## Chapter 2
### Theoretical Orientation

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CHAPTER 2
THEORETICAL ORIENTATION

2.1 INTRODUCTION

Theoretical orientation is the important part of the research studies. It states the theoretical concepts or the basic ideas on the topic and the work already done in the research studies, to attain an overall relevance and purpose. Theory is used to craft the null hypothesis, which is either proved or disproved by the research itself and illuminate the significance for the new study. The theory is the source of concepts and the connections among them that made it possible to produce hypotheses identify confirmations or refutations. (Ritzer, George, 2007)

The researchers can summarize the relevant theory from books and past studies. The theoretical orientation thus becomes a link between the research proposed and the studies which was already done. The value of theory depends on the clarity and coherence of their formulation and their adequacy to their conceptual frameworks. (Merton, Robert K., 1979) This chapter is concerned to the theoretical orientation concerning the changing roles of teachers in the context of globalization and technological changes.

2.2 GLOBALIZATION AND TECHNOLOGY

The theoretical orientation of the present study is to state the basic ideas on the globalization and technology i.e. definition of globalization, definition of technology, relationship between globalization and technology, effect of globalization and technology in education, importance of globalization and technology in education, and roles of teachers in the context of globalization and technological changes.

2.2.1 Definition of globalization

Globalization is an umbrella term for a complex series of economic, social, technological, cultural and political changes across the globe. Many educators give definition of globalization as follow:

Simon Feffery (2002) comments that globalization is the process enabling financial and investment markets to operate internationally, largely as a result of deregulation and improved communications.
Rodhan, A.I. et al (2006) define globalization as the processes of international integration arising from increasing human connectivity and interchange of worldviews, products, ideas, and other aspects of culture. In particular, advances in transportation and telecommunications infrastructure, including the rise of the internet, represent major driving factors in globalization and precipitate further interdependence of economic and cultural activities.

Hopkins, J. (2008) has summarized globalization into six terms as follow:

1. Globalization is “the act of globalizing”; from the noun “global” meaning “pertaining to or involving the whole world”, “worldwide”, “universal”. (Oxford English Dictionary, 2006)
2. Globalization is the present worldwide drive toward a globalized economic system dominated by supranational corporate trade and banking institutions that are not accountable to democratic processes or national governments. (International Forum on Globalization, 2006)
3. Globalization can be defined as a historical stage of accelerated expansion of market capitalism, like the one experienced in the 19th century with the industrial revolution. It is a fundamental transformation in societies because of the recent technological revolution which has led to a recombining of the economic and social forces on a new territorial dimension. (WTO, 2006)
5. Globalization can be defined as an increasing interaction across national boundaries that affect many aspects of life: economic, social, cultural and political. (United Nations, 2006)
6. Globalization, or the increased interconnectedness and interdependence of people and countries, is generally understood to include two interrelated elements: the opening of borders to increase fast flows of goods, services, finance, people and ideas across international borders; and the changes in institutional and policy regimes at the
international and national levels that facilitate or promote such flows. (World Health Organization, 2006)\footnote{11}

Steve Jones (2009)\footnote{12} describes that globalization is an elimination of barriers to trade, communication, and cultural exchange. The theory behind globalization is that worldwide openness will promote the inherent wealth of all nations.

Helena Simon (2010)\footnote{13} states that globalization is the system of interaction among the countries of the world in order to develop the global economy. Globalization can be referred to the integration of economics and societies all over the world. Globalization involves technological, economic, political, and cultural exchanges made possible largely by advances in communication, transportation, and infrastructure.

Hafiz, G. (2011)\footnote{14} mentions that globalization is the process of increasing the connectivity and interdependence of the world’s markets and businesses. This process has speeded up dramatically in the last two decades as technological advances make it easier for people to travel, communicate, and do business internationally. Two major recent driving forces are advances in telecommunications infrastructure and the rise of the internet.

Business Dictionary (2011)\footnote{15} defines globalization as the worldwide movement toward economic, financial, trade, and communications integration. Globalization implies the opening of local and nationalistic perspectives to a broader outlook of an interconnected and interdependent world with free transfer of capital, goods, and services across national frontiers. However, it does not include unhindered movement of labor and, as suggested by some economists, may hurt smaller or fragile economies if applied indiscriminately.

Wikipedia (2011)\footnote{16} explains that globalization is the tendency of businesses, technologies, or philosophies to spread throughout the world or the process of making this happen. It is a process of increasing interdependence and interaction among people, companies, and governments of different nations, driven by international trade and made possible by innovations in information technology. Globalization can be referred to the increasingly global relationships of culture, people and economic activity. Most often, it refers to economics: the global distribution of the production of goods and services, through
reduction of barriers to international trade such as tariffs, export fees, and import quotas. Globalization accompanied and allegedly contributed to economic growth in developed and developing countries through increased specialization and the principle of comparative advantage. The term can also refer to the transnational circulation of ideas, languages, and popular culture.

Leonard, J. (2011) points out that globalization is a complex of technological and economic factors including the global spread of communication technology networks, and the global integration of product and labour markets. He further explains that globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world.

From the definition of globalization mentioned above, it can be concluded that globalization is the process of interaction and integration among the people, companies, and governments of different nations arising from increasing human connectivity and interchange of worldviews, products, ideas, and other aspects of culture. In particular, advances in transportation and telecommunications infrastructure, including the rise of the internet. Globalization is a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world. It is the tendency of businesses, technologies, or philosophies to spread throughout the world, or the process of making this happen. It can be said that globalization is an elimination of barriers to trade, communication, and cultural exchange. The theory behind globalization is that worldwide openness will promote the inherent wealth of all nations.

2.2.2 Definition of technology

There are numbers of definition of technology suggested by educators and dictionary.
American Sociologist Read Bain (1937) wrote that technology includes all tools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them. More recently, scholars have borrowed from European philosophers of "technique" to extend the meaning of technology to various forms of instrumental reason.

Dosi (1984) points out that a set of pieces of knowledge, both practical and theoretical, know-how, methods, procedures and physical devices to produce something is called technology. It is the systematic application of organized knowledge to practical activities especially productive ones.

Bernard Stiegler (1998) defines technology in two ways: as "the pursuit of life by means other than life", and as "organized inorganic matter." He also explains that technology can be most broadly defined as the entities, both material and immaterial, created by the application of mental and physical effort in order to achieve some value.

Tarek, M. Khalil. (2000) Technology can be defined as all the knowledge, products, processes, tools, methods, and systems employed in the creation of goods or in providing services. In simple terms, technology is the ways of doing things by which the practical implementation of knowledge, a means of aiding human endeavour.

Harrison, G.B. (2010) states that technology is the process of using scientific, material and human resources in order to meet human need or purpose.

Dictionaries and scholars have offered a variety of definitions. The Cambridge Encyclopedia (1990) defines technology as the ways of making or doing the things. It is the used of tools, machines, materials, techniques and sources of power to make work easier and more productive. The Merriam-Webster dictionary (2010) offers a definition of the term: "the practical application of knowledge especially in a particular area" and "a capability given by the practical application of knowledge" whereas the free dictionary (2011) gives three definition of technology: (1) the application of scientific knowledge for practical purposes;
(2) machinery and equipment developed from scientific knowledge: it will reduce the industry’s ability to spend money on new technology; and (3) the branch of knowledge dealing with engineering or applied sciences.

Business Dictionary (2011)\textsuperscript{26} defines the term “technology” as the purposeful application of information in the design, production, and utilization of goods and services, and in the organization of human activities. Technology is generally divided into five categories (1) Tangible: blueprints, models, operating manuals, prototypes. (2) Intangible: consultancy, problem-solving, and training methods. (3) High: entirely or almost entirely automated and intelligent technology that manipulates ever finer matter and ever powerful forces. (4) Intermediate: semiautomated partially intelligent technology that manipulates refined matter and medium level forces. (5) Low: labour-intensive technology that manipulates only coarse or gross matter and weaker forces.

American Heritage Dictionary (2011)\textsuperscript{27} defines technology into three definition: (1) the application of science, especially to industrial or commercial objectives; (2) the scientific method and material used to achieve a commercial or industrial objective; (3) electronic or digital products and systems considered as a group: a store specializing in office technology; and (4) Anthropology. The body of knowledge available to a society is the use in fashioning implements, practicing manual arts and skills, and extracting or collecting materials.

According to McGraw-Hill Science & Technology Encyclopedia (2011)\textsuperscript{28}, technology is the systematic knowledge and action, usually of industrial processes but applicable to any recurrent activity. Technology is closely related to science and to engineering. Science deals with humans’ understanding of the real world about them, the inherent properties of space, matter, energy, and their interactions. Engineering is the application of objective knowledge to the creation of plans, designs, and means for achieving desired objectives. Technology deals with the tools and techniques for carrying out the plans.

Wikipedia (2011)\textsuperscript{29} explains that Technology is the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, methods of organization, in order to solve a problem, improve a preexisting solution to a problem, achieve a goal or
perform a specific function. It can also refer to the collection of such tools, machinery, modifications, arrangements and procedures. Technologies significantly affect human as well as other animal species’ ability to control and adapt to their natural environments.

From the definition of technology mentioned above, it can be seen that technology can be most defined both material and immaterial, created by the application of mental and physical effort in order to achieve some value. It is the making, usage, and knowledge of tools, machines, techniques, crafts, systems or methods of organization in order to solve a problem or perform a specific function. It can also refer to the collection of such tools, machinery, and procedures. The term can either be applied generally or to specific areas: examples include construction technology, medical technology, and information technology.

