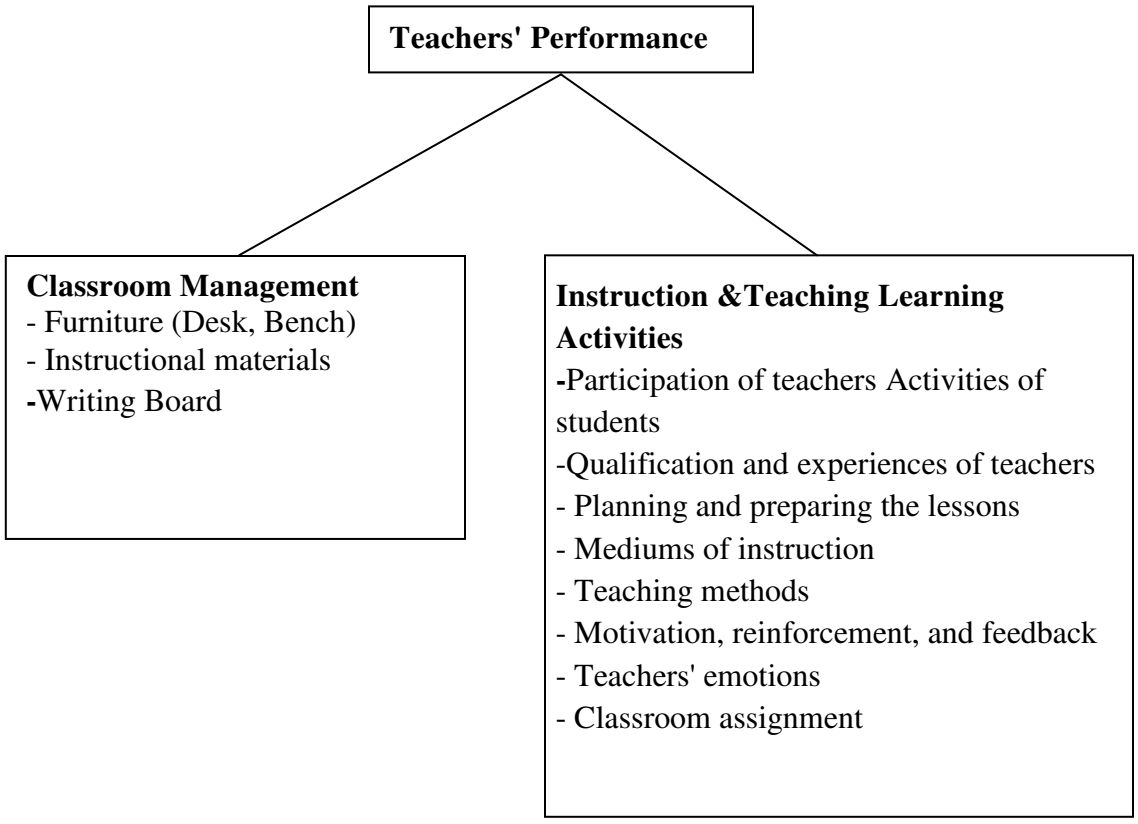
freedom within limits, and respect for a child's natural psychological development, as well as technological advancements in society. It is fundamentally a model of human development, and an educational approach based on that model. Based on her observations, Montessori believed that children at liberty to choose and act freely within an environment prepared according to her model would act spontaneously for optimal development.

Conceptual Framework

From above theoretical and empirical literature, the researcher found the gap in the research for the study. The conceptual framework helps the researcher to make research instruments, not only that but the collected data has been analyzed and interpreted on the basis of conceptual framework. Teaching is really challenging profession. Good performance in the classroom is important part in teaching learning activities. Different teachers perform in different ways. While performing in the class, teachers should careful in classroom management, physical and psychological management, instruction and teaching learning activities. The teachers should be out of personal biasness. They should be fair and should treat all the students equally. In the classroom, utmost care should be taken. From planning and preparing the lessons, they should play import role till end of the class or lesson. In this study, the researcher had made following conceptual framework from the reviewed of literatures.

Figure 1

Conceptual Framework for the Study



There are many components that could affect the teacher's performance. The figure 1 shows that teaching performance has included two areas such as classroom management, and instruction and teaching learning activities. Classroom management consisted of classroom furniture, instructional materials, and writing board where as instructions and teaching learning activities consisted of participation of teachers, activities of students, academic qualification and experiences of teachers, planning and preparing the lessons, mediums of instructions, teaching methods, use of motivation, reinforcement and feedback, teachers' emotions and biasness, and classroom assignment.

Chapter III

METHODS AND PROCEDURES

This chapter deals research methods and procedures based on following topic; research design, population of the study, sample of the study, research instruments and its validity, data collection procedures, scoring procedures, and data analyzing procedures.

Research Design

The study was conducted with the study of teaching performance of mathematics teachers at pre-primary level in Tanahun district. The study has included both qualitative and quantitative research methods. The survey design was adopted to conduct the study.

Population of the Study

All mathematics teachers who were teaching mathematics at pre-primary level in Tanahun district at public and institutional school were considered as population for the study.

Sample of the Study

There were 472 schools and 728 pre-primary teachers in Tanahun district. Out of those schools, thirty public and fifteen institutional schools were selected by using stratified random sampling methods. From those sample schools, sixty teachers were selected for the study. Out of those sixty teachers, thirty teachers were selected from public schools (one from each government school) and remaining thirty teachers were selected from ten institutional schools (two teachers from each institutional school).

Research Instruments/Tools

To collect the data, structured questionnaire, class observation forms, and interview schedule were used. The questionnaires, observation form, guidelines for

interview were developed by the researcher himself with the help of supervisor, subject experts, and related literature.

Reliability and its Validity

Initially, the research instruments were developed and administered by the researcher himself from related literatures with the consultation of supervisors. They were selected from the related literatures which were already validated by experts in the field. Further, a pilot test was conducted among five pre-primary schools' teachers in Tanahun district. By adding the results of the pilot testing and adopting the suggestions given by the supervisor and experts, the final versions of research instruments were prepared. In this process, some items were changed, some items were rephrased and some repositioned.

Data Collection Procedures

To collect the data, researcher visited each of the samples school with research instrument and request letter of campus. After explaining the purpose of his visit to sample schools, the researcher visited sample teachers regularly for one year after receiving the authority of school administrators. In this period, researcher requested the sample teacher to fill up the form of questionnaire. He filled up the performance of teachers with the help of class observation form himself. Unstructured questions were used for the interview. The responses obtained from teachers were noted and recorded for the study.

Scoring Procedures

In this study, the data collected from questionnaire were analyzed and interpreted with the help of percentage schools. It meant that researcher used "Yes" for affirmative

and "No" for negative responses for the questionnaires. Further, Likert's five points scale were used to compare the teaching performance of teachers in public and institutional school. The scores of 5, 4, 3, 2, and 1 was assigned to that statement consisted the responses of "Very Good", "Good", "Satisfactory", "Poor", and "Very Poor" and reverse for negative statements.

Data Analysis Procedures

In this study, data collected through questionnaire was analyzed and interpreted by using percentage scale and the data obtained through class observation form was analyzed with the help of mean weightage (Formula given in Appendix-D). If the calculated mean weightage of the statement is greater than three then those items are considered as favorable statement, otherwise they are considered as unfavorable statement for teachers' performance. The performance of teachers in public and institutional school was compared with the help of t test ($\alpha = 0.05$, level of significance) and the data obtained by interview was analyzed descriptively.

Chapter IV

ANALYSIS AND INTERPRETATION

This chapter deals analysis and interpretation of data obtained through data collection instruments.

The aim of the study was teaching performance of mathematics teachers. The objectives were to analyze the teaching performance of mathematics teachers and to compare the teaching performance between public and institutional schools' teachers. To achieve the objectives of the study, the collected data has been analyzed and interpreted according to the objectives of the study and its conceptual framework on the following headings.

Teachers' Performance in Public and Institutional Schools

The researcher had prepared the observation form to compare the performance between public and institutional schools' teachers. In this study, the researcher found that many teachers of public schools had more teaching experiences and qualification than the teachers of institutional schools.

Table 16 (Appendix-C) shows that public schools' teachers had good performance on the basis of punctual in the classroom (Mean weightage Pub.4.90, inst. 4.70). The teachers of public schools were using more instructional materials in compared with the teachers of institutional schools (Mean weightage pub. 2.60, inst. 2.20). It was not satisfactory in aggregate (Mean weightage 2.40). Likewise, the public schools' teachers had showed more love and affection to the students.

