

CHAPTER I

INTRODUCTION

Background of the Study

These are changing times in education systems around the world. With the start of the new millennium, many societies are engage in serious and promising educational reforms. One of the key elements in most of these reforms is the professional development of teachers; societies are finally acknowledging that teachers are not only one of the ‘variables’ that need to be changed in order to improve their education systems, but they are also the most significant change agents in these reforms. This double role of teachers in educational reforms – being both subjects and objects of change – makes the field of teacher professional development a growing and challenging areas, This new emphasis has been welcomed by teachers and educators. In general, it represents a much-needed appreciation of teachers’ work, and also promotes the concept of teaching as a profession. Unfortunately, others have taken this new emphasis to signify teachers are not providing adequate teaching standards. Guskey and Huberman (1995) reflect on this paradox and also report that their work with teachers worldwide offers little evidence to support this belief. The vast majority of teachers and school administrators we have encountered are dedicated professionals who work hard under demanding conditions (Guskey & Huberman, 1995). It is for these hard-working teachers and educators that professional development opportunities are needed. Not only recognition of their work as professionals, but also is the case for all professionals in any field new opportunities for growth, exploration, learning, and development are always welcomed.

Professional development, in a broad sense, refers to the development of a person in his or her professional role. More specifically, “Teacher development is the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically” (Glatthorn, 1995). Professional development includes formal experiences (such as attending workshops and professional meetings, mentoring, etc.) and informal experiences (such as reading professional publications, watching television documentaries related to an academic discipline) (Ganser, 2000). This concept of professional development is, therefore, broader than career development, which is defined as “the growth that occurs as the teacher moves through the professional career cycle” (Glatthorn, 1995), and broader than staff development, which is “the provision of organized in-service program designed to foster the growth of groups of teachers; it is only one of the systematic interventions that can be used for teacher development. When looking at professional development, one must examine the content of the experiences, the processes by (Ganser, 2000; Fielding & Schalock, 1985).

The professional development of teachers is a lifelong process which begins with the initial preparation that teachers receive (whether at an institute of teacher education or actually on the job) and continues until retirement. Therefore, initial preparation, as well as models of in-service training and other learning experiences that enhance teachers’ practices and professionalism throughout their lives. Only in the past few years has the professional development of teachers been considered a long-term process that includes regular opportunities and experiences planned systematically to promote growth and development in the profession. This shift has been so dramatic that many have referred to it as a ‘new image’ of teacher learning, a ‘new model’ of teacher education, a ‘revolution’ in education, and even a new

paradigm of professional development' (Cochran-Smith & Lytle, 2001; Walling & Lewis, 2000).

Teacher Development is the process of becoming the best kind of teacher that I personally can be (Underhill, 1986). To the extent that teachers are regularly asking themselves 'How can I become a better teacher? How can I enjoy my teaching more? How can I feel that I am helping learning? They are thinking about ways of developing. They are acknowledging that it is possible to change that way they teach and perhaps also the preconceptions that they have about teaching and learning. Teacher development as we understand it draws on the teacher's own inner resource for change. It is centered on personal awareness of the possibilities for change, and of what influences have or haven't been developmental helps identify opportunities for change in the present and future. It also draws on the present, in encouraging a fuller awareness of the kind of teacher you are now and of other people's responses to you. It is a self-reflective process, because it is through questioning old habits that alternative ways of being and doing are able to emerge.

TPD Program in Nepal

The term “Teacher professional Development” (TPD) has already become a buzz-word. People who are working under the Ministry of Education (MOE) always produce this word as it is one of the curricular parts of the MOE School Sector Reform program (SSRP). TPD has already been implemented for three years. People working in this field have experienced both opportunities and challenges of this program.

Recently , the focus of teacher education in the Ministry of Education has shifted from teacher training to teacher professional development with the view to transforming today’s schools from a place of knowledge – transmission to the

knowledge-creating/generating space that consider classrooms as a learning-community. This means teacher professional development program has been introduced on our teacher education program to promote teacher with creative and critical ideas and skill to bring changes in their teaching. Moreover, from this program we have high expectations from the teachers with regard to their personal and professional development. Our planner, who do not have to train and teach, at the policy making level have envisioned bringing substantial changes in current educational scenario by implementing the teacher professional development program.

Statement of Problem

Educational reform requires teachers not only to update their skills and information but also to totally transform their role as a teacher. It establishes new expectations for students, teachers, and school communities that some educators may not be prepared to meet. Professional development is a key tool that keeps teachers aware of current issues in education, helps them implement innovations, and refines their practice. This issue will explore what is necessary for facilitating systemic reform and for realizing new learning for all students through a new vision of professional development.

Educational reform is creating new challenges for Nepalese schools and colleges. There is a movement for greater teacher professionalism and an emphasis on the school site as the locus for changes. The development of standards has now created new expectations for students as well as a search for better assessment techniques. Accordingly, teachers are expected to play new roles as part of the systematic reform effort. Inside the classroom, teacher roles are changing; teachers are learning to act as facilitators of their students' learning. Outside of the classroom,

teachers are assuming collaborative team-building and decision-making roles. These changed roles can be accomplished through professional development

Professional development provides opportunities for teachers to explore new roles, develop new instructional techniques, refine their practices, and broaden themselves both as educators and as individuals. To fulfill the demand of the students, parents as well as learning communities it is necessary to identify the factors that affect the professional development of teachers and also to explore the identify the possible ideas for the professional development of teachers in different stages of professional career.