In the present study, the technology refers to the tools, machine and collection of techniques, desired products, method, skills, processes and raw materials including the application of science which is not limited to only physical application and physical tools. Benefits can be achieved through the application of new methods of thinking or new insights into the general knowledge base. The one of the biggest applications of this type is computer and the internet. Computers are tangible items, their ability is to perform basic thinking processes much faster which enable education to proceed much more efficiently.

2.2.3 Effect of globalization and technology

Globalization and technology is an international, global amalgamation of individual national economic, social, culture and politics force into a unified and single society. It has changed the world outlook into a more liberal or neo-liberal sense. Globalization and technology has brought about diversity in the products and services in many counties, and has led to a lot of growth. It is a growing phenomenon where different societies are becoming similar in the way they function and behave. The effects of globalization and technology are manifold, affecting various aspects of the world environment, economy, industry, financial condition, society as well as education in a particular nation. The effects of globalization and technology can be discussed as follow: (Jeffrey Frankel, 2010)
1) Globalization and technology effect human, animal and natural environment

Globalization and technology significantly affect human as well as other animal species’ ability to control and adapt to their natural environments. The human species’ use of globalization and technology began with the conversion of natural resources into simple tools. The pre-historical discovery of the ability to control fire increased the available sources of food and the invention of the wheel helped humans in travelling in and controlling their environment. Recent globalization and technological developments, including the printing press, the telephone, and the Internet, have lessened physical barriers to communication and allowed humans to interact freely on a global scale. However, not all technology has been used for peaceful purposes; the development of weapons of ever-increasing destructive power has progressed throughout history, from clubs to nuclear weapons.

2) Globalization and technology effect economy, industrial sector, financial condition

The globalization and advancement in technology in the past century have brought about a major change in the world today. The people can now communicate with other people from all around the world with great ease. The internet has also allowed the people to transfer huge amounts of data to a place half way around the world in a matter of seconds. The various means transportation is a lot faster and the people can now travel half way around the world within a day (Jeffrey Frankel, 2010).

Globalization and technology give birth to markets based on economics. The idea of free trade has been around ever since the early 18th century. Since then on, it is seen the growth of a global common market, allowing the freedom of exchange of goods and capital. Lowered restrictions on foreign direct investment have allowed corporations to set up factories in places where the cost of production is the lowest. This has increased the number of job opportunities in underdeveloped countries.

Globalization and technology have lead to the rise of worldwide markets where countries now have better access to foreign products. Industrially developed countries can now import raw materials required for production of various consumer products. These products can then be exported to different countries. It can be seen that there is a great
increase in movement of material goods between and inside national boundaries. The world has seen a rapid growth of international trade within the last fifty years, and the numbers are still growing.

Different economies of the world have greater access to funds since they now have better access to external borrowings. Trade in national currencies increased dramatically in the recent past to support the increasing levels of trade and investment.

(3) Globalization and technology effect society

Globalization and technology has affected society and its surroundings in a number of ways. In many societies, globalization and technology has helped to develop more advanced economies and has allowed the rise of a leisure class. Many technological processes produce unwanted byproducts, known as pollution, and deplete natural resources, to the detriment of the Earth and its environment. Various implementations of globalization and technology influence the values of a society and new technology often raises new ethical questions. Examples include the rise of the notion of efficiency in terms of human productivity, a term originally applied only to machines, and the challenge of traditional norms.

Globalization and technology has reduced poverty worldwide. It has allowed the sharing of technology, wealth and understanding among nations. It has raised the life expectancy of humans. It has opened the world to better understanding and communication among people. People now communicate with other people from all over the world.

With the help of modern technology the world has become a smaller place. People from all over world can communicate with each other easily and efficiently. This integration among the different countries across the globe is known as globalization. Globalization can be of different types social, cultural, economic, technological, biological, etc. with the growth of modern technology in this era people have come closer and have begun to understand the different cultures of the people living in other countries. Through globalization communication between the people living across the globe has increased to a great extent. Globalization and technology lead societies and cultures of the world are integrated through a global network. (Henry Mintzberg, 2010)
Internet has played a vital role in bringing the people together. With the help of internet communication has become cheap and people can gather information and connect with people living in any corner of the world. One of the most important aspects of the internet is e-marketing. With the help of e-marketing consumers can buy goods being sold all over the world and manufacturers can make their product available for everyone worldwide. Internet is known as one of the key reasons for which globalization has increased.

Language is one of the most important means of communication. When people speak the same language communication becomes easier and effortless. English is a language spoken by most of the population on the entire globe. There are a number of language translators on the internet that can help you learn and understand the language of your choice. People respond well to someone who speaks the same language as them. With the considerable growth in globalization people have to learn to embrace it with open arms. Industries have flourished to a great extent as entrepreneurs from different countries have come together to boost their profits. Due to globalization the rich are becoming richer and the poor are becoming poorer.

(4) **Globalization and technology effect competition among different countries**

Globalization and technology had also increased the competition among different countries. People are striving to make their countries better and richer. With globalization there are chances that the developed countries will take over the developing and underdeveloped countries. It is better to take up measures to meet the needs of everyone in order to live peaceful and comfortable life. Some people are finding it difficult to cope up with globalization. With the proper use of modern technology communication can be made more easier and there will be more integration of different countries in the world. Globalization and technology exists and there are predictions that the earth will become smaller and smaller as people start coming closer and closer.
(5) Globalization and technology effect the changing in education

Globalization and technology also effect the changing in education and teaching-learning process.

(5.1) Globalization and technology is fast becoming an indispensable tool for learning management.

DES (2003)\(^{33}\) sets out the objectives for effective use of globalization and technology in teaching and learning as “broadening horizons with more opportunities for creative expression; flexibility to study where, when and how best suits individual needs and preferences; increased motivation through learning that stimulates and stretches; wider access to learning and participation; and sensible choices about when, when not and how to use new technology to enhance, enrich and extend learning.” It goes on to suggest that: globalization and technology can make a significant contribution to teaching and learning across all subjects and ages. It can engage and motivate student and young people and meet individual learning needs”.

Cox (1997)\(^{34}\) also lists a series of benefits of using globalization and technology in lessons such as increased commitment to learning tasks; enhanced enjoyment and interest in learning and the subject; enhanced sense of achievement in learning and pride in the work; increase in self-directed learning and independence; enhanced self-esteem leading to expectations of achieving goals.

Becker (2001)\(^{35}\) documented a study of over 4000 teachers in the USA and suggested the following effects of using globalization and technology in lessons: (a) getting information and ideas; (b) expressing self in writing; (c) mastering subject skills just taught; (d) learning computer skills; and (e) analyzing information.

Trimmel and Bachman (2004)\(^{36}\) believed that globalization and technology can motivate students to learn. They found that the introducing of globalization and technology into classrooms has a positive impact on school attendance and learning interest. When students are using technology as a tool or a support for communicating with others, they are in an active role rather than the passive role of recipient of information transmitted by a teacher, textbook, or broadcast. The student is actively making choices about how to
generate, obtain, manipulate, or display information. Globalization and technology allows many more students to be actively thinking about information, making choices, and executing skills than is typical in lessons. Moreover, when technology is used as a tool to support students in performing authentic tasks, the students are in the position of defining their goals, making design decisions, and evaluating their progress.

DES (2003)\textsuperscript{37} drew on a number of research projects to support its statement that: “Globalization and technology play an important role in motivating students and encouraging them to engage in learning, within and beyond the classroom”. This is similar to the view of Bonnett et al (1999)\textsuperscript{38} who found that if students are allowed to choose their own content and presentation styles, it will increase students’ motivation. They believed that providing students with choices would motivate them to think about the options available to them and select the most appropriate media for their audience and purpose. The globalization and technology were useful in their own right.

The globalization and technology has been an empowering tool to the students. In many classes, students choose to work on their technology-based projects during recess or lunch periods. Teachers also frequently cite technology’s motivational advantages in providing a venue in which a wider range of students can excel. Compared to conventional classrooms with their stress on verbal knowledge and multiple-choice test performance, technology provides a very different set of challenges and different ways in which students can demonstrate what they understand (e.g., by programming a simulation to demonstrate a concept rather than trying to explain it verbally).

BECTA (2001)\textsuperscript{39} describes that globalization and technology is a tool to allow students to find their own information. Students can take the help of globalization and technology to capture original images that are used as the basis for paintings or digitally manipulated to create new and interesting effects. They can use digital scanners to explore the light filtering properties of different plastics, net curtains and film negatives. The use of digital technology allows students to experiment much more than would be possible with traditional techniques given the amount of curriculum time available. Globalization and technology can be used effectively in Science to show video sequences of things that are hard to explain or visualize. They used software to test aspects of their design that greatly
reduced the amount of time required and provided much more flexibility. John and Sutherland (2004)\textsuperscript{40} state that globalization and technology can be used in Geography to develop a “digital earth” concept to enhance students’ understanding of many aspects of the subject. The internet is often used to augment textbooks at much lower cost.

\textbf{(5.2) Globalization and technology effect the educational quality}

Globalization and technology enables high quality output to be produced at a speed that cannot be matched using traditional methods and resources. For example in education, the teaching applications such as graphing packages in Mathematics, multimedia authoring software and data analysis packages in Geography and Science all allow students to work much faster than if they had to do the tasks manually. Morgan and Tidmarsh (2004)\textsuperscript{41} studied the work of Geography teacher using the help of globalization and technology. They found that using of globalization and technology as a tool can increase the breadth and speed of learning, increasing the efficiency of both teacher and students. The appropriate use of globalization and technology can contribute to learning quality outcomes which are more relevant to work and competitiveness. Globalization and technology can bring real-life experiences to classrooms, thus it is indispensable in developing global citizenship and multicultural understanding.

