Chapter 1

Introduction

1.1 Background and Significance of the Problem

Mathematics is a course that relates to abstract notions. It is the abstract that has a symbol for a clear idea of the language media, Logic, with the precision that can be proven. Mathematics is the science that humans must learn in order to develop the human mind for human creativity. It allows humans to think rationally, systematically, and traditionally. It can be used to analyze a problem or the situation carefully and thoughtfully. It can be predict, plan, and used to make decisions and solve problems correctly and appropriately. Mathematics is a tool for education, science and technology including other sciences that relate with Mathematics. Mathematics is useful for survival and helps to develop the quality of our lives for the better. Mathematics also helps develop the complete human being. It can bring balance to the body, mind, wisdom, and emotions by being able to think, and solve problems so they co-exist with each other happily. (Ministry of Education, 2008, page 54). Complying with Siriporn Tipkong(2001, page 13 – 14) she said that mathematics is a subject that is important to improve the quality of the person. Because this subject can practice thinking rationally and creatively. It is essential for survival and for preparing students to be good members of the community. It promotes self-development, Problem solving, and the capacity to choose a career based on aptitudes, interests and capacities. Teaching mathematics can apply knowledge in everyday life. Students will develop good attitudes towards mathematics by being able to use mathematical knowledge fundamental to science, and all sciences will help promote new technological inventions and new innovations in the world.

The importance of mathematics. The Ministry of Education (2008, pages 2-3) specifies math as a subject in the core - curriculum of the basic education act 2008 and specifies the quality of learning of the students through out the course as follows:

1. Have understanding of the basics of math about numbers and implementation, Measurement, Geometry, Algebra, Data analysis and probability, including the capacity to apply the knowledge.

2. Have understanding of essential math skills, for example, the capacity to solve problems in many ways, give a reason, communicate, make mathematical interpretation and presentation, with creativity, linking all knowledge with mathematicsand linking mathematics with other sciences.

3. Have an capacity to work in a systematic, disciplined, careful, responsibly, critical, and with self- confidence, recognizing their value and having a positive attitude towards mathematics.

Therefore, assessing the quality of education of schools, under office of basic education commission (2011 A, page 4), found that the percentage of the mathematics scores of Prathomsuksa 6, In the year 2008 were 43.76 percent, In the year 2009 was 35.88 percent, and in the year 2010 was 34.85 percent. That the lower average has had the tendency to decrease every year. This is the issue of the quality of education in Thailand overall. It is essential that all parties get involved with the learning group. The group developing the mathematics curriculum has to implement a solution, and improve the education of the students to a higher standard. To achieve the continued educational development. The Office of Primary Education Commission (2002, page 3) suggested that it is necessary to require an administrative process; So that the supervisory and teaching processes are consistent. These relate very well; Especially the supervisory process is a developmental process. Teachers could developed their capacity for effective working, solvable, manageable learning systems in order to improve the students' learning potential to the maximum, consistent with the concept of Monnipaa Chutiboot (2010, pages 1-2) and the Office of the Basic Education Commission (2011B, page 26). They have the same concept that the teacher is the main factor in the development a good quality of learner. The teacher must have the knowledge and capacity to manage the learning environment effectively. Because the quality of learning depends on the quality of teachers. This is the key for the students to have a quality education; The teachers will have an important role.Teachers should have developed good qualities. Especially in understanding the curriculum and learning management. Even today, teachers have more workload in teaching. They manage

every project that they deliver, both outside and inside their school of operation. Although the project will engage students for development, with the restrictions on the duties of teachers including the lack of teachers at the schools. This development is decreased. Although the teachers have been given training on a regular basis the effective of the quality of teaching has decreased. Moreover, some teachers lack encouragement in their work. So the way to help teachers develop their quality of teaching is to encourage them in their capacity (they can do it). In the meantime, they can encourage the development of the quality of the students. Consistent with Short and Greer (1997 p. 38) who say that "*teachers are the people who need to access policies and needs of the school, by being a leader who brings the policies into practice correctly and properly by linking ideas, and the principles of the curriculum to apply in teaching and learning as well as directly responsible for the development of learners*".

Developing teachers to have the capabilities for learning management is a key objective of educational supervision. As Charee Maneesri (1999, page 22), And Watchara Lawriendee (2011, pages 7-8) said, "the purpose of educational supervision were; A rescue operation, guide, to give knowledge and practice developing curriculum, to develop new teaching techniques, use media, create media, and to do research in the classroom. Aiming to help teachers with an awareness, and an understanding of the importance of things. To understand the purpose of education can help oneself, and understand learners. It encourages teacher to be a person of learning, To be academic leaders, To strengthen and encourage their mind to be strong. It encourages teachers to serve as a group, committed to improving the developing the lives of their learners. In all areas of their lives including the intellectual, emotional, physical, social, aesthetic, imagination and creative abilities. So that they will have the capacity to apply the knowledge in everyday life. Meanwhile, the supervisor can help to manage the administration of a school more efficiently. From the study of the Primary Education Commission (1997); Ratthasak Jarearnsil (2002), Orrawin Chamra (2004), and Detch Sarachan (2010) found that teachers want to be supervised by the supervisors from moderate to high level.