Objective of the Study

Objectives of this study are:

-) To identify the encouraging and discouraging factors of professional development of mathematics teachers.
-) To explore the present practices used for professional development of mathematics teachers.

Research Questions

This study is intended to respond the following research questions:

-) What are the encouraging and discouraging factors for professional development of mathematics teachers?
-) How the practice is being observed in the field of professional development for mathematics teacher?

Significance of the Study

This research primarily is an objective analysis of the reliable data collected from Kathmandu, Baneshwor-10 therefore the research proves itself to be an exploration of factors affecting for professional development of mathematics teachers. The result of the study provides true information about the encouraging and discouraging factors for professional development .It can be taken as a good base to the policy makers, subject experts and researchers. since it reflects the status of professional development of mathematics teachers .the time of research which could be one of the representative to explore the present practices used for professional development of mathematics teachers. This study is useful for educators, parents, and the people involved in teaching and learning process in general. Beside these this study will help for planning and policy making bodies. It will be helpful even to the researcher to carry out their further research in this field.

Delimitation of the Study

This study was limited in the following boundaries:

-) This study was limited to the mathematic teachers of private Secondary Schools of Kathmandu, Metropolitan city.
-) The study was limited only in 35 high schools mathematics teachers of concerned area.
-) It may not generalize because of less sampled teacher and limited area.

Definition of the Terms

High School Level: The level containing grade nine & ten in Nepalese School system.

Teacher: In this study teacher means teacher who is teaching secondary level school mathematics.

Professional development: Teachers are the objectives of the educational reform.

This means their professional development considered. They should be brought in such activities which help them ensure their professional development. Secondly, they are the objective of the educational reform. This means by their involvement they are responsible to bring changes in their classroom in particular and in education at large.

Encouraging factors: The factors that positively effect in promoting the professional development of mathematics teacher. The facilities given by the school, training and workshop etc. are play the main role to promote the mathematics teacher. The things like a reinforcement for the mathematics teacher.

Discouraging factors: The factors that effecting demoting of professional development of mathematics teacher. The facilities given by the school, training and workshops etc are play the main role to encourage the mathematics teacher. If the facilities are not given by the school to the mathematics teachers then the teachers cannot promote his/her teaching career.

Profession: Any type of work that needs special training or particular skill or the people who do a particular type of work. The teacher who involves in mathematics teaching is the profession chosen by the researcher.

TPD: This definition of professional development includes support for teachers as they encounter the challenges while putting their understanding about the use of technology to support inquiry-based learning in to practice. Current technologies offer resources to meet these challenges and provide teachers with a cluster of supports that help them continue to grow in their professional skills, understandings, and interest.

CHAPTER II

REVIEW OF RELATED LITERATURE

This section includes review of related literature and focuses on the different aspects that create problems in instruction of mathematics. Furthermore, it deals with review of empirical literature, implication of the studies and conceptual framework. The review of related literature deals with the theories of research studies which have been conducted earlier. It helps to conduct the new research study in systematic manner by providing the general outline of the research study to avoid the unnecessary duplication. There are various literatures on teaching and learning mathematics, numbers of books, research reports, papers and other booklets can be found that concern with curriculum, teaching materials and methods and so on. The review of the related literature of this study and theoretical framework of this study deals with the books, theories, research studies and articles related to the study which were collected and studied by the researcher.

Empirical Review

Each and every research work requires the knowledge of previous background to open the targeted objectives and to validate the study. Here, this section is an attempt to review the related studies, articles and the reports. Some of the old thesis has been reviewed considering them as a related literature and also as evidence to the present study.

The primary focus of teacher education and professional development research was on teacher behavior and how professional development could help teachers to change their behaviors and adopt innovations (particularly new interventions developed through research and development); such research focused on the “transfer” of training back to the classroom.

In the 1980s, the focus shifted toward Institutional improvement and the role of professional development in supporting reform in institution or restructuring. In the early 1990s, the focus shifted toward student achievement and the role of professional development in improving student learning, perhaps because of increased emphasis on educational accountability (Elmore, 2002). Finally, in the late 1990s, the focus shifted to teacher quality (defined variously as teachers' years of experience, level of education/certification, and knowledge of subject matter), its importance as a key predictor of student achievement, and the role of professional development in helping teachers develop into high-quality teachers (Wenglinsky, 2000). Although individual research studies based on these different foci still continue to appear, the trends are clearly visible when looking at the evolution of professional development and teacher education philosophies over the years, similar types of professional paradigm can be implementing in Nepalese context as well. In the context of Nepal, we should review some of the model which is applicable in Nepalese context. One of the purpose for review the research work and literature is to understand the trend regarding the most effective model of Professional development. For this some of the research will categorize and studies with some approaches. In this connection, Sparks & Loucks (1987) listed five model of professional development such as: 1) Individual/self-motivated 2) Observation /assessment 3) Institutional improvement 4) training and 5) Inquiry.

In the same way Pelvic Research Institute (1996) listed four approaches for professional development of teachers as: 1) workshop/presentation, 2) observation/feedback, 3) inquiry-research, 4) product/program development. Beside these approached of Pelavin research institute, Feiman-Nemser (2001) argues that different types of professional development should be offered on a "continuum" over

the teacher's career, starting with formal education (courses offered by the college), then induction (pairing with a master teacher or mentor when beginning to teach, offered by the school), then ongoing inquiry activities while teaching (practitioner research or study circles, organized by the school), supported by a learning environment in the school, and opportunities for professional development (workshops, institutes offered. Coaching has also advocates in professional development field (Joyce, 1983; Joyce & Showers, 1995).