\textbf{(5.3) Globalization and technology effects the students’ motivation and students’ self-esteem}

Globalization and technology also effect on students’ motivation. Teachers and students are sometimes surprised at the level of technology-based accomplishment displayed by students who have shown the new thinking or innovation.

Globalization and technology is the enhancement of students’ self esteem. It increases competence feeling after mastering technology-based tasks and their awareness of the value placed upon technology, led to increases in students' sense of self worth. For example, students clearly take pride in being able to use the same computer-based tools employed by professionals. As one teacher expressed it, "Students gain a sense of empowerment from learning to control the computer and to use it in ways they associate with the real world." Technology is valued within culture. It is something that costs money and that
bestows the power to add value. By giving students technology tools, it seems to be giving weight to their school activities. Students are very sensitive to this message that they, and their work, are important. (David Lackland Sam, 2001)

Students’ self-esteem and students’ motivation are able to encourage the students to acquire an impressive level of skill with a broad range of technological skills. The students can acquire more information and bring confidence about being able to learn to use new tools that will support their learning of new technology applications.

(5.4) Globalization and technology effects more on collaboration with peers

Another effect of globalization and technology is an increased inclination on the part of work cooperatively and to provide peer tutoring. Collaboration is fostered for obvious reasons when students are assigned to work in pairs or small groups. Technology-based tasks involve many subtasks, leading to situations where students need help and find their neighbour a convenient source of assistance. Students who have mastered specific computer skills generally derive pride and enjoyment from helping others. In addition, the public display and greater legibility of student work creates an invitation to comment. Students often look over each others’ shoulders, commenting on each others’ work, offering assistance, and discussing what they are doing. Globalization and technology often promoted collaboration and co-operation among students. (Ljosa Erling, 1998)

Experiences in developing the kinds of rich, multimedia products that can be produced with technology, particularly when the design is done collaboratively so that students experience their peers’ reactions to their presentations, appear to support a greater awareness of audience needs and perspectives. Multiple media give students choices about how best to convey a given idea (e.g., through text, video, animation). In part because they have the capability to produce more professional-looking products and the tools to manipulate the way information is presented, students in many technology-using classes are reportedly spending more time on design and audience presentation issues.

From the above mentioned, it can be concluded that globalization and technology is more progressively used and developed for the improvement of many things including education qualities. In education, globalization and technology is the comprehensive
approach to innovate education systems and methods of teaching and adapting rapid to changes in society, environment and enhancing education efficiently, effectiveness and productivity.

2.3 ROLE OF TEACHERS

2.3.1 Definition of role

American Heritage Dictionary (2009)\textsuperscript{44} defines that “role” is the character or part played by a performer, the characteristic and expected social behaviour of an individual or the function or position.

Business Dictionary.com (2010)\textsuperscript{45} prescribed that “role” is the expected behaviour associated with a particular position or status in a group or organization.

Webster’s Revised Unabridged Dictionary (2010)\textsuperscript{46} mentioned that “role” is the actions and activities assigned to or required or expected of a person or group. It is the normal or customary activity of a person in a particular social setting.

Wikipedia, the free encyclopedia (2010)\textsuperscript{47} defines that “role” is a set of connected behaviours, rights and obligations as conceptualized by actors in a social situation. It is an expected or free or continuously changing behaviour and may have a given individual social status or social position. It is vital to both functionalist and interactionist understandings of society.

Roles may be achieved or ascribed or they can be accidental in different situations. An achieved role is a position that a person assumes voluntarily which reflects personal skills, abilities, and effort. An ascribed role is a position assigned to individuals or groups without regard for merit but because of certain traits beyond their control, (Stark. 2007)\textsuperscript{48}, and is usually forced upon a person.

Role development can be influenced by a number of additional factors, including social, genetic predisposition, cultural or situational.

- Societal influence: The structure of society often forms individuals into certain roles based on the social situations they choose to experience.
• Genetic predisposition: People take on roles that come naturally to them. Those with athletic ability generally take on roles of athletes. Those with mental genius often take on roles devoted to education and knowledge. This does not mean that people must choose only one path; multiple roles can be taken on by each individual.

• Cultural influence: Different cultures place different values on certain roles based on their lifestyle.

• Situational influence: Roles can be created or altered based on the situation a person is put in outside their own influence.

Roles are also frequently interconnected in a role set, that complement of role-relationships in which persons are involved by virtue of occupying a particular social status (Merton. 1957). From the meaning mentioned above, it can be said that “role” is a set of connected behaviours, rights and obligations as conceptualized by a particular position or status in a group or organization or a social situation.

2.3.2 Role Theory

Role theory is the sociological study of role development, concerned with explaining what forces cause people to develop the expectations they do of their own and others’ behaviors. According to sociologist Bruce Biddle (1986), the five major models of role theory include:

(1) Functional Role Theory, which examines role development as shared social norms for a given social position.

(2) Symbolic Interactionist Role Theory, which examines role development as the outcome of individual interpretation of responses to behaviour.

(3) Structural Role Theory, which emphasizes the influence of society rather than the individual in roles and utilizes mathematical models.

(4) Organizational Role Theory, which examines role development in organizations.

(5) Cognitive Role Theory, which is summarized as “the relationship between expectations and behaviours”
People simply know that the teacher is a profession associated with the education of children in schools, in educational institutions, and those who must master the instructional materials contained in the curriculum. Whether in employment or as a profession, teachers are always referred to as one of the main components of education is very important. Thus, roles of teachers are not only known formally as an educator, teacher, coach, mentor, but also as a social agent is hired by society to help facilitate members of society who attend school. Professional role of teachers will result in outputs that have a professional role as well.

2.3.3 Roles of teachers in the context of globalization and technological changes

Due to the technological developments in the fast changing world of the 21st century, education is also changed accordingly. As part of these changes, the role of schools and education is different both in the educational system and in the society. Together with them the role of teachers are also changed. The main roles of teacher in the globalization and technology changes concluded by Tony Buzan (2007) are the establishing order and facilitating learning. The matters which are included in the order are the discipline of students in the class, the interaction between students and teachers, managing the material, the learning environment, the facilities for teaching and learning process like classrooms, laboratories, libraries, and microteaching’s rooms.

The roles of teachers has changed and continued to change from being an instructor to becoming a constructor, facilitator, coach, mentor and creator of learning environments. Today teachers are required to be facilitators helping learners to make judgements about the quality and validity of new sources and knowledge, be open-minded and critical independent professionals, be active cooperators, collaborators and mediators between students and what they need to know and provide to scaffold understanding (Weinberger, Fischer & Mandl, 2002).

Along with the globalization and technology changes, the roles of teacher also have the following changes:

- Improve the teaching-learning process for increasing the educational quality
Integrate information communication technology in education
Infuse information communication technology into curriculum
Improve the teacher’s competencies on ICT skills
Develop ICT for enhancing the learning environment.

2.3.3.1 Improve the teaching-learning process for increasing the educational quality

In the past, teaching-learning process emphasis on memorization whereas the new learning is based on the achievement of significant overall learning outcomes rather than specific objectives and where success is measured in terms of individual growth rather than the bell curve. As the educational system is constantly being challenged to offer better education to more people, at the same time, technological development continually opens up new possibilities and methods of teaching.

Education and tutoring can be described as complicated relationships in which many factors affect the whole. Some of these factors are the students’ learning preconditions and which framework factors apply at any given time. The framework factors will be different in relation to various methods. The students’ preconditions for learning concern their working habits, attitudes, motivation and knowledge which are all central factors in teaching and learning. It is important that the teacher is conscious of this, and intervenes in the processes when it is desirable or natural to do so. Methods in the field of globalization and technology often require different things of the teacher at the same time demanding more student activity.

As a professional practitioner, the teacher is likely to become a role model or standard for students. The teachers’ roles should also be a subject developer. Teachers have to bring new knowledge to the subject through their own experience and research or development work. The teacher’s role as a subject disseminator is also emphasized by focusing on the "good teacher", who in an inspiring and lively manner, awakens the desire, and therefore also the motivation for learning.

The teacher's daily plan is often full of countless challenges and the time constraints are very tight. However, it is expected that creativity should be given space at work in an active search for new knowledge and new methods. In this connection it is
important that the teacher feels competent to move forward with the new tasks in hand. Motivation and competence are closely connected. Increased competence leads to increased motivation to develop what one is doing, and this in turn leads to one wanting to try something new. In this the interplay between teachers, teacher and student and between students becomes very important. Positive interplay and commitment increases the motivation and the learning effect. Through the globalization and technology changes, teachers have a responsibility to promote learning conditions such as working habits, attitudes, knowledge and motivation for the students to learn and faith in their own ability to master the learning situation. Teachers have to think through various teaching methods and assessing which possibilities offer for learning. New technology is continually opening up new applications, and without the urge to try out new methods the teacher’s work can seem monotonous, and the students can miss out on good and varied teaching set-ups. The importance of variation in teaching is often overlooked, although this is closely connected to the students’ motivation and activity. The use of ICT must be carefully planned and put into a pedagogical framework. It must, in other words, have a subject context and never be slung about in a careless way. It requires the teacher to possess good pedagogical and didactical knowledge and be able to apply this in such a way as to promote learning processes.

Hargreaves, A. and Fullan, M. (1992) illustrate that there have been a great number of changes in education systems worldwide recently. Schools have to be the source of knowledge, a place where children were educated more or less without parental control.