Further, teachers of public school didn't feel fear but showed more respects for the supervisors in compared to the teachers of institutional schools. Similarly, public schools

had suitable classroom furniture and comparatively satisfactory classroom management in compared with institutional school.

In contrary to this, on the basis of school uniform, classroom environment, participatory of students in the class, biasness activities of teachers, and students evaluation system in institutional schools were more favorable in compared with the performance of institutional schools' teachers (Table 16, Appendix-C).

Table 16 (Appendix-C), further, exemplifies that availability and used of instructional materials, suitability of furniture to students, classroom decoration, planning and preparing the lesson, commanding over subject matters, used of motivation and feedback, students' evaluation, summarization of the lessons at the end of the class, neither public nor institutional schools' teachers performed better.

Table 17 (Appendix-C) shows tabulated t-value at 5% level of significance with 58 degree of freedom is 1.734. But the calculated t-value is 0.486. The hypothesis, which was going to test, was two tailed test. The calculated value became less than tabulated value at 5% level of significance, i.e., $|0.486| < 1.734$. Hence the null hypothesis is accepted. It meant that there is no significance difference between the performance of public and institutional schools' teachers. Since null hypothesis was accepted at 5% level of significance with 58 degree of freedom, it is obviously accepted at 1% level of significance with 58 degree of freedom also. Thus, teaching performance of public and institutional schools' mathematics teachers had almost similar performance.

In this regards, while comparing the teachers' performance of public and institutional schools, the performance of public schools' teachers had good performance in some areas whereas institutional schools' teachers had other some areas also. But in

many areas, there were almost the similar results (Table 16). The statistical t-test shows that there is not the significance different between the performance of public and institutional schools' teachers (Table 17). Hence, the researcher concluded that the performance of public and institutional were not so much different.

Classroom Management

Classroom should be properly managed and decorated. It helps the teachers to make good teaching performance. Without proper classroom management, teaching learning process can't run smoothly. Classroom management indicates suitable classroom environment in which teaching learning activities can run smoothly despite any disturbance. It indicates cooperative learning environment with adequate physical and instructional management. In this study, classroom management includes class size, classroom furniture, classroom decoration, writing board or as a whole classroom environment.

From table 1, 85% teachers (pub. 80%, inst. 90%) claimed that the classroom was decorated properly. Only 15% teachers (pub. 20%, inst. 10%) agreed that there were availability of adequate instructional materials in the class whereas 65% teachers (Pub. 50% and inst 80%) had positive attitudes towards availability of suitable writing board. Moreover, all the teachers insisted that classroom consisted of enough furniture (desk and bench), but only 65% teachers (Pub. 70% and inst 60%) claimed that there was suitable sitting space according to the students' maturity, but they agreed that classroom were properly cleaned and sanitized.

The result of class observation form (Table 16, appendix-C) shows that classroom had enough furniture (Mean weightage 4.29; pub. 4.37, inst 4.20) but they were not

suitable according to the maturity of students (Mean weightage 2.53; pub. 2.60, inst. 2.10). It indicates lack of proper management of furniture (desk and bench) in the classroom. On the other hand, there was not the problems about cleanliness and sanitation inside the classroom (Mean weightage 3.90; pub. 4.20, inst. 3.70).

"Students are about three to five years of age but desks and benches are big. It was not suitable according to the age group of students" (Teacher's view)

Similarly, teachers' performance on the basis of classroom decoration was favorable (Mean weightage 3.05; pub. 4.20, inst. 3.60). The researcher found that instructional materials, rack, writing boards etc are managed in the schools. Further, classroom environment on the basis of air, light and temperature was favorable for the study (Mean weightage 3.10; pub. 3.03, inst. 3.17). There was not any disturbance from the outsides, and due to proper co-ordination of doors and windows the classrooms were light where the air could easily passes.

In this regards, the researcher concluded that performance of teachers on the basis of availability of furniture, cleanliness and sanitation inside the classroom, cleanliness decoration, classroom environment on the basis of light, air and temperature, seemed favorable, but available furniture (desk and bench) were not suitable.

Instructional Materials

Instructional materials are primarily a medium for delivery of content. The teacher reiterates and builds on the content. Instructional materials are the important part of teaching. Instructional material means content that conveys the essential knowledge and skills of a subject in school curriculum through a medium or a combination of media for conveying information to a student. It includes a book, supplementary materials, a

combination of a book, workbook, and supplementary materials, computer software, magnetic media, , computer software, on-line services, or an electronic medium, or other means of conveying information to the student or otherwise contributing to the learning process through electronic means, including open-source instructional material.

To make teaching learning process more effective and more achievable, instructional materials should be used properly, appropriately and sufficiently. Instructional materials play a vital role to make teaching learning activities more effective and meaningful. Use of concrete instructional materials helps students to attain clear concepts and ideas about the teaching content. It helps to concentrates the mind of the students towards the lesson. It is also the ways of encouraging and motivating the students towards the lesson. So, teachers should focus to use concrete instructional materials as much as possible.

All the teachers of public and institutional schools claimed that they were using instructional materials (Table 2, appendix-C). While observing the classroom, it was found that instructional materials were available in schools or classroom (Mean weightage 3.08; pub.2.93, inst. 3.23), but used of instructional materials was very low in schools (Mean weightage 2.45, pub. 2.57, inst. 2.33).

"We are using very few instructional materials of low cost and of no cost due to unavailability of it" (Teacher's view)

"Instructional materials related to the lesson are not sufficiently available in school" (Teacher's view)

Those views show instructional materials were not properly available in public and instructional materials. The available instructional materials and used of instructional

materials was very low. Teachers themselves can use instructional materials of low cost and no cost. The instructional materials available in those schools were different pictures of animals, human beings, fruits, colorful balls and marble, sticks, cartoon pictures etc. Further, episode 1 and episode 2 (Appendix-F) shows that there was lack of using instructional materials in the classroom.

While observing the classroom, the researcher found that there was unavailability of enough instructional materials in the class. The availability instructional materials in those schools are very few. Teachers didn't focus to construct and used instructional materials.

Writing Board

The writing board should be suitable in its size and quality. It must be kept in suitable position. While conducting the study, it was found that whiteboard were using as writing board in schools in which black marker pens were being used.

Table 16 (Appendix-C) shows teachers had favorable attitudes towards writing board (Mean weightage 3.25; pub. 3.27, inst. 3.23). It indicates that many schools had suitable writing board. While observing the class, the researcher found that classroom had small size of writing board and of low quality but they were kept in suitable position.

In this regards, the researcher concluded that although there were writing boards available in the classroom but they were of low quality and small in size.

Instructions and Teaching Learning Activities

It is difficult to say which teaching method is better for teaching in schools or campuses level, but there is no any doubt that Montessori teaching method is popular teaching methods at pre-primary levels. Performance of teachers depends on instructions

and teaching learning activities. It is necessary to have enough knowledge about different teaching contents and methods to teachers. They should use appropriate teaching methods. Teachers' and students' psychology also play vital role in teaching learning activities. Teachers should be attractive as well as confidence in subject matter. In this study instruction and teaching learning activities has been analyzed as follows.

Participation of Teachers

A person in his/her life learns a lot from teachers, so it is very important for teachers to set good example for the society. Everybody learns from teacher by imitating them, so all teachers have a big responsibility to teach good things to their student. Appearance is one of the first things we notice, and we use this sensory information to form an immediate impression of teachers. Teachers, like everyone else in society, have different attire to others. Some are more formal than others in full suits, others more casual; and some dressed according to their school uniform.

Of course, the perception of their ability will eventually be replaced by their actual ability and results. This is the case for students who get repeated interactions with teachers, but parents who meet a teacher only a few times will most certainly judge them partly on appearance. Further, other characteristics may be judged from appearance, such as if they are strict, friendly, or even approachable.

If teachers were with school uniforms, then students also follow them. It meant that they are generally perceived as similar and there will be no debate over appropriate clothing. Physical appearance is the one factor of any teacher that influences teaching learning environment very easily. A good physical appearance of a teacher has many

advantages such as gains respect from students, increase attendance of students in the class, and helps in controlling the class.

Different activities of teachers such as their facial attraction, dressed up, voice, and regularity play the vital role in school. Attractive and charming face, well and clean dressed or school uniform, well and commanding voice are essential to teachers. It is said that students learnt what teachers told and what teacher really is because teachers are more than standing in front of the classroom. Students imitate many things through the activities of teachers. Students at the age of pre-primary school level are fundamental phase of life. Children are not well prepared and matured at the age of pre-primary level.