Through the review of these different model researcher will learn that professional development could be successful, if it work place over time was integrated with college and universities and focus on helping teachers not just acquire new behavior but change their assumption and ways of thinking as well. The difficulties of trying one shot traditional professional development such as workshop, training, mentoring etc. recommend alternate or reform type of professional development such as study cycle, mentoring, collaborative problem solving group, practitioner inquiry and so on that can be organized as a part of teachers daily work to help them acquire a reflective stance as much to require new knowledge of contents and practices. Professional development, these experts contended, should have as its goal increased reflection and inquiry stance among teachers, rather than simply adoption of new practices. Adoption of new practices, they believe, would come about as teachers reflected and systematically tested "what works in their own context (Richardson & Anders, 1994)

Theoretical Review

Researcher wants to know what research existed about different meaning and factors that affect the professional development. Effectiveness of professional development in helping teachers, change in preferred and substantial ways, whether or

not these changes are lasting, and whether they make a difference in student achievement or not. So, the researcher wants to learn more about how professional development works and under what circumstances. My review of the literature base on professional development and teachers efforts for their professional development on the basis of some theories as well as the findings of different research conducted on national and international communities

Mathematical journals and articles of different researches have been consulted sufficiently, as like one of the article about TPD, Reamers – Villegas (2003) ideas here. What – Reamers-Villegas says is that TPD should move towards achieving “double role of teachers”, that is to say, both subjects and object of educational reforms. Firstly, teachers are the object of the educational reform. This means their professional development should be considered. They should be brought in a such activities which helps them to insure their professional development. Secondly, they are the objects of the educational reform. This means by their involvement they are responsible to bring change in their classroom in particular and in education at large. They will be expected to be professional and to play the role of change. In our context as well we are expecting this kinds of dual roles of teachers from TPD program. We expect to change teachers role from technicians to classroom researchers to equip them with the skills to deal with their own pedagogical problems their own settings. It is not always possible to bring teachers in the Educational Training Center (ETC) , Lead Resource Center (LRC), and Resource Center (RC) to discuss all the issues they have. Therefore, if they are able to carry out action researches, so they can solve their own problems.

Each and every research work requires the knowledge of previous background to open the targeted objectives and to validate the study. Here, this section is an

attempted to review the related studies, articles and the reports. Some of the old thesis has been reviewed considering them as a related literature. The number of different ways to observe the theoretical perspectives of the various methodologies subsumed under the term qualitative research. To analyze the data of my study I had taken the help of the following theory.

Conflict Theory

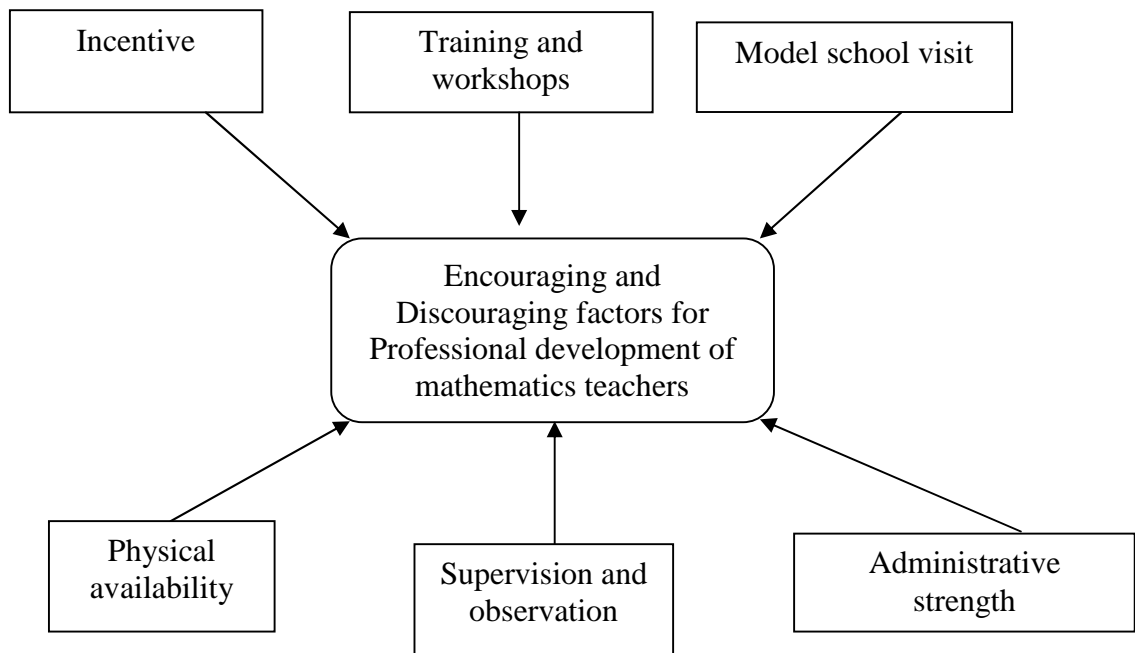
Conflict perspective is one of the major theoretical approaches to sociological thought. It originated with Karl Max and his critique of capitalism and has since developed along a number of lines. In general, the conflict perspective assumes that social life is shaped by groups and individuals who struggle or compete with one another over various resources and rewards, resulting in particular distributions of power, wealth, and prestige in societies and social systems. These shape the patterns of everyday life as well as things such as racial, ethnic, and class inequality and relations among nations and regions of the world.