Nowadays schools need to teach their learners how to gain information and how to select and use them. This happens so quickly that students learn how to use the Internet together with their teachers. The concept of learning to learn has become a very important element of teachers’ job. Due to the changes that took place in schools, the roles of teachers have to change too. In the past teachers used to be the major source of knowledge, the leader and educator of their students’ school life. Teachers used to be the authority in the class. Nowadays, teachers’ roles have to provide information and show their students how to tackle them. Although they are still considered to be a kind of leader in the class, they can be thought of as facilitators in the learning process. They are supporters rather than educators and also advisors towards parents.
Teachers in modern classrooms are no longer lecturers, they are facilitators, their main task is to set goals and organise the learning process accordingly. Then, in the past, teachers used to follow a syllabus which was compulsory for them. Nowadays, teachers have a National Curriculum, a Core Curriculum and a local (school) curriculum that they have to consider, but - on the other hand - they have independence to choose the teaching materials (textbook), make up a syllabus of their own and teach their pupils so that they can perform well both at examinations and in life. Curriculum design is a task teachers have to be prepared for, although the present generation of teachers has been growing into making up syllabi for years.

Another difference between the past and present tasks of teachers is represented by the technical background they need to be able to use and handle effectively (computer, photocopier, power point, projectors, etc). Instead of teaching chalk face, they need to be an information technology expert, a technician or/and a photocopy master.

One of the biggest challenges for teachers is that their role in the school management has also changed. The school needs them as individuals, who can make decisions and cope with the stress of the changing world of schools. At the same time teachers need to be able to work in teams, co-operate with colleagues and parents.

From the above mentioned, it can be said that the roles of teachers in the context of globalization and technology are as follow:

(a) Teacher is a knowledge deliveryman: All the above-mentioned changes have a common root. They show that it is not enough for teachers to be masters of their profession; they also have to come up with the importance of content knowledge (teachers’ subjects), pedagogic content knowledge (how to adapt content to the learners), general pedagogic knowledge (e.g. classroom management), curricular knowledge, contextual knowledge (the context of teaching: community expectations) and process knowledge (learning skills, observation skills, etc.). Teachers have to be the main source of information; the sources of answers, a learning facilitator, a trainer, a collaborator, and a friend for students in the learning activity. Furthermore, the development of teachers’ education must give an attention
to globalization and technology with all of the consequences. Teachers must have academic competency, personal competency, and social competency.

(b) **Teacher is a manager of teaching-learning process:** The teachers’ role in the new teaching-learning approaches needs to become the learning manager. The teachers as a manager have to look at the classroom as a working place, and their task is to manage the joint efforts effectively towards the best possible result. Everybody should know how to learn, and doing the delegates tasks and responsibilities. Teachers have to use various working methods. They have to aware of individual differences and uses much time in explaining what to do and why. Teachers must be a democratic leader, discusses students and let the students share their opinions freely. (George Siemens, 2010)

(c) **Teacher is an entertainer:** Teachers should be the entertainer that is much like an actor. They have to feel that it is their responsibility to arouse the interest and make it easy to grasp the central issues of her subject. They have to work with background and perspectives. They have to try to establish an active dialogue with the students, in which they will be able to present and accentuate view. (Erling Ljosa, 1998)

(d) **Teacher is the sculptor:** Teachers’ role is as the sculptor who takes full responsibility for the presentation of all relevant material. Teachers have to control the schedule and the curriculum and control the work of the students. They devote time to help the weakest of the students and clarify the correcting students’ work.

(e) **Teacher is an innovator:** In the era of technology changes, teachers have to shape and implement their role as the innovator. The lecture and the textbook will not be sufficient any more in teaching-learning process. The teachers and learners will have to produce their own "textbooks" and presentations, as part of their articulation of the world, built from a wider range of sources. (Weick, 1997)

It is commonly argued that the shift in education will be linked to a shift in the arrangement and control of the learning processes. A greater part of the activities associated with learning will be initiated and controlled by the learner instead of the teacher. A different balance in the roles of learners and teachers is needed and a different climate and
environment of communication and co-operation will have to emerge. If not for other reasons, this will be brought about by the changes in student populations and the contexts in which the educational programmes will be set.

Even if this balance of control needs to shift, that does not mean that the students will be able to or should take over the control completely. Both students and teachers will have to accept that they have a joint responsibility for the goals and methods of learning. In addition, the issue of the overall organization of the teaching and learning activities will be addressed not only by the educational institutions themselves, but increasingly by the organizations in which students are employed or will be employed as well as by the society in large. The classroom or the lecture hall will no longer be the obvious solution. It is perfectly possible for learners to be at different places in time and space, and even so to be engaged in a common learning process, supported by communication technologies. This, however, introduces new possibilities, constraints and demands concerning the communication processes. Communication and collaboration processes are quite different in a distributed environment compared with the corresponding processes in the classroom.

In conclusion, it can be said that teachers play an important roles in the context of globalization and technology changes. The technology will never render the teacher superfluous, but it can change the teacher’s role. By using globalization and technology for building of different approaches of teaching, teacher can arrange things so that the student, can, through active searching, find and go through relevant subject matter.

2.3.3.2 Integrate information communication technology in education

In improving the excellence of education, Information and Communication Technology (ICT) is a vital factor. ICT in education has become a mainstream educational focus. There are more requirements for education in the new global economy simply as “Basic Education for All”, “Core Work Skills for All” and “Lifelong Learning for All”. ICT which include radio and television, as well as newer digital technologies such as computers and the Internet have been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different ICT are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise
educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life.

Information and Communication Technology (ICT) can boost the quality of education in numerous ways as follow: (Stephenson, J., 2001)\(^{57}\)

(1) ICT can transform the way that education is delivered and open the way to a new pedagogy. It can make it easier for teachers to plan and find high quality materials, and it can help students to find out more about the subjects that they are studying. Critically, new technology can enable teachers to tailor their teaching more closely to the abilities of individual learner.

(2) ICT can increase the students’ motivation and engagement, by facilitating the acquisition of basic skills. ICT is also transformational tools and when used appropriately it can endorse the reallocation of learner-centered environment. ICT such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students.

(3) The appropriate use of ICT can activate an exemplary shift in both content and pedagogy that is at the heart of education restructuring in the 21st century. If designed and implemented properly, ICT supported education can promote the attainment of the knowledge and skills that will empower students for lifelong learning. When used appropriately, ICT particularly computers and IT facilitate new methods of teaching and learning rather than plainly allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning are underpinned by constructivist theories of learning and constitute a shift from a teacher-centered pedagogy in its worst form characterized by memorization and routine learning to one that is learner-centered. ICT makes the learners have active learning and enhances learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. (Oliver Ron, 2002)\(^{58}\)

(4) ICT supports learning interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real-world interactions, ICT
supports learning provides learners the opportunity to work with people from different cultures, in this manner helping to enhance learners’ teaming and communicative skills as well as their global awareness.

(5) ICT supports learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information.

(6) ICT enhances learning promotes a thematic, integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.

(7) ICT enhances learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICT allow learners to explore and discover rather than merely listen and remember.

(8) A large number of distance education universities and programmes use ICT to support the print content that they deliver to students. These include broadcast audio and video such as radio and television programmes, audio and video tapes delivered to students as part of a learning kit, and in more recent times, multimedia content such as lessons which are delivered off line, i.e. on CDs. This is also sometimes called multimedia education, where multiple media are used to support learning.

(9) Any educational programme that is purely delivered through ICTs, or with ICT delivered content as the primary backbone of the teaching-learning process, such as on line courses through the web, is ICT enabled education. In simple words, this form of education requires ICT access and requires that the learner use ICTs as a primary or basic medium of instruction.

(10) ICTs are able to provide strong support for competency and performance-based curricula and capacity to promote and encourage the transformation of education from a very teacher directed enterprise to one which supports more student-centred models. Students use ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools.

(11) ICT applications provide many options and choices and many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to where they learn.
It means that ICT allow anyone to learn in any place. This is because the communications capabilities of modern technologies provide opportunities for many learners to enroll in courses offered by external institutions rather than those situated locally. These opportunities provide such advantages as extended course offerings and eclectic class cohorts comprised of students of differing backgrounds, cultures and perspectives. Learners have freedoms of choice provided by programmes that can be accessed at any place are also supporting the delivery of programmes with units and courses from a variety of institutions.

(12) Through online technologies learning has become an activity that is no longer set within programmed schedules and slots. Learners are free to participate in learning activities when time permits and these freedoms have greatly increased the opportunities for many students to participate in formal programmes. The wide variety of technologies support learning are able to provide asynchronous supports for learning so that the need for real-time participation can be avoided while the advantages of communication and collaboration with other learners is retained. Therefore, at anytime, teachers are also finding the capabilities of teaching at any time to be opportunistic and able to be used to advantage.

Looking to the above mentioned, it can be said that integrated information communication technology (ICT) in education is the important roles of teachers. In order to fulfill the teachers' role in this approach, the following are the suggested. (Erling Ljosa, 1998)

(a) Virtual classroom should be established: Through audio and/or video conferencing, with connection in real time to one or more sites, it is possible to reproduce the classroom or lecture model, with the teachers and the learners in different places. The virtual classroom is usually teacher-centred, with the teacher/expert as the main actor. As in any ordinary classroom, the teaching strategies depend on the teaching model and the objectives of the teacher. The learners may attend individually, but usually they are forming local groups. They may use additional learning material, such as complementary information, practice, group sessions without the teacher, and self-assessment tasks. They can usually ask questions or intervene in other ways during the sessions.