Many educators believe that early stages of life of child determine their future career. It is milestone period for whole life. Students, in this period, learn through imitation where the teachers interact with students in face to face situation. S/he is a real actor in a real environment. Teachers must be more serious and more careful in every encounter with child and every activity of child and herself/himself. It is necessary to play the role of model by teachers since activities of teachers affect more to their performance. Teachers can mould the child in this period.

The study found that many schools consisted of ladies teachers except few. Physical appearance of teachers was favorable (Mean weightage 4.82; Pub. 4.76, inst. 4.87) in the classroom. Although many teachers were participated in school with school uniform, few teachers were out of school uniforms also (Mean weightage 4.74; pub. 4.70 and inst. 4.77).

"Only the students have school uniform. The school doesn't afford any school uniform in pre-primary level" (Teacher's view)

Teachers believed that due to unavailability of school uniform, some of them went school without school uniform, but it was rare case. The study shows that teachers had participated regularly in the class (Mean weightage 4.79; pub. 4.88, inst 4.70) (Table16, appendix-C). While observing the classes, the researcher found that teachers had regularly participated in the class. While interviewing with teachers, similar result was obtained through class observation form. It indicates favorable for the study.

Hence, in this regards, it is concluded that many teachers in school were charming faces, neat and clean dress up. They were punctuation in the class. It meant that they were regularly participated in classroom teaching.

Students' Activities

The classroom activities of teachers as well as students are an important part in teaching learning activities. While combining the results of class observation form and the responses of teachers towards questionnaire, it was found that students were actively participated in classroom. The table 16 (Appendix-C) shows participation of the students in the classroom was satisfactory (Mean weightage 4.78; pub. 4.73, inst. 4.83).

Episode 1 (Appendix-F) shows that students were highly motivated by the teachers. The teachers hadn't used negative reinforcement. The instructional materials that teacher used was small in size. The teacher was in well dressed with commanding voice. She treated all the students equally. During this period, she created suitable teaching learning environment. Not only that, she sometimes danced, sometimes clapped, and created many activities that made students laugh. Here teaching styles were really attractive. Finally, she gave homework and gave thanks to all students. Hence, her teaching method seemed almost nearer to Montessori teaching method.

Further, episode 2 (Appendix-F) exemplifies that many teachers were not using instructional materials. Some teacher created biasness activities also which was justified from teacher's misbehavior to some students. But, she highly encouraged students to participate in the classroom activities. Students had actively participated in the classroom.

Qualification and Experiences of Teachers

While conducting questionnaire, it was found that all the sample teachers were either qualified or trained. They had the qualification of at least SLC degree. Many of them were of under graduated which is enough for teaching at pre-primarily level in the context of Nepal. Many teachers, whose qualification higher than S.L.C degree, were from education faculty. Although, some teachers had the qualification of SLC degree only, they had participated in different teacher training programs. There were not any teachers who were beyond either education faculty or teacher training program. The study shows that teachers of public school had more teaching experiences and qualification than the teachers of institutional schools. Many teachers had long time teaching experiences. As a whole, academic qualification and teaching experiences of teachers seemed favorable towards the study.

Planning and Preparing the Lessons

The first work of teacher before entering the classroom is to prepare and plan the lesson. Planning and preparing the lesson is necessary to each teacher every day. Without proper planning and preparation, teaching learning activities could not be run continuously and smoothly. Well planning and preparing the lessons guide teacher to perform well in the classroom. It increases teachers' confidence. Teacher should make lesson plan in written form as far as possible.

Table 3 (Appendix-C) shows that many teachers didn't prepare lesson plan, unit plan or early plans. The study exemplifies that only 35% teachers (Pub. 20%, inst. 50%) prepared lesson plan, 15% teachers (Pub. 0%, inst. 30%) prepared unit plan and no any teacher prepared yearly plan. Number of teachers preparing plan was less than number of teachers not preparing the lesson plan. The result of preparing lesson plan shows unfavorable towards the study. A question, "Why you didn't prepare lesson plan?" was asked to teachers, their views were as follows.

"I had taught for five year in the same class and same book, so I didn't prepare lesson plan in written form" (Teacher's view)

It is only necessary to prepare the lesson plan to new teachers" (Teacher's view)

Those views clarify that some teachers had negative perspective towards preparing lesson plan. Some teachers claimed that only new teachers should prepare lesson plan, it was lack of understanding about teaching. Many educators believe that all experiences or un-experienced teachers need lesson plan. They should prepare lesson plan orally or in written form.

Table 4 (Appendix-C) shows that teachers had practiced their lessons by reading books and reading materials. They would consult with other teachers if they got the problems about the lessons. Teachers practiced their lessons anywhere either at home or school or any places according to the necessity. It shows that teachers had practised more although they didn't prepare the lesson in written form.

Medium of Instructions

It is necessary to use appropriate teaching language or mediums of instructions in teaching learning activities. Mother tongue plays vital in teaching at pre primary level. It

is said that each children had a right to get the education of primary level from their mother tongue. But while conducting the data, it was not found using mother tongue as teaching mediums (Table 5, Appendix- C). They used Nepali and English language both as teaching mediums.

"Teaching though mother tongue is very difficult due to students from different communities" (School's principal)

"We don't have qualified teachers to use mother tongue" (School's Principal)

It is said that mother tongue is best language for teaching in pre-primary level. From the above views, the researcher concluded that teachers were not using mother tongue as teaching medium due to students of different communities together, lack of skilled and qualified teachers, lack of enough resources and facilities etc. Table 16 (Appendix-C) exemplifies that languages used in teaching learning activities was favorable (Mean weightage 3.77; pub. 4.33, inst. 3.20). Similarly, the teachers had commanding and fluency voice towards subject matters (Mean weightage 4.44; pub. 4.60, inst 4.27). It indicates good performance on the basis of voice of teachers.

Hence it could be concluded that teachers made favorable performance on the basis of teaching mediums such as used languages and voice. It would be better if they used mother tongue also. Each students should get the basic level education from their mother tongue if would be possible.

Teaching Methods

Teaching method is an important part of instructions and teaching learning activities. The achievement of teaching learning activities depends especially on teaching methods. Every teacher should have adequate knowledge and experiences about teaching

methods. They should apply proper teaching methods in proper time according to the students' psychology, difficulty level of teaching lessons, and availability of facilities.

Table 6 (Appendix-C) shows 15% teachers (10% of pub., inst. 20%) used lecture methods, 70% teachers (100% of pub., and inst. 40%) used discussion methods. While conducting the study, the teachers claimed that they were been using Montessori teaching methods in the classroom. But, all the teachers claimed that they were not using problem solving methods, induction and deduction methods, discovery methods. It was due to maturity level, knowledge and skills, lack of proper growth and development of students.

While observing the class, it was found that many teachers were using class discussion methods while teaching mathematics subject. They were teaching by using Montessori Methods also, but there were not adequate facilities for using Montessori Method. The class observation form consisted of mean weightage 3.17 (Pub. 3.20, inst. 3.13) about the use of teaching methods. It could be considered as favorable for the study.

"We used child centered teaching method how much it would possible"

(Teacher's View)

"There is no any alternative teaching method of Montessori teaching method"

(Teacher's View)

"I have participated in Montessori Training Program" (Teacher's View)

In this regards, the researcher found that many teachers used child centered teaching methods. Although teachers claimed that they were using Montessori teaching method, they couldn't follow it properly. There were not enough instructional materials as well as facilities in schools. Some teachers had participated in Montessori teacher training also. Majority of them focused game and game equipments as much as possible.

Motivation, Reinforcement, and Feedback

Motivation, reinforcement and feedback play a vital role in teaching learning process. Motivation is a psychological factor which arouses an organism to act towards a desired goal and optimize well-being. It is the energy that catalyzes behavior. Motivation affects all aspects of living. Being positively motivated in life is essential for growth, success and the overall well-being of a person.

Reinforcement is the process whereby desirable behavior is encouraged by presenting a reward at the time of occurrence of such behavior. Positive reinforcement is a tried and tested method in what is known in psychology as ‘operant’ conditioning. It is widely studied and used in behavior analysis. Timing is critical to achieve the best results by using positive reinforcement. The desired behavior needs to be rewarded immediately. A delay in rewarding the positive behavior will have no effect in reinforcing the desirable behavior.

Reinforcement consists of prizes, criticism corporal, financial punishment etc. In school level, both positive and reinforcement are used, but it is said that negative reinforcement should not be used to students. Whereas, teachers' encouragement, praise, reward etc are taken as positive reinforcement and criticism, corporal, financial and physical punishments etc are taken as negative reinforcement. It would be very much helpful if it is used properly. Further, appropriate feedback should be applied to improve students' weakness.