Social life is shaped by groups and individual who struggle or compete with one another for power and other resources. This theory is used to analyze the struggle between junior and senior teachers, administrator and teachers, teachers with high facilities and low facilities etc.

Conceptual Framework

The conceptual framework is created from previous literature review, theoretical review, TPD program and expert consultation and best of researcher knowledge and belief .The conceptual framework stems from the theoretical framework and concentrate, usually on one section of that theoretical framework which becomes the basis of our study. The later consist of theories or issues in which our study is embedded, whereas the former describe the aspects that we selected from

the theoretical framework to become the basis of our inquiry. So, the conceptual framework of my study presents as in the following diagram



Incentives: The researcher in this section has intended to evaluate the level of facilities of teacher given by the intuitions. For the purpose the researcher observed the level of salaries and other facilities, respect and work responsibility given to the teacher thinking that these aspects play the vital role for the professional stability or drain of mathematics teacher. These aspects play the main role in professional development of mathematics teacher.

Training and workshop: The researcher in this section found the condition of training and workshop organized by the school or any upper section for the professional development these activities are also helps professional development of mathematics teacher.

Model school visit: The researcher in this topic amid to identify whether the teacher are involved to visit other model schools (A level schools) to know the administration and managerial system to apply on his/her profession development.

Physical availability: The researcher in this topic aimed to identify whether the school having infrastructure and mathematics teaching materials (school building, desk bench, writing board, ventilation and teaching materials) or not because these things play the vital role in professional development of mathematics teacher.

Supervision and observation: Even though all the facilities are available the teacher may occasionally or unknowingly may commit errors or these can be a lot of weakness, to minimize likewise weakness observation and supervision may be the string method. Moreover, supervision helps to make the system regular and give the chance to the teacher to tell their problems during instructional activities.

Administrative strength: A good teacher can lead the institution to get the success, that is to say a standard and responsible management can mobilize the physical and human resource properly and can feel self-respect in their institution, so that they can develop in teaching which helps for their professional development mathematics.

CHAPTER III

METHODS AND PROCEDURES

This chapter provides a procedural guideline that helps the researcher to collect and analysis the data. Also this section provides a description of the nature of the study and research method or approaches to be followed in answering the research questions. It also highlights the research tools, techniques and data generation procedure and describes the research areas, nature of data and the sampling techniques.

Design of the study

This chapter deals with the procedures adopted to carry out the study. This is mixed research design of qualitative and quantitative data. To find the reliable and valid data the researcher had taken mixed design. It also helps to describe the data more effectively and findings, conclusions are more valid. This study focused on encouraging and discouraging factors for professional development of mathematics teachers in secondary level. This is a research based on survey design.

Population

The population of this study constituted all the mathematics teachers teaching in secondary level in Kathmandu Metropolitan city.

Sample of the Study

To select the sample from the population the researcher prepared a list of school from the concerned area and randomly selected as a sample of the study. I have selected only 10 schools from the total through the random sampling. I have purposively selected 35 teachers from secondary schools. To analyze the opinions of teachers towards meaning of professional development, encouraging and discouraging factors, effort for professional development and problems/ obstacle for their

professional development, I had taken the in-depth interview with these 10 mathematics teachers and 5 head teacher

Instrument Used in Data Collection

Research instruments are the tools that we use to collect the proper data necessary to explore the research questions. While designing instrument for the study, the researcher was being very care full on content, structure, organization, order of questions and wording. Also, the researcher will consult to the supervisor, seniors and the other researchers. I have taken the following tolls for data collection.

Opinionnaire

The first tool to collect the data of this study is opinionnaire. According to the Thurston “Attitude is the degree of positive or negative affect associated with psychological object”. The inquiry that attempts to assess the attitude or belief of an individual. To collect the data from opinionnaire “The Likert scale” I used. The Likert method of summated can be perform without a panel of judges. The simplest way to describe opinion is to indicate percentage responses and also analyze it by using mean weightage for each individual statement. For this type of analysis by item three responses 'agree', ' Neutral' and ' disagree' are preferable to the usual five. In this type of Likert scale may be possible to report percentage responses by combining the two outside categories 'strongly agree' and 'agree', 'disagree' and 'strongly disagree' .

The Likert scaling technique assigns a scale value to each of the five responses. Thus, the instrument yields a total score for each respondent, and a discussion of each individual item, although possible, is not necessary. Starting with particular point of view, all statements favoring the above position are scored.

Interview schedule

The second tool for the data collection on this study is in-depth interview. The purpose of interviewing is to find out what is in or on someone else's mind. "The purpose of open ended interviewing is not to put things in someone's mind (for example, the interviewer's preconceived categories for organizing the world but to access the perspective of the person being interview" (Patton, 1990). In conducting interviews, it is important for researchers to keep this quote from Patton in mind. Interview data can easily become biased and misleading if the person is interviewed is aware of the perspective of the interviewer. Too often interviewees provide information based on what they think the interviewer wants to hear. Therefore, it is critical for the interviewer to make sure the person being interviewed understands that the researcher does not hold any preconceived notions regarding the outcome of the study.

The main key for effective interview is to establish the rapport. This skill is somewhat intangible, including both a personality quality and a developed ability. With a skillful interviewer, the interview is too often superior to other data gathering devices. Another advantage of interviewing is that the interviewer can explain more explicitly the investigation's purpose and just what information he/she wants (Best & Khan, 2008). By supporting this view, I myself had taken in-depth interview of different teachers of five stages containing two teachers in each stage with the help of protocols. All part of interview was recorded with the permission of respondents. This helps to validate the information that I collected from the field. Validity of the interview was based on a carefully designed structured protocol. Thus, ensuring that the significance elicited which represent the content validity of tools.