The change of role for teachers is then perceived mainly as a need for more thorough planning and preparation of their lectures, or as a possibility of using *the best
lecturers” or add presentations by high level experts from outside the institution. Some say that both these aspects will lead to higher quality of teaching. But it is also argued that the new technology increases the dominant role of the teacher in imparting knowledge, making the teaching-learning situation even more authoritarian than in conventional education.

On the other hand, it is possible to shift the balance of control from the central, transmitting site towards the receiving site. A group of learners may invite external experts and discussion partners to participate by telecommunication, and thus enrich their learning situation. The role of the invited expert will then be more like a resource person, and the group of learners, or their local teacher, will be in charge of organizing the learning process. The success of the virtual classroom model will depend on a shift of balance towards a more active use of the communication aspect of the technologies, and the incorporation of real time communication into a strategy with a wider range of learning activities. (Beaudoin, 1998)

(b) Supported self-learning: In the second type, supported self-learning, the strategies used are learner-centred. The learner explores them individually. The model is based more or less on the same tradition as in distance learning. Contrary to the previous type, the learner has access to core content of the course, at the convenient time and for as long as he/she can, using on-line or off-line technologies. This model is very flexible as far as the place of learning is concerned. It is possible in this tradition to develop highly structured, pre-defined programmes of study. But flexibility is also often a characteristic of the course content, which may be structured and arranged in modular form so that it can be easily adapted to the learners’ needs and knowledge level. The flexibility of this model implies a high degree of responsibility and self-discipline of the learners.

Although the self-learning model means autonomous and independent learning, it must also be supported in the sense that the educational organization arranges tutorial support and an evaluation system. The learning tradition generally stresses the need of careful preparation of the learning materials. The support is designed to answer requests from the learners, and to assess and give feedback based on assigned tasks. Tutorial support contributes to the individualization of the learning process, since it may correspond to learners’ variety of interests and needs.
To some extent, this model is characterized by teaching strategies developed within more restricted technology options than we have today. But highly structured and polished lessons in pre-programmed classes or modules may be too static for a digital economy environment (Shrivastava, 1998)\textsuperscript{61}. They may become obsolete even as they are under preparation. With richer information access it will become more attractive to include, together with any pre-produced learning material, other resource material which has not been structured according to the same principles. And the learners will always be free to use this kind of material in their learning process. The success of the model will depend on its ability to incorporate and develop new options and strategies based on new generations of ICT.

The role of the teacher may vary also within this type of learning scenario. One of the main roles will be to plan and prepare self-learning material. Another will be to provide supportive evaluation and communication, both related to pre-structured material and as guidance to students who are exploring new fields and structuring their own learning materials and project tasks. In the latter respect this model comes closer to the next one.

(c) Collaborative learning: Nowadays, the new technologies have made possible a rich horizontal communication flow. The learners are able to exchange information and experiences in real or not real time, as well as carry out common project work for both learning and operational purposes. The activities in a collaborative learning model arise when a group of people share the same goals, interest, needs, etc., and decide to work on these together. The learners can also work together on a subject proposed by their teacher. In a first virtual or face-to-face meeting the group settles down their ideas, the scope of their work and the activities to be carried out to achieve their initial goals. From there on all the participants will contribute to the final product, which can be, for instance, a project report or a multimedia presentation.

The dynamic flow of communication will to a large extent be shaped by the nature and the organization of the collaborative project. The main task of the teacher will be to play the role of a moderator maintaining the discussion, suggesting new subject matters, new directions for information search or new questions related to the work that is being done. In this role the teacher will often be assisted by other members of the group. The work is
normally group-centred without heavy constraints concerning time, space and schedules, except for the cases in which real time technologies are exploited.

Collaborative learning has its link to the communication tools and it is necessary to establish and maintain the commitment to the goals, the work schedules and the rules of communication and decision-making in distributed groups. Collaborative learning has also an obvious potential for learning in the new Information Society. It is the starting point for the development of networked systems of knowledge resources, or knowledge ecosystems. In such systems we may find a blurring of the distinction between learning and work performance as knowledge creation and work interaction become collective, networked activities. This fact changes the concept of expertise and the conventional role of the teacher more fundamentally than in any of the other models. (Fjuk, 1998)

2.3.3 Infuse information communication technology into curriculum

All educators realize that ICT is a valuable resource for improving school education. However, the process of introducing and integrating technology into the curriculum is not easily or quickly accomplished. It is a challenge to reconsider teaching practices, the curriculum, the role of teachers, and the ways in which ICT can be incorporated into the school curriculum to maximize educational outcomes.

Rittu Abichandani (2012) explains that in order to implement the technology change in scholastic and co-scholastic areas, teachers need to accept the use of ICT in the classroom. The teacher of the future must not only be accomplished in the use of ICT but also in the integration of ICT into the curriculum. It is, therefore, inevitable that for any effective change to occur, the use of ICT in teaching and learning must be accompanied by a corresponding change in the curriculum.

ICT has to become as important as literacy in language and mathematics. Like reading, writing and mathematics, computing gives the student a basic intellectual toolbox with innumerable areas of application. Each one of these tools provides the student with a distinctive means of thinking about and representing a task, of writing his/her own thoughts down, of studying and criticizing the thoughts of others, or rethinking and revising ideas,
whether they are embodied in a paragraph of English text or a set of mathematical equations, the simulation of a social process, or the development of a computer programme. To achieve these abilities, ICT curriculum should have substance in it. A national scheme of work for computer education should be rolled down to form the basis of curriculum planning. The practical skills of blogging, podcasting, ethical use of social networking must be inculcated in present generation learners. Computer education curriculum must include stances, which enable students to develop an appreciation for the emerging technology, usage and application of technology, and the impact of technologies on themselves and on society.

The successful implementation of computer education will act as a building block for ICT integration in to classrooms. For language teaching, the World Wide Web should be used to build vocabulary, activities on listening, pronunciation support and so on. The listening drills provide not only sounds but also visual inputs that equip learners with more contextual clues. Latest web technologies like wikis, blogs, and podcasting can be built-in within the lesson plans of literature to enhance creative writing, good communication and critical thinking in learners. Videos and multimedia presentations can be used for complex grammatical concepts, thereby avoiding the boredom of written script. As the technology integration process involves visual and audio usage, it automatically increases the learner’s concentration and retention, and can be used as a permanent record for recapping and revisions.

ICT simulations can be used in science education for understanding of theories, principles, ideas and concepts. Biological systems, industrial chemical plants and concepts such as radioactive decay and interactions within ecosystems, populations and food chains can be explained using CD ROMs, which are available with interactivity. A particular type of simulation is the virtual experiment through online laboratories. In some cases students can start at the beginning with a choice of apparatus, and move on to decide on amounts of materials or operating conditions. These kinds of software or online programs can be used by teachers to complement student practical work. It can be used as part of a pre-lab discussion to set the scene for the experiment, or to stimulate post-lab evaluation of experimental process and results. Various science educational applications make learning interactive and engaging.
For mathematics, different kinds of interactive learning environments are available in the form of 3D programmes. The integration of these 3D programs for teaching geometry will lead to a better understanding of the concept with an impact on the minds of learners. Construction of point, arcs, line, and further complex geometrical figures can be explained using construction software that serve as an ultimate tool for introducing the concept of construction. Many information processing tools like the spreadsheet package, can be used to teach graphs, formulas and functions, which help to identify the role of concepts in the real world scenario.

Learners interacting with a computer actually use motor skills, which can have a strong reinforcing effect on the learning process by connecting physical actions like clicking and typing with desired results. Learners are also allowed more control over the learning process as they make the decisions on when to repeat questions, exercises and sequences based on their own progress. As a result, they experience expanded devotion towards the task, take the onus of the work done, learn independently, and are joyfully involved in the learning process.

Teachers with ICT skills will need to carefully consider when, what and how to teach the generative topics integrated with ICT tools. Teachers may choose to use very simple or complex technologies to achieve their educational vision. The role of technology integration should be to enhance the content and pedagogy. Learners need to be engaged in tasks where technology facilitates their learning.

It is not just the teaching-learning process that can be enhanced with the use of technology. Assessment of learning can also be heightened by the integration of technology. Capturing the moments of assessment using digital cameras and maintaining and calculating grades and marks, using information processing tools will save time and help teachers understand better how their students learn.

Educators need to perceive ICT primarily as a tool for teaching and learning across the curriculum although there are foundations skills in ICT that students need to learn before they can participate fully in an ICT rich classroom. Teachers need to inculcate the willingness to learn enough about ICT to use it effectively in the classroom. For teachers to
rethink and re-structure teaching and learning they must first learn enough about relevant technologies to apply them in their professional arena, and to translate them to their students as part of the integrated learning of the subject matter. While in the past, the role of school was thought to be that of the distributor of information, in today’s context this role can no longer hold. The information explosion has changed the nature of knowing from the ability to recall information to the ability to define problems, to retrieve information selectively and to solve problems flexibly. This therefore changes the nature of learning from the need to master topics in class to the need to learn autonomously. Teachers and students now need to learn how to learn in an ICT rich environment.

2.3.3.4 Improve the teacher’s competencies on ICT skills

Technology is recognized as a key element to learning in the 21st century. The roles of globalization and technology has been well documented and researched for the development of 21st century skills to support the challenges of the modern work-place and the dynamic and rapidly changing knowledge society.

According to principle of education, students are all equal to the situations at the school. This is the aim of changing the learning management at inclusive schools. Since the students’ learning experiences and their ability to solve problems are different, they need different challenges, which inclusive schools provide if possible.