Table 16 (Appendix-C) shows that there was lack of student motivation in the classroom (Mean wieghtage 2.77, pub. 3.03, inst. 2.50). It meant that teachers had lack of enough knowledge to motive the students. Table 7 and table 8 shows the used of

reinforcement to the students. It indicates that all the teachers used positive reinforcement. Class observation form shows the favorable performance about used of positive reinforcement (Mean weightage 3.67, pub. 3.73, inst. 3.60). Positive reinforcement was provided by word spoken, word written or giving things or prizes.

On the other hand, 60% teachers (Pub. 50%, inst. 70%) accepted that they were using negative reinforcement also. The use of negative reinforcement is justified from the table 16. Although mean weightage of using negative reinforcement is less than three it also considered favorable performance since use of negative reinforcement should be reduced as much as possible. As negative reinforcement, students were criticized, scolded or beaten by teachers. But, it was not found kicking out students from the classroom. They were not economically fined. Some teachers claimed that they made small beat to students sometimes (Table 7, Appendix-C).

While conducting teaching learning activities, teachers have to use feedback properly. It helps to make pre- knowledge strong and to improve their weakness. Table 16 (Appendix-C) shows there was not lack of enough feedback to students (Mean weightage 3.99; pub. 4.20, inst 3.77). It indicates poor performance of teachers.

In this regards, the researcher concluded that teachers were using motivation, positive reinforcement, negative reinforcement, and feedback. Used of positive reinforcement is better performance, but used of negative reinforcement, lack of enough motivation and feedback was unfavorable towards the study.

Teachers' Emotions and Biasness

Teachers need good social behaviour. They should have well relationships with students, parents or with whole school family. Good teachers need well emotions also.

Emotions consisted of love, anger, affection, fear etc. So much emotions and very little emotions become fatal for teachers in teaching learning activities. Teachers should always be far from their personal biasness.

Different activities of teachers such as biasness activities, respect of teachers to others, relationship with students are regarded as social traits of teachers. Class observation form shows that love and affection of teachers to students consisted of mean weightage 3.94 (Pub. 4.10, inst. 3.77), it indicates favorable emotions. Further, fear and anger of teachers while performing the lessons consisted of mean weightage 3.84 (Pub. 3.90 of pub., inst. 3.77) and 3.94 (Pub. 4.10, inst. 3.77) respectively. It indicates favorable since less fear and anger had been given high score while observing the class. Moreover, teachers had good respective behaviour (Mean weightage 4.05; pub. 4.27, inst. 3.83). There was well relationship between teachers and students. The view of researcher; "I was properly behaved from teachers while conducting the study" shows well social relationships. It indicates good performance. Further, teachers didn't seem afraid.

Biasness is the factor that affects the classroom teaching. Biasness may be arisen from different ways such as choosing a student to call on waiting for a student to answer, reacting to the students' answer, selecting the students for participating tournament/games/programs etc. It is the act of attitudes, habits, expectations teachers may consciously and unconsciously may create bias. It is the non random selection of the students which don't provide each student equal chance to be selected in any activities. Teachers should not do bias. It becomes harmful for teaching learning activities.

In this study, it was found that teachers had not created biasness activities from teachers except few. As a whole, teachers had the good performance in respect to their

love and affections, anger, fear, respects and relationship with students. While conducting the study, all the teachers claimed that they didn't created biasness activities to students (Table 8, appendix-C). But while collecting the data, it was found creating biasness activities by teachers (Mean weightage 2.75; pub. 2.67, inst. 2.83). The biasness activities created by teachers were focusing only some students of front sides, misbehaved towards students, doing careless to backwards students, focusing to talent students only etc. In this study, biasness activities of teachers could be considered favorable since less biasness activities of teachers had scored high ranks and vice versa.

From the above description it is cleared that teachers had good performance on the basis of emotional factors such as love, affection, anger, fear and biasness activities. But it was found that some teachers created biasness activities also. Teachers always require democratic behaviour and free from personal biasness.

Classroom Assignment

The teacher should initiate the lesson in the class in such a way that s/he should concentrate the attention of the students towards the lesson. The class presentation of the lessons should be attractive and achievable. For it, s/he should use adequate instructional materials, used suitable questions, and participate in class work and homework.

Table 9 (Appendix-C) shows class presentation became favorable towards the study. Similar result was found from class observation form (Mean weightage 3.17; pub. 3.33, inst. 3.00). The teachers had favorable performance to initiation of the lessons (Mean weightage 2.85; pub. 3.03, inst. 2.67). Many teachers started their lesson after revising the lesson or making some funs to students. The gesture of teachers to students in the classroom was favorable (Table 16, appendix-C). Their lessons relevant to subject

matters, commanding over subject matters, and used of illustrations seemed favorable. They were capable to teach according to child level and interests (Table 9, appendix-C).

Table 10 (Appendix-F) shows teachers used all types of questions such as easy, average, difficult, oral and written types of questions. It indicates favorable performance. Further, Table 16 justifies it since questioning to the students consisted of mean weightage 3.35 (Pub. 3.37, inst. 3.33).

Table 11 (Appendix-C) shows that teachers daily gave and checked homework but not weekly and monthly. While checking class work or homework, they gave check marks, made comments in written form such as good, excellent or providing smiling face and so on. They gave feedback to the students to improve their weakness. No any teachers left blank space while checking class work and homework. The class work or homework was provided on books, writing board or orally. The result of class observation form shows the performance of teachers towards class work and homework was favorable (Mean weightage 3.47; pub. 3.63, inst. 3.30).

Further, they had good command over subject matters. They used suitable illustrations related to the lessons. While observing the class, it was found that mean weightage of use of illustrations 3.19 (Pub. 3.17, inst. 3.20). As a whole class presentation, and used of illustrations could be considered as favorable performance of teachers.

Table 14 (Appendix-C) shows teachers ended the class or lessons in different ways. At the end of the lesson, some teachers summarized the lessons, some evaluated the students, and some gave homework. Further, all teachers insisted that they did self evaluation about their performance exhibited in the classroom. The result of class

observation form shows that summarization of the lesson at the end of lesson was unfavorable (Mean weightage 2.17; pub. 3.33, inst. 2.00). Further, evaluation of the students was also unsatisfactory (Mean weightage 2.75; pub. 2.50, inst 3.00).

From above description, it is concluded that class presentation of teachers was favorable. Initiation of the lesson, gestures towards students, commanding over subject matters, used of illustrations, questions used, given and checked class work and homework were favorable towards the study. But, used of feedback, students' evaluation, summarization of the lessons at the end of class were unfavorable towards the study.

Chapter V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary, findings, conclusion, suggestions, and recommendations.

Summary

The purposes of the study were to identify the teachers' performance of mathematics teaching at pre-primary level and to compare the teaching performance of between those schools.

The population of the study consisted of pre-primary mathematics teachers situated in Tanahun district of public and institutional schools. The study was of survey type and descriptive in nature. For the study, the researcher randomly selected 60 teachers from 30 public and 15 institutional schools (one teacher from each public and two teachers from each institutional school) from Tanahun district. The main tools for the study were questionnaire, class observation form and interview schedule which were developed by researcher himself with the consultation of supervisor. The research tools were finalized after conducting pilot study. The data obtained from questionnaire was quantified based on percentage scale and the data obtained from classroom observation form were categorized in terms of Likert's five points scale; very good, good, satisfactory, poor and very poor. Statistical indicator such as mean weightage and paired sample t-test was used for the analysis of the teachers' performance. The responses collected through interview also added with analyzing of data. The collected data had been analyzed and interpreted according to the objectives of the study and conceptual understanding in chapter IV.

Findings of the Study

While conducting the study, the researcher arrived at the following results as the finding of the study.

- Teachers were regularly participating in the classroom.
- Most of the schools had enough furniture but they were not suitable to the students. The classroom was cleaned and sanitized.
- Although most of the school had instructional materials they were not adequate for the students.
- The writing boards inside the classroom were small in size and of low quality.
- Most of the teachers were qualified or trained.
- Although most of the teachers had more year teaching experiences, they had lack of pedagogical knowledge. They became failure to use Montessori teaching method.
- About 65% teachers didn't prepare lesson plan.
- Teachers used either English or Nepali or both languages as mediums of instruction. They became failure to use mother tongue.
- The statistical t-test shows that there was not significance different between teachers' performance of public and institutional schools. There was almost the similar performance.

Conclusion

The findings of this study shows teachers' performance has to be seemed favorable in many subject/ statements presented above (Chapter IV) in public and

institutional school teaches such as in teachers' preparation, use of instructional materials, classroom activities, teaching methods and class presentation.