Data Analysis Procedure

The research adopted the descriptive survey method. Responses of teachers' and were interpreted and analyzed with the help of five-point Likert scale. Statistical tool mean was used to find the mean weightage of teachers' response. Percentage of teacher response all or the particular portions have been found, analyzed separately and different conclusions have been derived.

The teachers' responses were used to answer the first research question i.e. the responses helped to determine the reliable factors that played vital role to find encouraging and discouraging factors of professional development of mathematics teachers. Scoring procedure for the positive statement was- Strongly Agree (SA) =5, Agree (A) =4, natural (N) =3, disagree(D) = 2, strongly disagree(SD) = 1 , for the negative statement was Strongly Agree (SA) = 1, Agree (A) = 2 , natural(N) =3 , Disagree(D) = 4 and strongly disagree(SD) = 5 . Mean Weightage >3 were considered to be good for positive and Mean Weightage <3 were considered to be noted for negative statements. The data obtained from interview was in verbal form. Firstly, the interview data was noted down in a diary and diary was categorized based on different themes developed on conceptual understanding of the study and then the data was analyzed descriptively on the basis of themes.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

The data were collected for the study from ten secondary schools of Kathmandu, Baneshwor-10. The collected data were tabulated and analyzed according to the objectives of the study. The tabulated data were statistically analyzed and interpreted by using statistical tool mean weightage. Interview guideline was prepared and interview was taken to the 10 teachers and 5 head teachers. It was implemented to find encouraging and discouraging forces and possible ideas to promote professional development of mathematics teachers. The researcher also observed the physical strengths of selected schools as library, math lab, structure of building etc. as far as possible which could affect in professional development of mathematics teacher. All these activities were done in the complete guidance, instruction and supervision of expert. The views of teachers from the interview can be analyzed as:

According to the interview question “How do you motivate to increase Professional Development?” Teacher said that (Head teacher)

Time is not important for professional development. If teacher has intrinsic motivation for his/her professional development he/she can manage time easily. If teacher is not motivated in his/her professional development activities time may be constraint for him. He has not given the importance for his professional development. In my case, I am very much motivated towards professional development, whatever types of program such as training, workshop, interaction activities with mathematics community, writing book, article etc. I know I can manage time for that. So, I have developed some ideas on research, writing articles, books.

By supporting the above view, I analyzed that not all teachers, administrators, parents, or community members agree that teachers need more time for professional development. Many people would argue that teachers should hone their skills before entering the profession and/or on their own time. They would argue that the school district is in the business of educating students, not teachers. In this context of motivation of teachers in their professional development, intrinsic motivation theory refers to motivation that is driven by an interest or enjoyment in the task itself and exists within the individual rather than relying on external pressures or a desire for reward.

Similarly, according, to another interview question “What are the factors which are responsible to discourage for the Professional development for you?” Teacher said that:

Due to the lack of appropriate learning materials (such as textbook, references book, journals etc.) learners are facing different problems for their professional development, to fulfill this demand of learners, as well as for my professional development, I have given time to prepare such a reading material, training materials. I hope that this material may contribute for the professional development of learners' in mathematics.

By supporting the above view, I analyzed that Teachers also need different types of resources, such as computer support. Teachers often need technical assistance as well as pedagogical support such as advice on choosing relevant software books, journals and integrating it into instruction. Teachers also need recommendations for ways that technology can be used to meet educational objectives, along with ideas on how to organize a classroom to take full advantage of only a few technologies. It is

reported that technology and reference books support for assisting teachers in his professional development.

Similarly, According, to the interview question “How can mathematics teachers continue to learn and grow professionally? Teacher said that (Head teacher):

There is not sufficient knowledge of contents as well as teaching pedagogy to our teachers. There is no provision for formal training and orientation for new teachers in our universities education. Some of the training, seminar was organized but this didn't play the supportive role for the development of knowledge to teachers. After the development of courses in every subject, there should prepared reading materials for students and teachers as well. In the context of Nepal, there are some books and references books in market but they were not written on the basis of knowledge generation of the learners. To fulfill this demand, I am interested to prepare resources to the students as well as teacher which would play supportive role in mathematics teaching and learning.

By supporting the above view, I analyzed that all the teachers expressed a need and desire to find a better, more theoretically based way to teach. Unlike the teachers in the thinking change (who either had no strong need or whose need was related to something outside of teaching, such as collegiality or voice in program decisions) or the teachers in the attitude change (whose main need seemed to be different techniques to use in the classroom), the teachers in the integrated type were looking for a way to teach that included all of the theories of what helps learners be successful. To counter the problems related to content the researcher analyzed the responses of sample teachers asked in opinionnaire. By finding mean weightage of responses analyzed the problems related to contents. The results and explanation are as follow.

Table 1: Responses and mean weightage related to incentive statements.