Due to changes of technology, the teachers need to develop the inspiration and up-to-date knowledge and competencies on ICT skills. More self-motivated individualized, group and collaborative learning process, supported by ICT will contribute significantly to the preparation of a more agile modern work place. Ministry of Education (2011) has suggested four areas for improving of teacher’s competencies on ICT skills as follow:

(1) Improve the teachers’ competencies of using ICT skills for teaching–learning process

Ministry of Education in Thailand is mainstreaming support for ICT in teaching and learning across the institution. The purpose of this support is to maintain and improve the quality of the teaching and learning experience where ICT is used. ICT becomes an integral through invisible part of daily personal productivity and professional practices. ICT-based
learning technologies are integrated with new learning approaches and integrates subject areas in real world applications (i.e. learner-centered, problem-based, self-directed learning stressing higher-order thinking skills) embeds a new pedagogical culture. Recently, VCD/DVD, satellite-based digital video broadcasting, videoconferencing systems, digital projectors and LCD display boards and Internet-based video/audio streams synchronized with Power point slides are used in teaching-learning process.

The frequently used educational software and resources in Thailand can be classified into the following categories: (Ministry of Education, 2005)\(^6\)

(i) CAI courseware in the forms of tutorial or drill-and-practice: These types of courseware were developed both for teachers to demonstrate and present learning content in classrooms and for learners to use at home. The tutorial and practice courseware is supposed to be of high values in preparing students for learning outcomes and examinations, thus has great charms to students, parents and teachers.

(ii) Computer Assisted instruction (CAI) and computer assisted Test (CAT) systems: These software have also gained great attentions because it can help teachers with the creation and implementation of teaching-learning process, quizzes and examinations and help students to make self-learning and self-evaluations in their own experience.

(iii) CD-ROM-based and Web-based resources banks: Tutorial courseware has the limitation in that it usually provides a whole program for certain learning unit and leaves little spaces for teachers' flexible instructional design and integration. Under this circumstance, there appeared the concept of "integral-ware", which represents the micro learning objects in learning resources that can be integrated or orchestrated into a lesson plan using platform tools. Many companies in Thailand have developed CD-ROM or Web-based resources banks geared to particular subjects in different levels of educational institutions. These resources banks are composed of such formats of instruction resources as texts, images, audio, video, animations, and simulations and the like. Teachers and students can find out the target resources using the provided search tools.

(iv) Framework software as tools for learning and teaching: Framework software is not designed to deliver the target subject matter, but to function as a tool for learners' thinking, learning, and teachers' work.
(v) Web-based learning management (LMS) systems: A Learning Management System (LMS) is a software package that helps teachers and educators to manage learning content and resources, and to deliver them to students. Usually an LMS is web-based so that students can access learning content anywhere and any time. An LMS enables teachers to manage large numbers of students, instructors and courses, and provide online forums. Apart from using an LMS to deliver e-learning courses, educational institutions also use an LMS to assist with student registration and sometimes to help with competency management, skills-gap analysis, certification, virtual classes and resource allocation (textbooks, instructors, etc.). An LMS can be used on any computer and can be used to assist just one teacher to manage one course, or can be used to manage the e-learning content and delivery for several teachers and thousands of students. The design and development of Web-based learning management systems is currently the focus of many e-learning corporations. More and more educational institutions are starting to use Web-based LMS to setup their online courses and virtual communities.

E-Learning courseware is designed to promote learners' higher-order thinking, knowledge construction and social interactions. For the stimulation and regulation of the e-Learning market, teachers have to spend too much energy in designing and developing courseware for their own classes, which is usually not professional or transferable. Therefore, it is an urgent mission for the governments to encourage and regulate the commercial and public service (e.g. libraries, museums) institutions to develop educational resources of good quality and develop a rich learning resources market.

(vi) "Web Schools" have established to extend their classrooms to more students and provide them with high quality mentoring. This model can also meet the needs of the students who are striving to get better scores in their examinations.

(vii) Comprehensive educational Website is included for almost every subject in schools and universities. Teachers and students can search for and download the resources of their interests, upload and share their thoughts and products, and communicate with peers online.
For the using of ICT to improve teaching–learning process, the best practices can be performed as follow:

(i) Teachers have to aware of the importance of the appropriate use of ICT

It is needed for teachers to aware for the importance of the appropriate use of ICT to support their teaching and to enhance the student's learning. They have to be enthusiastic about incorporating the use of ICT to support and stimulate effectively the student's interest in learning. High levels of teacher enthusiasm, coupled with challenging and stimulating tasks, promote the student's interest and extend their thinking. The student will show high levels of confidence in their work using ICT and respond with enthusiasm and enjoyment. They should be motivated by the effective inclusion of ICT in lessons, and their positive attitudes to learning in these lessons. Teachers should use a range of good classroom organizational and management skills to enable the entire student to acquire competence in the use of ICT hardware and software and to develop a range of ICT skills. Information and communication technology can be used well through whole-class, group, paired and individual work to promote independent learning and to extend the student's understanding, especially those students with special educational needs. The Internet is a resource for students to find curriculum-related information, and then use open software to make reports, organize their work and express their findings. Teachers were given release from other duties to develop a series of student-centred activities. The school timetable was then adjusted to allow time for students to work in groups with teachers acting as facilitators. (Venezky Richard, 2005)66

(ii) ICT should be used as tools

ICT tools can be assumed as the general software such as word processing or paint programmes or an Internet World Wide Web browser. It can be flexibly applied by the learner to various topics. Teachers have to change the roles in classroom and adopt a fully integrated the using of ICT as tools as follow: (Collins, 1992)67

- Use ICT for the whole class to small-group instruction;
- Use ICT for coaching, not for lecture and recitation;
- Use ICT for working with better students and weaker students and facilitated by student-directed learning;
• Use ICT for assessment which based on products, progress and effort of students’ performance;
• Use ICT for a cooperative social structure, not for a competitive;
• Use ICT for student’s individual difference learning different things, not for all students learning the same things;
• Use ICT for the verbal thinking to the integration of visual and verbal thinking, with organizational, artistic, leadership and other skills contributing valuably to group projects.

Teaching-learning through ICT in education identify four broad stages in the way that teachers and students learn about and gain confidence in the use of ICT.

• The first stage that teachers and students go through in ICT development is of discovering ICT tools and their general function uses. In this discovery stage, there is usually an emphasis on ICT literacy and basic skills. This stage of discovering ICT tools is linked with the emerging approach in ICT development.

• Following on from the discovery of ICT tools, it comes to the stage of learning how to use ICT tools, and beginning to make use of them in different disciplines. This stage involves the use of general or particular applications of ICT, and is linked with the applying approach in ICT development.

• The next stage is the understanding of how and when to use ICT tools to achieve a particular purpose, such as in completing a given project. This stage implies the ability to recognize situations where ICT will be helpful, choosing the most appropriate tools for a particular task, and using these tools in combination to solve real problems. This stage is linked with the infusing and transforming approaches in ICT development.

• The last stage involves specializing in the use of ICT tools such as occurs when one enters more deeply into the science that creates and supports ICT. In this stage, students study ICT as a subject to become specialists.

(iii) Designing an integrated ICT learning environment

In designing an integration of ICT learning environment, particular attention should be given to the following important points: (Ministry of Education, 2010)
(a) If teachers are to use the integration of ICT learning environment for maximum benefit, then they have to become pedagogical design experts and facilitators of learning. They have to be prepared to change their traditional teacher roles to include using technology appropriately to create alternative and meaningful learning paths for their students. It is only then that they will be able to cater for the individual learning differences of the students in their classrooms.

(b) Teachers need to present materials in interesting ways to stimulate intellectual curiosity. Careful thought needs to be given to provide clear explanations and quality feedback. They will observe student behaviour by using the monitoring system and be ready to provide clear structure and organization to the materials presented. Individual student profiles will provide data for further follow-up action.

(c) Teachers need to understand how students make sense of the curriculum so as to decide how to change it to cater for individual differences. Any changes made must aim to make a difference to student motivation, learning, and achievement. When using the integration of ICT learning environment, teachers can gain more confidence and can subsequently focus more on maximizing natural learning and motivation with instruction that is meaningful and relevant from the individual learner’s perspective; provides appropriate learning activities; attends to the climate and context in which learning occurs; provides choice and caters for individual interests and creativity, and adapts to a variety of individual differences.

Through continuous improvement of the resources (produced by teachers) currently available in the integration of ICT learning environment, it is envisaged that the environment can support learning in these ways:

(a) To bring exciting curricula into the classroom by extending access to resources beyond the school classroom to supplement existing content;

(b) To provide tools and scaffolds that enhance learning - teachers can represent data in different ways;

(c) To give students and teachers more opportunities for feedback, reflection, and revision;
(d) To give students the chance to self evaluate their learning and experience the opportunity for more focused and individualized feedback from teachers where improvement is needed;

(e) To build an entire community that is inclusive of teachers, administrators, parents and students; and

(f) To expand opportunities for teacher learning that include helping teachers to think differently about learners and learning, to reduce the barriers between students and teachers as learners, to create new partnerships among students and parents, and to expand communities of learners that support ongoing communication and professional development of teachers.

(iv) ICT assessment

In order to improve the teaching-learning process, there must be the ongoing and systematic assessment through practical observation of the student's work, and well-documented records of the student's progress in using ICT are maintained. The teachers monitor and track the student's progress in ICT and use the information to inform future planning. Examples of the student's work using ICT are collated to form digital, multi-media, electronic portfolios of ICT competence. In a number of instances, the students are involved in this process. Records of achievement provide comprehensive records of progress and achievements in using ICT. The impact of ICT should be monitored and evaluated effectively by both the teachers and the management team.