Most of the teachers claimed that they were using Montessori teaching methods but in fact they became failure to use it. They frequently used motivation, reinforcement and feedback in teaching learning activities. The writing board was of inadequate size and the available instructional materials were not enough. Most of the teachers prepared the lessons orally but not in written form. While comparing the teaching performance between public and institutional schools' teachers, it was found that physical appearance of teachers, dressed up, classroom environment, planning and preparing the lessons, used of motivation, used of negative reinforcement, used of feedback, and students' evaluation were better in institutional schools in compared with public schools or public schools' teachers. Further, punctuality in schools or classroom, availability of instructional materials, used of instructional materials, love and affection, biasness activities, fear, anger, conditions of furniture, classroom decoration, used languages, commanding voice, class presentations, gestures, questioning to students, summarizing the lessons etc were better in public schools or to public schools' teachers in compared with institutional schools or to institutional schools' teachers. But as a whole, it could be said that there was not different between teaching performance of public and institutional schools' teachers.

Suggestions

Through the above description, the following suggestions have been mentioned:

- The classroom should have suitable furniture to students.
- Teachers should focus to construct and use suitable instructional materials.
- Writing board should be of suitable size and of good quality.

- Use of motivation, reinforcement and feedback should be increased.
- All the teachers should prepared lesson, unit, and yearly plan regularly.
- It would be better to use mother tongue as mediums of instructions as much as possible.
- It would be better to follow Montessori teaching methods in pre primary level.

Recommendation for the Further Study

- Similar studies are essential on the same subjects in higher level.
- Similar research should be conducted by taking large sample size.
- Research should be conducted on the factors influencing performance of teachers in lower and higher school level.

REFERENCES

Acharya, P. (2006). *A Study on the Problems Faced by HSEB Mathematics Teacher in Teaching of Grade XII.* An Unpublished Thesis, T. U., Nepal.

Adams, H. P. & Dickey, F. G. (1956). *Basic Principles of Student Teaching.* American Book Company, New York, U.S.A.

Amatya, B. P. (1978). *A Study of the Effectiveness of Teaching Mathematics with and without Use of Instructional material.* An Unpublished Master's Thesis, T. U., Nepal.

American Psychological Association. (2009).*Publication Manual of the American Psychological Association* (6th ed). Washinton, DC: Author.

Baral, S. K. (2001). *A Study of Problems Faced by Mathematics Teachers in Implementation of Compulsory Mathematics in Grade IX.* An Unpublished Master's Thesis. T. U., Nepal.

Basnet, B. B. (2003). *Teaching Problems Faced by Mathematics Teachers in Existing Curriculum of Grade VIII.* An Unpublished Thesis. T. U., Nepal.

Best, J. W. & Kahn, J. V. (1992). *Research in Education*, New Delhi Prentice Hall of India Private Limited.

Bhatia, B. D. & Bhatia, K. (1987). *The Principles and Method of Teaching*. New Revised and Enlarged Edition, Delhi: Hoha Housem Book Sellers and Publishers.

Bhattarai, T. (2005). *A Study of Problems Faced by Mathematics Students in Existing Curriculum.* An Unpublished Thesis. T. U., Nepal.

CERID (1988). *A Study on Secondary Education in Nepal*, Kathmandu, T. U.

Chaulagain, R. K. (2005). *A Study on Problems Faced by Secondary School Mathematics Teacher in Teaching Geometry*. An Unpublished Thesis. T. U., Nepal.

Chen, Q. and Leung, F. (2013). *A Comparative Study of Teachers' Mathematics Beliefs in the Context of Curriculum Reform in Hong Kong and Chongqing*. The Mathematics Educator 15 (1), 46-65. Retrieved from http://math.nie.edu.sg/ame/ matheduc/tme/tmeV15_1/3.pdf

Crain, W. (2004). Montessori. *Encounter, 17*(2), 2-4. Retrieved from http://www.search. ebscohost .com/ login.aspx?direct=true&db=aph&AN=13936267.

K. C., N. B. (2009). *A Study on Problems Faced by Students in Compulsory Mathematics at Secondary Level.* An Unpublished Thesis, T. U., Nepal.

Lamichhane, H. (2001). *A Study of the Problems Faced by Secondary Level Mathematics Teachers in Teaching Mathematics*. A Master's Thesis, Department of Mathematics Education, T. U., Nepal.

Lopata, C., Wallace, N. & Finn, K. (2005). *Comparison of Academic Achievement between Montessori and Traditional Educational Programs*. Journal of Research in Childhood Education*, 20*(1), 5-13. Retrieved fromhttp://search.ebscohost.com/ login.aspx?direct=true &db=ehh&AN=18543435.

Montessori, M. (1966). *The Secret of Childhood.* New York: Ballantine Books.

Montessori, M. (1967). *The Discovery of the Child*. New York: Ballantine. Retrieved from http://www.montessori.edu.

Montessori, M. (2000): *A Sensory Approach to Learning*: Early Childhood Today, 15(3), 74. Retrieved from http://search.ebscohost.com/login.aspx?direct=true &db=aph &AN=3797123

Neupane, R. C. (2001*). A Study on the Effectiveness of Play-Way Method in Mathematics Teaching at Primary Level.* An Unpublished Master's Thesis, Department of Mathematics Education, T. U., Kirtipur, Kathamandu, Nepal.

Pandit, R. P. (1999). *Problems Faced by Mathematics Teacher Education in the Implementation of Three Year B. Ed. Level Mathematics Curriculum.* An Unpublished Thesis, T. U., Nepal.

Pathak, B. R. (1986). *A Study on the Problems Faced by the Teachers in Kathmandu District in the Implementation of Mathematics Curriculum for Lower Secondary School.* An Unpublished Master's Thesis, T. U., Nepal.

Paudel, D. (2002). *A Comparative Study of the Mathematics Achievement of Primary Level Students with and without Pre-Primary Education*. An Unpublished Thesis, T. U., Nepal.

Peters, H. J., Burnett C. W. and Rarewell G. F. (1963), *Introduction to Teaching*. The Macmillan Company, New York.

Regmi, D. R. (2008). *A Teachers' Belief About the Mathematics and its Manifestation in Teaching practices at Secondary Level.* An Unpublished Thesis, T. U., Nepal.

Riaz, M.N. (2000). Student Evaluation of University Teaching Quality: Analysis of a Teacher's Rating Scale for a Sample of University Students. *Pakistan Journal of Psychological Research,* 15 (3), 107-117.

Shelkh, M. A and Iqbal M. Z (2003). *Status of Teachers in Pakistan.* UNESCO Office, First Floor, Saudi-Pak Tower, Blue Area, Islamabad. Retrieved From http:// www.un.or.pk/unesco.

Shrestha, B. K. (2005). *A Study on the Mathematics Teachers' Teaching Performance of Secondary Level*. A Master's Thesis, Department of Mathematics Education, T.U., Nepal

Subedi, A. (2005). *Mathematics Learning Management in an Effective School*. An Unpublished Master Thesis, Department of Mathematics Education, T. U., Kirtipur, Kathmandu, Nepal.

Thapa, P. K. (2005). *Problems Faced By Teachers in Teaching Mathematics at Primary Level.* An Unpublished Thesis. T. U., Nepal.

Thapa, R. K. (2004). *A Study in Mathematics Classroom Management at Primary Level in Kathmandu Metropolitan City*. An Unpublished Thesis, T. U., Nepal.

Tripathi, S. K. (2008). *A Study on Teaching Performance of Mathematics Teacher at Secondary Level*. An Unpublished Thesis, T. U., Nepal.

Usop, A. M. (2013). *Work Performance and Job Satisfaction among Teachers.* A PhD Thesis, School of Social Sciences, Sains University Malaysia.

Villegas-Reimers, E (2003). *Teacher Professional Development*: An International Review of the Literature. International Institute for Educational Planning 7-9 Rue Eugène Delacroix, 75116 Paris. Retrieved from http://www.unesco.org/iiep.

Wagle, M. P. (1995). *Research Method in Education, Kathmandu*, Ganesh Himal Educational Press, Nepal.

Yadav, S. (2000). *A Study on the Role of Teachers Behaviour in Achievement of Students in Math of Lower Secondary Level of Sirha District*. An Unpublished Master's Degree Thesis, Department of Mathematics Education, T. U., Nepal.

Appendix-A

QUESTIONNAIRE

Respected teacher,

I am going to conduct a thesis entitled on "Teaching Performance of Mathematics Teacher at Pre-primary Level" for partial fulfillment of master's degree in mathematics education. Teaching learning activities couldn't be effective without qualified teacher in teaching. So to complete this thesis, I have prepared some questionnaires which are prepared to you. Researcher is very much thankful for your valuable help and would like to express gratitude to you and your institution. The information obtained from you will be used for this study and your answer will be kept secret.