For supervision to be effective, according to the research of Somkid Chaiyaa (2002) ,Wichet Chanakeaw (2002) , Namyen Leangprasert(2003) , Thatsanee Jaihaaw (2005), and Phakin Samutwaanich (2006); For educational supervision to be effective.

It should be in an atmosphere of goodwill. All parties have learned to understand their role in the mission; Regularly work together collaboratively, have a goal of interoperability, use a plan to work together, run the program, and measure of results together. Performance characteristics above mentioned; Kinlaw (1995), Robert (2001), and Nitthaya Saengwong (2002) said that the practitioners empowered to each other because empowerment means to increase knowledge, skills, self-confidence, and recognize the capacities of them. It Creates a conducive environment for all parties involved in the decision, specifies a target together, builds the vision, specifies the mission, specifies the plans and projects, and brings a sense of belonging together, to develop the organization to be successful. While maintaining the benefits of personal interest and the common interest of the organization.

Meanwhile, David (2011 p. 14) and Suwat Ngeuncham (2010, interview) have concluded that all teachers need to be empowered. The reason is not only for teachers but for students that the teachers will be teaching. Therefore, supervisors should be organized for teachers to work happily, participate in decision-making, and create a working environment for teachers to feel that they are asked for advise, and don't merely serve as baby sitters only teaching in their duties. Because the teachers who are empowered will have confidence and can apply philosophy, theory and programs to use in the classroom better, and able to develop themselves to be professional teachers also. According to the study of Sweetland and Hoy (2000 p. 703-729), Lashley (2001 p. 22-29), World Bank (2002 p. 10), Dee, Alan and Lee (2003 p. 257-277), Petty (2007 p. 25-28), and David (2011 p.14); Found that the effect of the empowerment makes the teachers understand their self-efficacy and will have the capacity to increase the performance of their work schedule. There is an incentive to work even more, and they will have a positive attitude towards the organization, participating in decision making and reducing conflict in the organization. There is a sense of ownership workload. Empowerment fosters organizational commitment and helps with teacher job satisfaction. Both have high affinity. That is, if a teacher has a commitment to the organization, They will be satisfied in the job, Also. When the teachers were satisfied with the teaching profession, They will desire to continue to teach. Everything that happens within the teacher will directly have an effect on their work. This means, it helps teacher productivity increase, and high achievement for the learner, including the effect that impact has on the achievement of students.

The researcher who functions as the supervisor and manager of a developing learning management of mathematic teachers, recognizes the importance of supervision, empowering teachers, and the problems of quality of learning of students. The results of this research can be used appropriately and in accordance with the intension of the decree of the Provincial Administration and the Provincial Integrated 2551. This provides the method for the administration of the province and the provincial group, by covering the main area to distribute development and to reduce the disparity of growth between all of the areas in the country. Each area needs to have a clear role of development and through the common consent of all parties to achieve sustain capacity and cooperation for educational development and resolve to meet requirements in the context of the province. The customer will receive the maximum benefit from operating thoroughly with good quality. The researcher who has the duty of supervisors of the Primary Educational Service Area Office in the Upper Northern of Thailand needs to seek a model of supervision and develop the capacity of management for the Mathematic teachers and they can manage to run through self-sustaining learning. This will be a benefit for the learning management of teachers and continue the development of the students in the future.

1.2 Research questions

1. What are the factors and indicators of the empowerment-based supervision.
2. The empowerment – based supervision model for learning management capacity development of mathematics teachers, school under office of Primary Education Service Area Office Upper Northern Region that is built with accuracy, Propriety, Utility and feasibility be applied or not? How?
3. What is the result of the empowerment – based supervision model for learning management capacity development of mathematics teachers, school under office of Primary Education Service Area in Upper Northern Region?

1.3 Purposes of the research

1. To analyze the factors and indicators of the empowerment-based supervision.
2. To create the empowerment-based supervision model for learning management capacity development of mathematic teacher, School under Office of Primary Education Service Area in Upper Northern Region.

3. To study the implementation of the empowerment - based supervision model for learning management capacity development of mathematic teacher, School under Office of Primary Education Service Area in Upper Northern Region.

1.4 Scope of research

Scope of population

1. The populations in phase 1 for analyzing factors and indicators of the empowerment – based supervision were 3,205 mathematics teachers, School under Office of Primary Education Service Area in Upper Northern Region

2. The populations in phase 2 for creating the empowerment- based supervision model for learning management capacity development of mathematic teacher, School under Office of Primary Education Service Area in Upper Northern Region were 28 mathematic supervisors in Primary Education Service Area in Upper Northern Region.