In terms of assessment, a secure basis from which teachers can plan lessons to meet the needs of all students in the class should be provided as follow: (Ministry of Education, 2010)

(a) Identify the type and use of resources and make use of a resource range appropriate to the individual ability level of students;

(b) Better understand ways in which student's progress in learning; formative developmental feedback is emphasized;

(c) Help students toward success, not merely to point out their shortcomings;

(d) Assist students to remediate any personal learning problems through ongoing feedback;
(e) Allow students to resubmit work and not be penalized; emphasis is on understanding rather than on memorization and repetition;

(f) Allow student for broad flexibility and encourage toward self-direction;

(g) Give opportunities for assessing student’s progress are built into the activities of each topic

A study plan is prepared for each student which is pitched at an appropriate level. The outcomes of the activity are used to review progress and check whether students are ready to move to the next activity. The objectives and expectations in the study plan can be used to help students review their own progress. Teachers’ feedback to students can range from informal (oral comments) to formal comments in using this system. Teachers need to think and reassess current practices relating to assessment that entail the following:

(a) Find effective new and improve assessment methods;

(b) Emphasizing on deep learning rather than surface learning;

(c) Interest in using new teaching methods;

(d) Emphasize on formative and summative assessment;

(e) Increase on student’s self – assessment and student’s self confidence;

(f) Use diagnostic tools to interpret individual learning differences,

(g) Use learning resources i.e. provide students with experiences outside the classroom;

(h) Provide students with opportunities to develop initiative and independent learning;

(i) Enable students to enjoy learning through IT and be motivated students a wide range of IT tools and resources that are varied and up to date;

(k) Direct students to use ICT as a self-study resource and a communication tool; and

(l) Use the ICT to give immediate feedback to students on their understanding.

(v) Provide variety of pedagogies

ICT provide many opportunities to more easily use a variety of pedagogies. As a tool, ICT can support didactic or facilitative approaches, collaboration and interaction
across time. Online technologies support and make easier constructivist approaches, just as they make behaviourist approaches easier. The capacity of ICT to deliver information or to communicate with a mass of students in quite individual ways opens up the possibility of tailoring pedagogy to the needs of a student in time and place without the limitations imposed by peer groups. This provides the opportunity for software that utilizes, for example, multiple intelligence theory. The ICT will not improve pedagogy. It support and assist teachers who shift their pedagogies to be more student project-based and collaborative.

Alignment is an emerging concept in education facilitated by information and communication technology. Schools can only be effective in enhancing teaching, learning and helping students achieve well-defined educational objectives when the standards, objectives, teaching, curriculum, resources, technology use and assessment are all aligned. The content and methods of assessment must be aligned to measure standards and objectives. Technology provides valuable tools to align the system to promote student learning by providing a means to monitor alignment.

(vi) **Provide training for development of teachers’ ICT literacy**

Information and communications technology (ICT) offers new and innovative modes of learning for all students at all educational levels, ICT can bring about classrooms without walls when teachers are ready to realize the potential of this powerful tool. However, at the present time, despite the technology changes in society, teachers are still to a great extent using the approach of helping students acquire information from textbooks and acting as the information giver. All of their formal teaching in classrooms is still driven by traditional teaching practices although there may be occasions when ICT is used. Breaking away from traditional approaches to instruction means taking risks and this is not easy for school leaders and teachers to do on their own. It takes time for school leaders and teachers to recognize the value of using ICT and to become fully committed to the view that information is available from sources that go well beyond textbooks and themselves. As change agents they must help students understand and make use of the many ways in which they can gain access to information and how to make use of this information in a meaningful way. At the very least teachers need to employ a wide range of technological tools and software as part of their own instructional repertoire. (Kar Tin Lee, 2001)
For educators at all levels who are preparing students for the information age, the challenges of introducing and integrating ICT into education have become even more challenging. The school leaders and teacher of the today and future must not only be accomplished in the use of ICT but also in the integration of ICT into the curriculum. It is therefore inevitable that for any effective change to occur the use of ICT in teaching and learning must be accompanied by a corresponding change in curriculum.

Training for development of teachers' ICT literacy is now a worldwide critical issue for using ICT in education. The lack of knowledge of school leaders and teachers was seen as a major obstacle in many countries. According to a recent survey of ICT using in Thailand, it was found that school leaders, teachers and staffs with lower than 50 percent can use a word processor, 20 percent of them can browse the Internet to find usable resources, and 6 percent can use e-mails. Senior teachers were found to have much lower proficiencies with ICT than young teachers (Basic Education Teaching Research Center (BETRC), 2010).

In a national project on using ICT to support curriculum reform, Thai government have developed a standard for school leaders’ and teachers’ competencies of educationally using ICT. This standard encloses a list of training content that falls into five dimensions: (1) general knowledge and skills of ICT, (2) using ICT in learning and teaching processes, (3) assessment and ICT applications, (4) using ICT for professional development and life-long learning, and (5) the humanity, ethical, and legal issues related to educational uses of ICT.

Megha Gokhe (2011) states that for development for ICT literacy of school leaders and teachers, the ICT curriculum is needed to be considered. The curriculum for personal productivity and professional practice of school leaders and teachers should be enhanced with the use of ICT. Educational research studies show that programmes of professional development for school leaders and teachers are most effective if directed to the stage of ICT development reached by schools. School personnel development is best conceived as an ongoing process, with many professional development activities conducted in schools. They should understand about the curriculum affects the progression of ICT in the curriculum in following various stages of development.
First, the curriculum must enhance school leaders, teachers and staff become ICT literate with regard to what technology is available and how it might be used.

Second, school leaders, teachers and staff are able to learn basic skills and begin to apply various ICT tools to their regular tasks and projects.

Third, they are able to become more capable and confident with ICT and begin to integrate and overlap both subject areas and tools.

Last, they have to change in professional practice in which they are now enabled to design lessons to incorporate larger, more complex, real-world projects using ICT tools and resources.

As ICT is introduced into school systems, there is a tendency to move from discrete skills training to reflective practice and integrative professional development. Budgetary allocation and provision for release time for teacher professional development seriously impact on the ability of a school system to incorporate ICT in a meaningful way. Community involvement may include parents, families, business, industry, government agencies, private foundations, social, religious and professional organizations, as well as other educational institutions can help in the form of donations of equipment and resources, or may be in human resources provided for training and technical assistance.

Ministry of Education (2005) suggests that the best practice for personnel training and developing, school leader should have a clear vision of how ICT is to be developed throughout the school in a progressive, manageable manner, to broaden the student’s experiences and to raise standards. A thorough, detailed and relevant school/university development plan for ICT should identify appropriate areas for improvement and development, supplemented with clearly-focused action plans. School/university leader should support learning and teaching, and through interest and support, empowers staff by promoting a collegiate approach to making the best use of ICT resources. The teachers should work well together to monitor and evaluate the student’s experiences of using ICT, and, as a result, they have a clear picture of where, and what, ICT is happening in the curriculum.
Itasca, I.L. (2004) describe that it is need for educational institutions today to build up a network infrastructure with lots of computers and IT facilities. The focus should be on the integration of ICT into the curriculum, using IT effectively as a tool for enhancing the effectiveness of learning and teaching, institutional administration and assessment, e-Services and school-based intranet applications.

In the present situation, ICT is not really well integrated into the curriculum or daily teaching. Many teachers still adopt a ‘teacher-centred’ approach and do not know how to apply IT into their subjects. To put it in another way, many teachers still use ICT to support or supplement traditional mode of teaching, or as a remedial tool to reinforce basic skills. For example, they use power point slides to replace chalkboard notes and the data projector like the overhead transparency projector. They distribute electronic materials instead of printed copies. These practices are good in enhancing a teacher-centred approach. However, it is hard to find that ICT has brought a significant change in the students’ mode of learning (Aviram, A. and Comay, O., 2000). Yet a lot of investment and resources have been given to ICT implementation in educational institutions.

Trinidad (2005) illustrates that without pedagogical change, teachers still use old methods for teaching. It is important to establish by the constructivist approach, a learner-centred environment based on learning, rather than teaching, with ICT. The ultimate aim of ICT adoption now is to facilitate effective transformation of learning. Any plan of implementation which deviates from this aim will result in futility. It should be curriculum driven instead of technology driven, in view of future curriculum reform. The mistake of the past has too much emphasis on technology e.g. fast computers, expensive multimedia centres and broadcast stations, but with little attention to how they can effectively transform learning. Most schools and universities pay their attention these days more to the curriculum reform than the ICT policy statements. If ICT cannot help the implementation of the coming curriculum, there is little rationale for its ‘survival’ or development. Probably an ICT plan is not necessary; rather there should be a school or university improvement plan which includes ICT as an important component (Lemke & Coughlin, 1998). In other words, the implementation of ICT is inseparable from the process of introducing curriculum reform. ICT
should be a means to help achieving future curriculum goals by providing a learner-centred environment, as shown by many studies.

In order to develop the ICT literacy for educational personnel i.e. leaders and teachers, there should be the development of technology leadership. (James, 2008)\textsuperscript{78} Technological leadership is becoming more important an issue in successful ICT implementation. School/university leaders should play increasing role in leading change, providing vision and objectives, as well as professional development initiatives in using ICT to bring about pedagogical changes. In the past several years, there was inadequate leadership development and support. School/university leaders neglected the extra stress on teachers brought about by ICT adoption. Usually a small group of teachers led by middle management was in charge of all ICT related duties. Much time was spent on the infrastructure rather than curriculum integration. Some school leaders even think that investing in high-end facilities or expensive hardware/software shows their schools are technologically advanced but without really transforming learning and teaching.