SN	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	Attractive salary helps to promote the teaching profession	9	14	7	5	0	3.77
2.	Salary does not affect the teaching profession.	0	5	9	6	15	3.45
3.	What is your opinion on your school that providing facilities to you.	12	8	3	6	6	3.4
4.	Feel that teaching is one of the noblest professions, take pride in the profession and maintain strong desire for professional development.	16	7	7	5	0	3.91
5.	Teacher's life is secure in teaching profession.	8	4	11	6	6	3.05

The above table 4 shows that the mean weightage of statements 1,2,3,4,5 related to incentive is very good. This value is greater than 3, it represent that the statements under incentive were statistically significance. This shows that there should be some incentives for teacher for his/ her professional development. They strongly support to write that monthly salary, incentives and other economic supports given to the teachers is very less which cannot motivate teachers to provide their best and serve longer in such institution therefore teachers' instability also was found high in such institution.

“I have just completed my master’s degree, I have to collect experience, I will return back in my own hometown it is only my training center because I cannot do any progress by Rs.18000 per month”. Teacher

From the above views of teachers one can conclude that teachers are not devoted in quality teaching due to various reasons, one of the main reasons behind this is very less salary and uncertainty of job security. Imagine what the above teachers give to the students! Therefore most strong reason for the poor quality delivery is the lack of proper behavior of administration towards teachers, in some extent nation’s policy and condition also has played role for the above problem.

Table 2: Responses and mean weightage related to training and workshop statements.

SN	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	Participate in the profession and its organization with a positive attitude towards professional development and national welfare.	20	12	3	0	0	4.48
2.	Utilize various forums for discussion of academic matters for enhancement of understanding.	13	13	9	0	0	4.11
3.	Visit institutes of excellence and share experiences with the teachers and experts for updating knowledge	15	17	3	0	0	4.34
4.	Participate actively in organizing co-curricular activities	19	16	0	0	0	4.54
5.	Keep on self –informed of the innovations in the field of educational technology methods of teaching and preparation of learning materials through attending courses for continuous orientation.	18	4	13	0	0	4.14

The above table 5 shows that the mean weightage value of statements 1, 2,3,4,5 related to training and workshop is higher than 3, it represent that the statements under the training and workshop were statistically significance. This shows that training and workshop organized by the school or any upper section for the professional development, Organizing seminar, workshop, training, interaction

program, and involved in research, educational planning. Participation in courses/workshops, education conferences or seminars, qualification programs, these activities are also play the vital role for professional development of mathematics teacher.

Table 3: Responses and mean weightage related to model school visit statements.

SN	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	Involving to visit other model school to the administration and management system to apply on your professional development	3	6	10	17	0	2.94
2.	Training and workshop organized by the school or any upper section helps to the teacher for professional.	3	4	3	20	5	2.43
3.	Model school visit does not help to develop profession.	10	10	6	6	3	2.48

The above table 6 shows that the mean weightage value of the statements 1,2,3 related to model school visit some mean weightage are less than 3, it represents that the statements under the model school visit were not statistically significance. The above result was found because most of the teachers are neutral, disagree with the statement related to model school visit, from the above statistical mean weightage and different views of teachers shows that the model school visit is not more effective rather than above incentive and training and workshop for professional development of mathematics teacher.

Table 4: Responses and mean weightage related to physical availability statements.

SN	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	Infrastructure and mathematics teaching materials play the vital role in professional development of mathematics teacher.	15	10	5	2	3	3.91
2.	New Technology creates positive environment for teacher for their professional development	13	13	9	0	0	4.11
3.	Take the help of books ,journals and some other reference materials for teaching	5	20	10	0	0	3.86

The above table 7 shows that the mean weightage value of the statements 1,2,3 related to physical availability are greater than 3. It represent that the statements under the physical availability were statistically significance, this shows that school having infrastructure and mathematics teaching materials (school building, desk bench, writing board, ventilation etc and teaching materials) or not because these things play the vital role in professional development of mathematics teacher.

Table 5: Responses and mean weightage related to supervision and observation statements.

SN	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	By observing the others instructional program, technology and goals helps to develop profession.	5	2	8	5	15	3.66
2.	Supervision helps to make the system regular and to the teachers to tell their problems during instructional activities.	12	13	10	0	0	4.05
3.	Visit institutes of excellence and share experiences with the teachers and experts for updating knowledge.	5	17	10	3	0	3.68

The above table 8 shows that the mean weightage value of the statements related to supervision and observation is greater than 3, it represent that the statements under the supervision and observation were statistically significance. This shows that even though all the facilities are available the teacher may intentionally or unknowingly may commit errors or these can be a lots of weakness, to minimize likewise weakness observation and supervision may be the string method. Moreover supervision helps to make the system regular and will give the chance to the teacher to tell their problems during instructional activities and play the vital role for professional development of mathematics teacher.

Table 6: Responses and mean weightage related to administrative strength statements.

S.N	Statements	Responses					Mean Weightage
		SA	A	N	D	SD	
1.	Rules and regulation of administration helps to develop profession.	7	2	5	9	12	2.51
2.	Administrative strength makes the institution well managed and updates the technology, so it helps to develop the profession.	5	5	7	8	10	2.63
3.	Administrative strength does not help to develop the profession.	5	7	10	5	5	2.68

The above table 9 shows that the mean weightage value of the statements related to administrative are less than 3, it represent that the statements under the administrative strength were statistically less significance .This shows administrative strength play the less role among the other one to develop the profession of the mathematics teachers. As one theory is taken for the study i.e. conflict theory, it says that in administration there are various types of teachers like junior and senior teachers, administrator and teachers, teachers with high facilities and low facilities . These aspects play vital role for professional development of mathematics teachers.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Researcher here submits the summary, major findings, conclusions and recommendation derived from the research work.