3. The populations in phase 3 for studying the implementation of the empowerment-based supervision model for learning management capacity development of mathematic teacher, School under Office of Primary Education Service Area in Upper Northern Region were mathematic teachers in school under Office of Primary Education Service Area in Upper Northern Region.

Scope of content

The content used in this study were composed of:

1. The content is factored in by the joining of the processing components and synthesis of research papers on the model of learning management supervision, both domestic and international were as follows:

1.1 Supervisory arrangements means to analyze the needs of supervision and pre –evaluation of the capacity in learning management.

1.2 Operations supervision of learning, means operational cooperation between supervisors and mathematics teachers follow by needs indicator.

1.3 Reflective Supervision means the post – evaluation of the capacity in learning management.

2. The content of the guideline of empowerment to manage the learning of mathematic teachers. The researchers synthesized the Self-control theory of Kouzes& Posner (1995 p. 184); Self-determination theory of Borich & Tobari (1995 p. 242); Goal

Setting Theory of Hoy &Miskel. (2001 p. 126 - 137); Equity Theory of J.Stacy Adams that was developed in 1965, presented by Hoy & Miskel. (2001 p. 143 - 157); Guidelines for empowerment in the work of Prawat (1991 p. 748 - 749); The concept of empowerment in the work of Kanpol (1999 p. 52); The concept about the power of the teacher's work of Klecker & Loadman (1996 p. 10); The concept of empowerment practice as the work of teachers of Terry (1999 p. 5 - 6); The concept of empowerment of teachers working of Blasé & Blasé (1994 p.1).The common factors that define a basic concept of empowerment to develop the learning management capacity of mathematic teachersas follows:

2.1 The recognition of learning management data.

2.2 The knowledge and the capacity to create a learning management.

2.3 The learning management reinforcement.

2.4 The Recognition of self – esteem and learning management capacity.

3. The content of the learning management capacity the researchers synthesized from the learning management process of the Institute for the Promotion of Teaching Science and Technology (IPST) (2003, pages 9-11) and Office of the Basic Education Commission (2011 c, page 11-73)

3.1 Learning management planning.

3.2 Learning management process.

3.3 Measurement and evaluation of learning.

1.5 Definitions of terms

Supervision model is a structure that presents the performance of supervisors to help mathematics teachers which consists of principle, objectives, condition, supervision process , and effectiveness evaluation.

Empowerment- based is the supervision operations for the mathematics teacher of supervisors by counseling to create a clear common, building acceptance of self-worth and seeing the value of the portfolio, building capacity and supporting factors for learning management, to promote cooperation and build a network of learning management.

Empowerment- based factors is the results of aggregation of the operation of supervisors that are relevance and can enhance learning management of mathematics

teachers such as: 1) The recognition of learning management data. 2) The knowledge and the capacity to create a learning management. 3) The learning management reinforcement. 4) The Recognition of self – esteem and learning management capacity.

Indicators is the empowerment – based performance of supervisors together with a mathematics teacher for the activities of supervision. The objective is to develop the ability for learning management of mathematics teachers.

Quality of accuracy is supervision model for each component with the implementation of the principles, concepts and theories for supervision and the empowerment, clear and reliable.

Quality of propriety is supervision model should be clear, transparent and can be audited. This quality can apply to the context of a primary school and those who are involved, and also consistent with the core curriculum of Basic Education Act 2004.

Quality of utility is supervision model can be respond with the replied of the supervision development and mathematics learning management.

Quality of feasibility is supervision model that consistent and can be implemented in Primary Schools under the current circumstances, economical and have a value.

The model results is the situation that happens to mathematics teachers after use the empowerment-based supervision model in 3 ways: 1) Learning management planning 2) Learning management process 3) measurement and evaluation of learning.

Learning management planning is the operation of mathematics teachers about the analysis of learner, analysis of curriculum, the learning management design, preparing of the materials learning, Learning center, and measurement and evaluation tool.

Learning management process is the operation of mathematics teachers about measurement and evaluation of learning basic of learners, learning management on the lesson plans, using the media and skill training, learning center, reinforcement and summarize the results of learning.

Measurement and evaluation of learning is the operation of mathematics teachers about the audit of the learning of the students during learning management, after learning management, and remedial teaching.

Upper Northern Region is the area that contains Mae Hong Son, Chiang Mai, Lamphun, Lampang, Chiang Rai, Phayao, Phrae and Nan**.**

1.6 Research benefits

1. To create a model of supervision that is accurate, propriet, utilite , and feasible, That can be used for the supervision of the development of math teachers effectively.

2. To generate data issues and factors that affect the success of supervision, so that supervisors that can use in practice on the job, or rectify the model to suit each area or on an individual basis.

3. To generate guidelines for the creation and development of supervision in various model appropriately that can be used in solving problems or further developing the quality of other education in other fields.