Researcher

Hari Man Nepali

M.Ed

Department of Mathematics Education

I request to fill this questionnaire as follows:

Please read carefully and respond as you feel.

Section-A

Teachers' Bio-Data Form

Name of teacher: ……...

Sex: Male ☐ Female ☐

Name of school: ……

Academic qualification: ……Teaching experience: ……

Section-B

This is a humble request to you to read each of the statements described in the questionnaire carefully and express honestly your opinion by putting tick mark (√) at the appropriate space where Yes (Favorable), No (Unfavorable), SA (Strongly Agree), A (Agree), U (undecided), DA (Disagree), SDA (Strongly disagree). R (Remarks).

1. Classroom Management

S.N.	Statements	Yes	No	R
1.	Is the classroom decorated properly?			
2.	Are there adequate instructional materials?			
3.	Is writing board suitable?			
4.	Is there adequate furniture?			
5.	Is sitting space (desk and bench) suitable to students?			
6.	Is the classroom cleaned and sanitized properly?			

2. Instructional Materials

S.N.	Statements	Yes	No
1.	Do you use instructional materials in teaching learning activities?		

3. Used of Reinforcement

S.N.	Items	Yes	No	R
1.	Do you use positive reinforcement?			
2.	Do you use negative reinforcement?			
3.	Do you create biasness activities to the students?			

While using reinforcement to students,

S.N.	Statements	Yes	No	R
1.	Do you use words about students' progress orally?			
2.	Do you use words in written way?			
3.	Do you give things or prizes to students?			
4.	Do you kick out the students from the classroom			
5.	Do you beat students?			
6.	Do you give financial punishment to students?			
7.	Any others			

4. Planning and preparing the Lessons

I. Do you make the following plan?

S.N.	Plan	Yes	No	R
1.	Lesson plan			
2.	Unit plan			
3.	Yearly plan			

II. While preparing the lessons,

S.N	Statements	Yes	No
1.	Do you read books and other reading materials?		
2.	Do you consult with other teachers?		
3.	Do you prepare the lessons without consulting teachers and reading books?		

5. Mediums of Instructions

While teaching to students,

S.N.	Statements	Yes	No
1.	Do you use either English or Nepali languages only?		
2.	Do you use mother tongue as teaching medium?		

If you use other languages, write the name of the languages ……...

6. Teaching Methods

Do you use following teaching methods?

S.N.	Components	Yes	No	R
1.	Lecture method			
2.	Problem solving method			
3.	Discussion method			
4.	Discovery method			
5.	Induction and deduction method			
6.	Montessori method			

7. Class presentation

S.N.	Statements	Yes	No	R
1.	Are your lessons relevant to subject matters?			
2.	Is your class relevant to students' level and interest?			
3.	Is your lesson cover subject matters?			
4.	Is your presentation command over subject matter?			
5.	Do you use appropriate illustrations related to lesson?			

8. Questions

Do you use the following questions in the classroom?

S.N.	Statements	Yes	No
1.	Easy questions		
2.	Average questions		
3.	Difficult questions		
4.	Oral questions		
5.	Written questions		

9. Class work and Homework/Assignment

S.N.	Statements	Daily		Weekly		Monthly	
		Yes	No	Yes	No	Yes	No
1.	When do you give class work or homework?						
2.	When do you check class work or homework?						

How do you give class work or homework?

S.N.	Topics	Yes	No	Remarks
1.	From the text books or reference books.			
3.	Giving on writing board			
4.	Telling orally to students			

While checking class works or homework/assignment,

S.N.	Statements	Yes	No
1.	Do you give check mark?		
2.	Do you make comments?		
3.	Do you give feedback?		
4.	Any other		

10. Ending of the class or lessons

At the end of the lesson,

S.N.	Statements	Yes	No	R
1.	Do you summarize the lesson?			
2.	Do you evaluate the students' achievement?			
3.	Do you give class work or homework to students?			
4.	Do you evaluate your performance yourself?			

Appendix-B

Class Observation Form

Name and address of the school: ……

Class staring at: ……

Class ended at: ……

Name of class teachers: ……

Topic or Lesson: ……

Number of Gender: Male: ……; Female: ……

Number of students: ……, Boys: ……; Girls: ……

Date: ……

Period: …… ……

Time: ……

The following observation form was used to observe the teaching performance of teachers in the classroom.

Topics	S.N.	Items	VG	G	S	P	VP
Participation of Teachers in the Classroom	1.	Physical appearance of teacher in the classroom					
	2.	Dressed up					

	3.	Punctuation or regularity of teachers					
Instructional Materials	4.	Availability of instructional materials					
	5.	Use of instructional materials					
Teacher's Emotion and Social Traits	6.	Love and affection					
	7.	Biasness					
	8.	Fear					
	9.	Anger					
	10.	Respects					
Classroom Management	11.	Availability of furniture					
	12.	Suitability of furniture					
	13.	Cleanliness and sanitation					
	14.	Classroom decoration					
	15.	Writing board					
	16.	Classroom environment (light, air and temperature)					
Mediums of Instructions	17.	Voice					
	18.	Used languages					
Teaching Methods &Teaching Learning Activities	19.	Planning and preparing the lesson					
	20.	Participation of students in classroom activities					
	21.	Initiation of the lesson					
	22.	Class presentation					
	23.	Gestures					
	24.	Commanding over subject matters					
	25.	Confidence over subject matter					
	26.	Questioning to students					

	27.	Use of illustrations					
	28.	Use of questions					
	29.	Use of teaching methods					
Motivation, Reinforcement and Feedback	30.	Use of motivation					
	31.	Use of positive reinforcement					
	32.	Use of negative reinforcement					
	33.	Teachers' biasness					
Ending of the Lesson	34.	Use of feedback					
	35.	Class work and homework					
	36.	Students' evaluation					
	37.	Summarization of the lesson					

Where,

VG = Very good G= Good

S= Satisfactory P =Poor

VP = Very Poor R= Remark

Opinion of the mathematics teacher's towards teacher's performance: ……

……

……

Appendix-C
Responses of Sample Teachers

Table 1: Classroom Management

S.N.	Statements	Yes (Quantity/Percentage)			No (Quantity/Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Classroom decoration	24 (80)	27 (90)	51 (85)	6(20)	3(10)	9(15)
2.	Availability of adequate instructional materials	6 (20)	3 (10)	9 (15)	24(80)	27(90)	51 (85)
3.	Suitable writing board	15 (50)	24(80)	39 (65)	15 (50)	6 (20)	21 (35)
4.	Adequate furniture	30(100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
5.	Suitable sitting space	21 (70)	18 (60)	39 (65)	9 (30)	12 (40)	21 (35)
6.	Cleanliness and sanitation	18 (60)	27 (90)	45 (75)	12 (40)	3 (10)	15 (25)

Table 2: Instructional Materials

S.N.	Topics	Yes (Quantity & Percentage)			No (Quantity & Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Using instructional materials	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)

Table 3: Teachers' Planning & Preparation

S.N.	Plans	Yes (Quantity/Percentage)			No (Quantity & Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Lesson	6 (20)	15 (50)	21 (35)	24 (80)	15 (50)	39 (65)
2.	Unit	0 (0)	9 (30)	9 (15)	30 (100)	21 (70)	51 (85)
3.	Yearly	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)

Table 4: Sources of Planning & Preparing the Lessons

S.N.	Topics	Yes (Quantity/Percentage)			No (Quantity/Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Reading books and other materials	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
2.	Consulting with others	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
3.	Neither read books nor consult with others	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)

Table 5: Medium of Instructions

S.N.	Language	(Quantity/Percentage)					
		Pub.		Inst.		Total	
		Yes	No	Yes	No	Yes	No
1.	English or Nepali languages	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)	0 (0)
2.	Mother Tongue	0 (0)	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)

Table 6: Teaching Methods

S.N.	Methods	(Quantity & Percentage)		
		Pub.	Inst.	Total
1.	Lecture method	3 (10)	6 (20)	9 (15)
2.	Problem solving method	0 (0)	0(0)	0 (0)
3.	Discussion method	30 (100)	12 (40)	42 (70)
4.	Discovery method	0 (0)	0 (0)	0 (0)
5.	Induction and deduction method	0 (0)	0 (0)	0 (0)
6.	Montessori method	30 (100)	30 (100)	60 (100)

Table 7: Technique of Reinforcement

S.N.	Statements	Yes			No		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Words spoken	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
2.	Words written	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
3.	Giving things or prizes	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
4.	Kicked out students from the class	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)
5.	Beaten students	12(40)	15 (50)	27 (45)	18 (60)	15(50)	33(55)
6.	Giving financial punishment	0 (0)	0 (0)	0 (0)	30 (100)	30(100)	60 (100)