Summary

The main purpose of this study was to identify encouraging and discouraging factors of professional development of mathematics teachers and present practices used for professional development of mathematics teachers. This study was mixed of quantitative and qualitative design and this study was entirely survey type. The population of this study consisted only secondary level mathematics teachers and some head teachers from respective schools of Kathmandu, Metropolitan city. The first tool to collect the data the researcher developed the opinionnaire form which was in five point Likert scale for 35 teachers to collect the quantitative data and the second tool to collect the data the was interview for that researcher made the interview schedule for 10 mathematics teachers and 5 head teachers. The qualitative data was analysis by using mean weightage for each statement and qualitative data was analysis verbally.

Findings

According to first objective of my study was encouraging and discouraging factors for professional development of mathematics teacher. After analyzing the received qualitative and quantitative data. The encouraging and discouraging factors are as follows.

Encouraging factors for professional development of mathematics teacher.

- J There should be some incentives for teacher for his/ her professional development. There should be suitable environment for study. Beside these different facilities such as books, references books, facilities of technology, research library, OHP should be available for teacher. Beside these teachers require sufficient salary enhancement, which support his family, so that he/she could give sufficient time for professional development.
- J Classroom and program facilities, materials, and technology that affect how well teachers are able to do their jobs. And how he could he/she develops professional development.
- J Participation on research activities, Participate in different program such as materials construction, use of technologies, language development activities.
- J Organizing seminar, workshop, training, interaction program, and involved in research, educational planning.

Discouraging factors for professional development of mathematics teacher.

- J Having more work load in the institution , don't feel any respect from the administration, don't have any inspiration in their work, don't have any job security, working with full of fear, very low salary compared with the other senior teachers , even though doing the same job in same class , more domination from senior teachers , don't have salary and other facilities on the basis of qualification , So that it is difficult to buy books and other resource materials for professional development which play the significant role to discourage in professional development of mathematics teacher.

-) Due to the part-time nature of staff, in many programs staff meetings were rare, so teachers have limited opportunities to meet and talk about subject matter, getting knowledge from elders teachers.
-) Many feel obligated to correct and prevent these mistakes, not realizing how fundamentally discouraging it can be. As a result, teachers determine their values.
-) Teachers who often teach in different higher secondary school and colleges have no frequent contact with other practitioners in and out of the program. They may not hear about professional development.

Similarly, the second objective of my study was present practices used for professional development of mathematics teacher. After analyzing the received qualitative and quantitative data and the data provided by Government of Nepal Ministry of education of teacher development plan 2013-2017. The present practices used for professional development of mathematics teacher are as follows.

-) **Contents Knowledge and Materials:** Lack of content and command over language on the part of teachers , It is difficult to deliberate the subject matter with clear understanding, Further, the lack of teaching materials, expensiveness lacks of knowledge updating habit, lack of training giving time to alternate income source, so that there is no sufficient time for professional development, So for that many organizations and MOE conducting the programs for teachers to develop the content knowledge and use of mathematical materials.
-) **TPD Program:** Teacher professional Development (TPD) program is most important part in teaching profession. It helps the teachers to develop their

teaching career, so for that MOE of Nepal conducting the TPD program for teacher professional development.

) **Inadequate IT Knowledge:** Lack of knowledge in the field of new Technology creates obstacles' for teacher for their professional development. Only using text book and material is not sufficient to develop the teaching profession teacher should be update with new technology. For that many schools and organizations are conducting the programs for their teachers to develop the IT knowledge so they can use in teaching profession.

) **Motivation:** Motivations play an important role for the professional development of mathematics teachers.

Teachers should be self-motivated towards his/ her professional development but sometimes teacher should not expect temporary benefit from his/ her professional. He/ she should sacrifice something for his professional development which is more benefited in his/her future career. For that many schools and organizations even MOE are conducting the motivational program for the teachers to develop the profession.

) **Training and Interaction Program:** Most of the teachers believe that training is most important factor for the betterment of skills. Due to the lack of specific need-based training and interaction it is difficult to develop the skills on classroom motivation, evaluation procedure etc. So, Training and interaction are most essential part for professional development. For that MOE of Nepal and many private organization time to time conducting the training and interaction programs to develop the teaching profession.

Conclusion

This topic deals the conclusions, and implication of the study based on the findings of the study. In the summary section, the overall purpose of the study, research questions, and key findings including a professional development model are presented such as participation on research activities, Participate in different programs, materials construction, use of technologies, language development activities, conduction TPD programs and incentives for teachers these factors play the vital role in professional development of mathematics teachers . The data from my study indicate that multiple factors influence teachers' professional development. On the description of my sample, professional development was either supported or hindered by the extent to which these factors applied. For any individual teacher, professional development program and system factors interacted to influence the amount and type of professional development.

From the analysis of information collected through interview has found that the teachers who has no permanent job has positive towards seminar, training, workshop types of professional development. Whereas the teachers with permanent job has positive attitude towards research activities and preparation of articles and books types of professional development.

From the analysis of in-depth interview, I concluded that the teachers with M.Ed degree and M.A degree are much interested towards training, workshop and seminar type of professional development activities.

The teacher with more opportunity for professional development has positive attitude towards professional development activities. The permanent teacher who wants to get promotion on their job has more positive towards professional

development. They are more positive towards the different types of writing books, articles etc.

The teachers who has more opportunity for decision making post through professional development has more positive and interested towards professional development. The salary enhancement, different facilities such as treatment, education for child, transportation is the main factors for the professional development of teachers. Besides these, security of job is also the key factor for the professional development of teachers.