A lot of educational changes have been taking place. It is essential for school leaders to cope with rapid changes. ICT implementation, at this stage, is not asking a group of teachers to give it a try. Every teacher is practically involving, and time is not much for the transition, as the curriculum reform approaches. Much staff development and support are required. Particularly the school leader must possess the strategy and knowledge in leading change. There should be the distribution or shared leadership which different levels of leaders collaborate to work for common ICT goals.

Many studies have shown that technology infrastructure is important, but ICT leadership is even more necessary for effective ICT implementation (Anderson, 2005)\textsuperscript{79}. Strategic leadership is needed for long-term sustainability of school improvements (Davis, 1989)\textsuperscript{90}. The success of other goals depends largely on whether leaders of schools/universities are capable of leading, planning, implementing and sustaining changes (including ICT).
Anderson (2005)\(^{61}\) states that some school leader support ICT but does not have a particular vision and strategy of ICT in education. The ICT job is given to a small team of teachers who focus more on the infrastructure management than technology innovation in teaching, not to mention staff development and ICT research which clearly defined the term “e-leadership”. The principal should develop his own leadership style to cope with rapid changes. Fullan (2001)\(^{62}\) points out the first step for staff development is making a moral purpose, making difference sense of purpose, and let staff establish and commit to a shared vision on ICT. The school/university leaders can foster a team learning environment in which teachers can communicate with each other on ICT experience, reinforcing each other’s effective practice. This also paves the way for knowledge sharing, especially for tacit knowledge which refers to skills, beliefs, and understanding below the level of awareness (Fullan, 2001)\(^{63}\). The leader must work through the complexities of problems to make coherence of reforms which may seem isolated and unconnected. The leader should establish coherence between ICT and curriculum reform though there is complexity in such change and aims at developing a collaborative, technology-rich school improvement plan. To facilitate change, the leaders can adopt the strategy of distributed or shared leadership by which emerge and get involved in the ICT policy-making process.

Chrispeel and Harris (2006)\(^{64}\) suggest that school/university leaders can empower teacher-led teams to explore, formulate and spread good ICT practices. Teachers will change their patterns of interaction, attitudes and beliefs, from being isolated, silent and autonomous to being collaborative, adaptive and innovative, because they have a say and involved in the decision-making process. There should be the interdependent leaders across an organization to bring development i.e. local line leaders, executive leaders and network leaders. The ordinary classroom teachers resemble local line leaders who are very focused on the students. The executive leaders resemble the senior management of the school; they shape ICT policies, create the environment for effective integration of ICT and arouse commitment to education among the classroom teachers. The network leaders act as an interface between different functional groups, subjects and teams. They may resemble, for example, ICT leaders or managers in school. They advise and help. They work in partnership with classroom teachers in trying out ICT pedagogy. They have the experience or insight to
help frontline teachers to move forward and bring change to school. Classroom teachers also
depend much on the network leader to link them to other parts (in terms of resources and
collaboration) of the school or reflect their opinions. (Cameron & Green, 2004)  

From this point of view, all teachers are leaders and their interaction contributes to
improvement. Therefore, without the staff's competencies development in the field of ICT,
there is always a risk. Thus, proper use of ICT, school leaders and teachers will be familiar
with the use of ICT in learning situation. They are able to cover the special needs of their
students with the application of ICT in the classrooms. They will consider the internet is a
useful learning resources and many use in teaching-learning process. Teachers can use
internet for changes in their teaching methods which will be the personal challenge for them.
Teachers teaching the same subject can organize into a group to work together,
communicating their understandings of curriculum standards and textbooks, designing
instructional activities, sharing materials, observing and reflecting over each others' teaching
activities occasionally, and composing tests to evaluate their students. In order to success
with the teachers behaviour mentioned above, it needs a model shift from technique-oriented
training to integration-oriented training that strengthens the educational uses of ICT and
integrating ICT into the training processes.

2.3.3.5 Develop ICT for enhancing the learning environment

Concurrently learning management need to plan and provide as much scaffolding
as possible to ensure that teachers interpret the prospects of technological innovations in a
positive manner because schools have been known to be resistant to curriculum innovations.
In the age of globalization and technological changes, teachers are given recognition for the
key role of integrating of ICT in learning management. In order to introduce ICT into
classroom, all teachers need to develop their basic ICT skills and then go on to ensure that
the students in their charge can also make progress in use of ICT in an incremental way.
Unless teachers are functioning at a comfortable level of ICT skills and knowledge they will
be unable to use ICT as a primary tool for teaching and learning across the curriculum.

Bridget Somekh (1997) has demonstrated that “the use of IT can provide
innovative learning experiences, but in all cases a great deal depends upon the teacher to
provide the context which makes this possible” as follow:
(a) Teachers need to be competent and confident users of hardware and software, but this in itself is not enough. They need also, to understand how to organize the classroom to structure learning tasks so that IT resources become a necessary and integral part of learning rather than an add-on technical aid”.

(b) Teachers need to be convinced of the value of ICT because many teachers tend to perceive themselves to be technologically incompetent and often feel deskilled and demoralized when they first begin to use computers in the classroom.

(c) Teachers need to encourage the students to construct, evaluate, manipulate, and present their ideas while demonstrating understanding of curriculum concepts and innovate constructs. It is precisely in this way that teachers should aim to prepare the students to work in the types of classrooms where knowledge is actively used and students are given more responsibility for their own learning when ICT is effectively integrated as a tool of technology into the curriculum.

(d) Teachers need to inculcate the willingness to learn enough about ICT to make effective use of it in the classroom. For teachers to rethink and re-structure teaching and learning they must first learn enough about the relevant technologies to apply them in their professional live, and to translate them to their students as part of the integrated learning of the subject matter. Teachers and students now need to learn how to learn in an ICT rich environment. The information explosion has changed the nature of knowing from the ability to recall information to the ability to define problems, to retrieve information selectively and to solve problems flexibly, which therefore changes the nature of learning from the need to master topics in class to the need to learn autonomously.

(e) Teachers need to perceive ICT as primarily tool for teaching and learning across the curriculum although there are foundations skills in ICT that students need to learn before they can participate fully in an ICT rich classroom.

(f) Teachers need to encourage the students to use ICT resources such as web sites and various softwares. The intranet is become core internal administrative system. Staff can use the intranet to access the main organizational data and to complete numerous administrative tasks. The examnet should be developed for a system called e-marking
The National Council for Educational Technology (NCET, 1994)\(^{67}\) stated that the changing roles of teachers in developing ICT for enhancing learning management should be emphasized on the following aims:

(a) Provide the flexibility to meet the individual needs and abilities of each student;

(b) Reduce the risk of failure at school;

(c) Provide students with immediate access to richer source materials;

(d) Provide new information and help students to understand, assimilate and use it more readily;

(e) Motivate and stimulate learning;

(f) Enhance learning for students with special needs;

(g) Motivate students to try out new ideas and take risks;

(h) Encourage analytical and divergent thinking;

(i) Help students to use the well-designed, meaningful tasks and activities;

(j) Offer potential for effective group work; and

(k) Provide the opportunity to students to use ICT skills in the right context.

2.4 SUMMARY

The second chapter discussed about the theoretical orientation concerning to the changing roles of teachers in the context of globalization and technological changes.

Globalization is the process of interaction and integration among the people, companies, and governments of different nations arising from increasing human connectivity and interchange of worldviews, products, ideas, and other aspects of culture, in particular, advances in transportation and telecommunications infrastructure, including the rise of the internet. Globalization is associated with technology which can be refers to material and immaterial, created by the application of mental and physical effort in order to achieve some value. It is the making, usage, and knowledge of tools, machines and collection of techniques, desired products, method, skills, processes and raw materials including the application of science which is not limited to only physical application and physical tools. Benefits can be achieved through the application of new methods of thinking or new insights into the general knowledge base. The one of the biggest applications of this type is
computer and the internet. Computers are tangible items, their ability is to perform basic thinking processes much faster enable education to process much more efficiency.

The effects of globalization and technological changes bring rapid changes not only in economics, industry and society, but it has greatly influenced in the new era of educational transformation and reform. The globalization and technologies had created the new trend of learning and teaching. Teachers can no longer transfer knowledge using traditional method; therefore, technology is the key and solution to these new changes. The roles of teachers has changed and continued to change from being an instructor to becoming a constructor, facilitator, coach, mentor and creator of learning environments. Today teachers are required to be facilitators helping learners to make judgements about the quality and validity of new sources and knowledge, be open-minded and critical independent professionals, be active cooperators, collaborators and mediators between students and what they need to know and provide to scaffold understanding. This change requires new competencies of teachers in integrating the use of ICT into curriculum and teaching - learning process.

By changing the roles of teachers to match with the current situation of globalization and technological changes, the changing roles of teachers in the context of globalization and technologies changes must be as follow:

1. Improve the teaching-learning process for increasing the educational quality
2. Integrate information communication technology in education
3. Infuse information communication technology into curriculum
4. Improve the teacher’s competencies on ICT skills
5. Develop ICT for enhancing the learning environment.

It can be said that in the context of globalization and technology, the continuous development of teachers’ ability to handle changes to ensure the successful and excellent education is necessary and required for every individual teacher.
The present study aims to investigate the changing roles of teachers in the context of globalization and technological changes. The next chapter will discuss about the study which was already done in Thailand and in foreign countries regarding to the changing roles of teachers in the context of globalization and technological changes.
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