Table 8: Reinforcement and Teachers' Biasness

S.N.	Topic	Yes (Quantity & Percentage)			(Quantity & Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Use of positive reinforcement	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
2.	Use negative reinforcement	15 (50)	21 (70)	36 (60)	15 (50)	9 (30)	24 (40)
3.	Biasness	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)

Table 9: Class presentation

S.N.	Statements	Yes (Quantity/Percentage)			No (Quantity/Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Lesson Relevant to subject matters	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
2.	Relevant to students' level and interest	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
3.	Commanding over subject matter	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
4.	Used of illustrations	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)

Table10: Questions Used in the Classroom

S.N.	Statements	Pub. (Quantity & Percentage)		Inst. (Quantity & Percentage)		Total (Quantity & Percentage)	
		Yes	No	Yes	No	Yes	No
1.	Easy questions	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)	0 (0)
2.	Average questions	30	0 (0)	30	0 (0)	60	0 (0)

		(100)		(100)		(100)	
3.	Difficult questions	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)	0 (0)
4.	Oral questions	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)	0 (0)
5.	Written questions	30 (100)	0 (0)	30 (100)	0 (0)	60 (100)	0 (0)

Table 11: Assignment

S.N.	**Topic**	**Time**	**Yes (Quantity & Percentage)**			**No (Quantity & Percentage)**		
			Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Giving class work, homework	Daily	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
		Weekly	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)
		Monthly	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)
2.	Checking class work, homework	Daily	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
		Weekly	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)
		Monthly	0 (0)	0 (0)	0 (0)	30 (100)	30 (100)	60 (100)

Table 12: Evaluating Assignment

S.N.	Statements	Quantity & Percentage		
		Pub.	**Inst.**	**Total**
1.	Simply making check mark.	30 (100)	30 (100)	60 (100)
2.	Making comments in written way	30 (100)	30 (100)	60 (100)
3.	Providing feedback.	30 (100)	30 (100)	60 (100)

Table 13: Sources of Homework

S.N.	Giving homework	Quantity & Percentage		
		Pub.	Inst.	Total
1.	With the help of books	30 (100)	30 (100)	60 (100)
2.	Giving on writing board	30 (100)	30 (100)	60 (100)
3.	Orally given	30 (100)	30 (100)	60 (100)

Table14: Closing of the Lesson

S.N.	Statements	Yes (Quantity & Percentage)			No (Quantity & Percentage)		
		Pub.	Inst.	Total	Pub.	Inst.	Total
1.	Summarization of the lesson	27 (90)	24 (80)	51 (85)	3 (10)	6 (20)	9 (15)
2.	Evaluation of the students	18 (60)	24 (80)	42 (70)	12 (40)	6(20)	18 (30)
3.	Given homework	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)
4.	Self evaluation	30 (100)	30 (100)	60 (100)	0 (0)	0 (0)	0 (0)

Table 15: Results of Class Observation Form

Public School							**Institutional School**					
S.N.	**VG**	**G**	**S**	**P**	**B**	**MW**	**VG**	**G**	**S**	**P**	**VP**	**MW**
1.	25	7	0	0	0	4.76	27	2	1	0	0	4.87
2.	22	7	1	0	0	4.70	24	5	1	0	0	4.77
3.	26	4	0	0	0	4.88	24	3	3	0	0	4.70
4.	3	6	7	14	0	2.93	3	7	14	6	0	3.23
5.	0	9	8	4	9	2.57	0	6	7	5	12	2.33
6.	12	9	9	0	0	4.10	6	11	13	0	0	3.77
7.	4	13	13	0	0	3.70	4	8	5	13	0	3.10
8.	6	15	9	0	0	3.90	9	6	14	1	0	3.77
9.	6	9	6	6	3	3.30	4	5	15	3	3	3.13
10.	9	20	1	0	0	4.27	5	15	10	0	0	3.83
11.	12	17	1	0	0	4.37	7	22	1	0	0	4.20
12.	0	3	15	9	3	2.60	3	3	3	6	15	2.10
13.	15	6	9	0	0	4.20	6	11	8	5	0	3.60
14.	0	9	17	4	0	3.17	1	5	7	17	0	2.67
15.	0	9	20	1	0	3.27	4	10	5	11	0	3.23
16.	0	6	19	5	0	3.03	0	9	17	4	0	3.17
17.	18	11	1	0	0	4.57	9	19	2	0	0	4.23
18.	13	14	3	0	0	4.33	3	7	13	7	0	3.20
19.	0	0	0	0	30	1.00	0	0	0	0	30	1.00
20.	23	6	1	0	0	4.73	26	3	1	0	0	4.83
21.	3	12	5	3	7	3.03	3	7	5	7	8	2.67
22.	3	6	19	2	0	3.33	1	9	11	7	2	3.00
23.	5	8	15	1	1	3.50	3	6	17	4	0	3.27
24.	3	3	12	3	9	2.60	3	5	4	9	9	2.47
25.	6	7	16	1	0	3.60	3	5	19	3	0	3.27
26.	3	15	8	4	0	3.57	0	11	10	6	3	2.97
27.	4	9	8	6	3	3.17	4	5	16	3	2	3.20

28.	4	9	12	4	1	3.37	0	13	14	3	0	3.33
29.	3	7	15	3	2	3.20	6	6	7	8	3	3.13
30.	2	4	18	5	1	3.03	0	4	13	7	6	2.50
31.	7	11	9	3	0	3.73	8	10	6	4	2	3.60
32.	0	3	7	9	11	2.07	0	3	4	11	12	1.93
33.	5	5	3	9	8	2.67	6	3	7	8	6	2.83
34.	11	15	3	1	0	4.20	8	11	7	4	0	3.77
35.	6	11	9	4	0	3.63	4	8	13	3	2	3.30
36.	3	4	3	15	5	2.50	1	8	13	6	2	3.00
37.	0	6	7	5	12	2.33	1	3	3	11	12	2.00

Where,

VG	Very Good	V	Good
S	Satisfactory	P	Poor
VP	Very Poor	MW	Mean Weightage

Table 16: Comparison of the Teaching Performance between Public and Institutional Schools

S.N.	Title	Public School		Institutional School		Total	
		MW	R	MW	R	MW	R
1.	Physical appearance	4.76	F	4.87	F	4.82	F
2.	Dressed up	4.70	F	4.77	F	4.74	F
3.	Punctuation or regularity	4.88	F	4.70	F	4.79	F
4.	Availability of instructional materials	2.93	UF	3.23	F	3.08	F
5.	Use of instructional materials	2.57	UF	2.33	UF	2.45	UF
6.	Love and affection	4.10	F	3.77	F	3.94	F
7.	Biasness	3.70	F	3.10	F	3.40	F
8.	Fear	3.90	F	3.77	F	3.84	F
9.	Anger	3.30	F	3.13	F	3.22	F
10	Respects	4.27	F	3.83	F	4.05	F
11.	Availability of furniture	4.37	F	4.20	F	4.29	F
12.	Suitability of furniture	2.60	UF	2.10	UF	2.35	UF
13.	Cleanliness and sanitation of the classroom	4.20	F	3.60	F	3.90	F
14.	Classroom decoration	3.17	F	2.67	UF	2.92	UF
15.	Suitability of Writing board	3.27	F	3.23	F	3.25	F
16.	Classroom environment (light, air, temperature)	3.03	F	3.17	F	3.10	F
17.	Fluency in voice	4.57	F	4.23	F	4.40	F
18.	Used languages	4.33	F	3.20	F	3.77	F
19.	Planning and preparing the lesson	1.00	UF	1.00	UF	1	UF
20.	Participation of students in the class	4.73	F	4.83	F	4.78	F

21.	Initiation of the lesson	3.03	F	2.67	UF	2.85	UF
22.	Class presentation	3.33	F	3.00	UF	3.17	F
23.	Gestures	3.50	F	3.27	F	3.39	F
24.	Commanding over subject matter	2.60	UF	2.47	UF	2.54	UF
25.	Confidence over subject matter	3.60	F	3.27	F	3.44	F
26.	Questioning to students	3.57	F	2.97	UF	3.27	F
27.	Use of illustrations	3.17	F	3.20	F	3.19	F
28.	Used of questions	3.37	F	3.33	F	3.35	F
29.	Teaching methods	3.20	F	3.13	F	3.17	F
30.	Use of motivation	3.03	UF	2.50	UF	2.77	UF
31.	Use of positive reinforcement	3.73	F	3.60	F	3.67	F
32.	Use of negative reinforcement	2.07	UF	1.93	UF	2.00	UF
33.	Teachers' biasness	2.67	UF	2.83	UF	2.75	UF
34.	Use of feedback	4.20	F	3.77	F	3.99	F
35.	Class work and homework	3.63	F	3.30	F	3.47	F
36.	Students' evaluation	2.50	UF	3.00	UF	2.75	UF
37.	Summarization of the lesson	2.33	UF	2.00	UF	2.17	UF