Recommendations

For the probable remedial measures the researcher talked with the teachers, principals and took the suggestion of supervisor for the correct and behavioral solution of the above problems. The researcher had also read the previous research documents which included practical effort and suggested to apply various techniques to achieve the goal despite the problems stated above. The following are the recommendations presented in the basis of above aspect.

-) Parallel researches in junior or senior level, in other topics or in other locality by taking large sample of population can be carried out.
-) This research will support for policy making to professional development of mathematics teachers for any organization and Ministry of education Nepal.
-) This research findings support for teachers to consider and work towards their professional development.
-) This study revealed that teachers who want to develop their professional development.
-) This study helps the teacher making a special position, power, prestige, value and ethic in the society.

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Appendix 1

Dear Respondent

I am going to conduct a study on the topic “Factors *affecting Professional Development of Mathematics Teachers*”. The survey intends to find out the level of the professionalism and the factors which are responsible for the promotion and demotion of the professional Development of mathematics teachers. Your valuable responses will be kept confidential and it will be used only for research purpose.

Name of Teacher: Age:

Qualification:..... Teaching Experience:

Teaching level:

Trained/Untrained:.....

Name of Institution:

Direction : Please read each statement given below carefully and give the number (1, 2, 3, 4, or 5) according to the level of your agreement. To explore the professional development of the teachers, I have divided the requirements of encouraging and discouraging factor of professional development of teachers in to following areas.

-) Incentive
-) Training and workshops
-) Model school visit
-) Physical availability
-) Supervision and observation
-) Administrative strength

Note: 5 = Strongly Agree, 4 = Agree , 3 = Undecided , 2 = Disagree , 1 = Strongly Disagree

Statements	5	4	3	2	1	Remarks
1 Do you think there should be a attractive salary for promoting the teaching profession?						
2 Do you think that the salary does not affect the teaching profession.						
3. What is your opinion on your school that providing facilities to you.						
4. Feel that teaching is one of the noblest professions, take pride in the profession and maintain strong desire for professional development.						
5. Participate in the profession and its organization with a positive attitude towards professional development and national welfare.						
6. Utilize various forums for discussion of academic matters for enhancement of understanding.						
7. Visit institutes of excellence and share experiences with the teachers and experts for updating knowledge.						
8. Participate actively in organizing co-curricular activities.						
9. Keep on self –informed of the innovations in the field of education educational technology methods of teaching and preparation of learning materials through attending courses for continuous orientation.						
10. Infrastructure and mathematics teaching materials play the vital role in professional development of mathematics teacher.						

11. Involving to visit other model school to the administration and management system to apply on your professional development.					
12. Training and workshop organized by the school or any upper section helps to the teacher for professional development.					
13. Supervision helps to make the system regular and to the teachers to tell their problems during instructional activities.					
14. A good teacher can lead the intuition to get the success, that is to say a standard and responsible management can mobilize the physical and human resources properly and can fell self respect in their institution.					
14. Identify and analyze factors which have been responsible for bringing down the prestige of the teaching profession vis-à-vis teachers' role.					
15. Understand that the teaching profession has had a long tradition imparting knowledge and wisdom particularly under the indigenous system of education in the country.					
16. Feel that teaching is one of the noblest professions, take pride in the profession and maintain strong desire for professional development.					
17. Identify and analyze factors which have been responsible for bringing down the prestige of the					

teaching profession vis-à-vis teachers' role.						
18. Develop alternative approaches to acquire higher levels of excellence and proficiency in day-to-day work in the classroom, in the school and outside.						
19. Developing positive attitude towards the values underlying the national policies of education and the role of the teachers to realize them.						
20. Understand basic values of the teaching profession for total human development.						

Appendix 2

Questions for interview

1. What are the factors which promote you for the professional development?
2. What are the factors which are responsible to discourage for the Professional development for you?
3. Why do you need to increase the level of Professional Development?
4. Are you facing problems to increase Professional Development? If yes, what are they if no, how you got access to develop it? And what are the remedies to eliminate the obstacles.
5. Do you think that there should be different strategies for Professional Development? If yes, what are the they?
6. How can mathematics teachers continue to learn and grow professionally?
7. Do you need further professional development? If yes what are the area of your interest.
8. How do you motivate to increase Professional Development?

Appendix 3

Name of the sample School, Number of maths Teachers and Students

SN	Name of the schools	Number of mathematics teachers	Number of secondary level students
1	Kathmandu xaviers school	3	76
2	New summit school	5	96
3	Landmark school	3	45
4	AIA Academy	3	60
5	Marvellous School	4	80
6	Kathmandu national school	4	87
7	Florida academy	3	33
8	Continental Academy	3	34
9	Novel Academy	4	96
10	Kamal netra School	3	32
	Total	35	639

Appendix 4

Distribution of Teachers in Sample, Based on their Qualification and Training

Qualification	Frequency	Percent	Trained	Untrained
M.Ed	10	28.57	18	17
M.A	14	40	(51.42%)	(48.57%)
M.Sc	8	22.87		
B.ed	3	8.5		
Total	35	100.0		

APPINDIX 5

Specification Chart for the Oppionnaire

Statement areas	No of Statements	Tools
Incentive	3 (15%)	Oppionnaire
Training and workshops	4(20%)	Oppionnaire
Model school visit	3(15 %)	Oppionnaire
Physical availability	2(10%)	Oppionnaire
Supervision and observation	4(20%)	Oppionnaire
Administrative strength	4(20 %)	Oppionnaire
Total	20(100%)	