Where,

MW Mean Weightage

R Remark

Table 17: Mean, Standard Deviation, Calculated t-value and Tabulated t-Value of Public and Institutional Schools' Teachers

Mean	**SD**	**No. of Teachers**	**Calculated t-value**	**Tabulated t-value**	**Remarks**
$\overline{X}_1 = 3.45$	$S_1 = 0.86$	$n_1 = 20$	0.486	1.734 (α=0.05)	Null hypothesis accepted
$\overline{X}_2 = 3.24$	$S_2 = 0.85$	$N_2 = 20$			

Where,

$\overline{X}_1$= Mean of the mean weightage of public schools' teachers

$\overline{X}_2$= Mean of the mean weightage of institutional schools' teachers

S_1 = Sample standard deviation of public schools' teachers

S_2 = Sample standard deviation of institutional schools' teachers

α = Level of significance

Appendix-D

Formula Used for Data Analysis

The following formulae were used for the study.

1) Mean Weightage = $\frac{\text{Total rank score of the statement}}{\text{Total Number of Teachers}}$

2) $$t = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where,

$$S_p = \sqrt{\frac{(n_1 - 1){S_1}^2 + (n_2 - 1){S_2}^2}{n_1 + n_2 - 2}}$$

S_p = Pooled standard deviation

$\overline{X}_1$ = Mean weightage of public school teachers

$\overline{X}_2$ = Mean weightage of institutional school teachers

S_1= Sample standard deviation of public schools' teachers

S_2 = Sample standard deviation of institutional schools' teachers

Appendix-E

Guidelines for Conducting Interview with Mathematics Teachers

Name:

Qualification:

Sex:

Training:

Experiences:

The interview with mathematics teacher was conducted on the basis of following topics:

- Lesson plan and class preparation
- Teaching materials and methods
- Classroom management
- Class work and homework
- Reinforcement and evaluation

Appendix-F

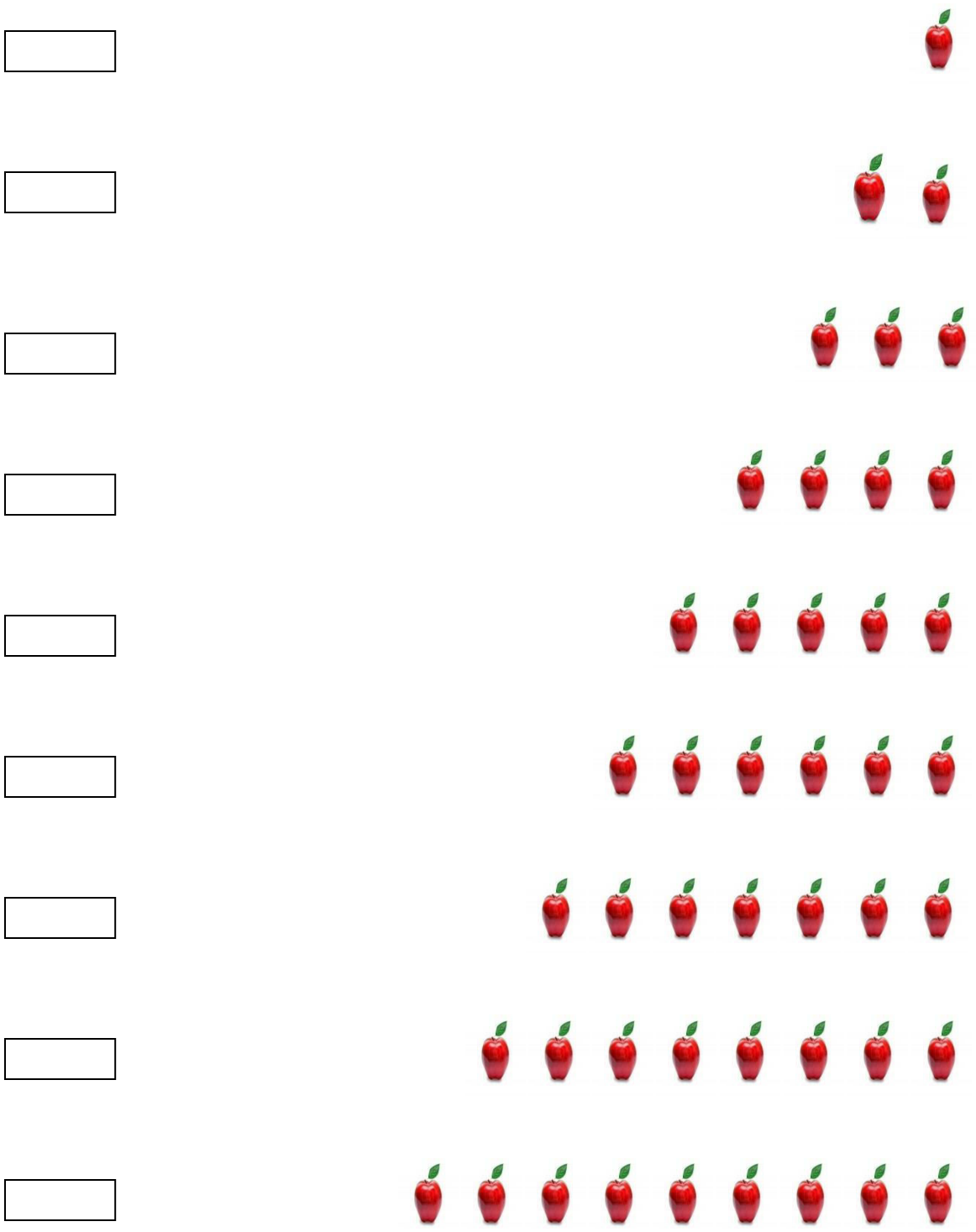
Appendix-F is the list of some episodes included the activities of teachers while conducting teaching learning activities. It was obtained by the researcher while observing the presentation class during class observation period.

Episode: 1

The researcher went to the classroom while teacher was presenting the lesson. It was the 3rd period and mathematics class at nursery level in public school. The classroom consisted of 21 students. The classroom had enough furniture and small white board. Some physical and instructional materials were hanging over the walls. The instructional materials available in the class were some poster, flax board, chart paper, card board, number board and several pictures, and some photos of different fruits and famous persons. Some materials were kept inside the rack also.

The teacher started to teach counting number by using number board. At first, teachers asked the students to play freely with plastic balls. Likewise, teachers picked up the number board representing the counting number "1" on one hand and one marble on another hand. Then she encouraged students to tell the number "1". Similarly, she picked up the number board representing "2" and two marbles. She encouraged students to say "2". Similar process was repeated up to 9, many times. With the help of book, she asked students to fill up in the following blank space.

Group A **Group B**



In the table, number of apples was given in right side (Group B) and appropriate representing the number of apples was given in left side (Group A). The teacher encouraged students to fill appropriate number. Students made errors in many times. Further, she made many questions about counting number by using sticks, dices etc. At the end of the class, students became able to recognize the counting number. Finally, she gave homework to students in book related to the lesson.

Episode: 2

It was the activities of one class observation of institutional school. It was the 1st period of L.K.G. level. The class teacher was teaching in the class before researcher entered in the classroom. It was the mathematics class. There were only 16 students. The classroom was clean with suitable air, light and temperature. There was not suitable furniture. The classroom consisted of small whiteboard, some chart of animals and fruits.

The teacher didn't have written lesson plan. She started to teach "Matching items". She was teaching it with the concept of counting number. She made two groups in the board such as Group A and Group B separately. In group A, she wrote numbers 2, 4, 6 and 8. Similarly she drew the picture of marbles representing the number of left side in group A but not in correct order as show in the figure.

Group A	Group B
2	
4	
6	
8	

In this matching, teacher herself matched one item (Number 8 and eight balls) and then requested the students to count the number of ball (Group B) and match with appropriate number (Group A) by using straight line. Many students did the work correctly. She told excellent, good, well etc for the correct responses, and necessary information was also provided. Finally, she solved the problem given on the writing board herself. She didn't use concrete instructional materials during the lesson. Sometimes, she scolded students also. At the end of the class, she sang a song together with students, gave homework related to the lesson and came out with students.