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CHAPTER V

SUMMARY AND CONCLUSION

1.5 META-ANALYSIS

Meta-analysis is a method for systematic literature reviews on a certain substantive question of interest. It refers to quantitative synthesis, a general set of procedures for combining the results of many individual research studies addressing a single question (Glass, 1976, 1978). The technique has grown out of a need in the social sciences to capture the essence of ever expanding research literatures and to provide definitive answers, in terms of the magnitude of effectiveness, to the bigger questions posed by theoreticians and practitioners. In addition, meta-analysis attempts to circumvent the subjectivism commonly associated with narrative forms of literature review and the limitations ascribed to the box score or vote count technique (Kavale, 1984).

It has long been recognized that the result of a single research study by itself is far from conclusive, even when the finding supports the hypotheses under consideration. Therefore, it has been common practice for researchers to review the literature of all such studies, whenever enough are available. It is not uncommon, in fact, to see the same question asked and answered in reviews every couple of years, as new studies add to the weight of evidence that can be brought to bear on a particular question. Since few studies of educational phenomena and even fewer studies of instructional methods actually draw subjects at random from a population, integrative reviews of many similar studies serve to provide greater coverage of the population. Integrative reviews provide a means of overcoming the effects of chance fluctuation within samples, leading to a more generalizable conclusion concerning an effect.

Conscientious practitioners are always searching for support for the design of quality instructional programs. This might come from previous successes, from the analysis of cost/benefits, or from the literature of research studies. Meta-analysis seems a reasonable tool for achieving the
latter goal. It remains the single most powerful tool for summarizing studies in an era of rapidly expanding scientific literature. For the researcher, meta-analysis represents a means for focusing thought on the large questions and a heuristic for designing future studies taking into account the smaller questions, for the practitioner in the media and technology field, meta-analysis are a means for making broad decisions about the implementation of new programs and the design of instructional products.

Conventional reviews of research on the efficacy of psychological, educational, and behavioral treatments often find considerable variation in outcome among studies and, as a consequence, fail to reach firm conclusions about the overall effectiveness of the interventions in question. In contrast, meta-analysis reviews show a strong, dramatic pattern of positive overall effects that cannot readily be explained as artifacts of meta-analytic technique or generalized placebo effects. Moreover, the effects are not so small that they can be dismissed as lacking practical or clinical significance. Although meta-analysis has limitations, there are good reasons to believe that its results are more credible than those of conventional reviews and to conclude that well-developed psychological, educational, and behavioral treatment is generally efficacious (Lipsey & Wilson, 2001).

Meta-analysis may be broadly defined as the quantitative review and synthesis of the results of related but independent studies. The objectives of a meta-analysis can be several-fold. By combining information over different studies, an integrated analysis will have more statistical power to detect a treatment effect than an analysis based on only one study. Meta-analysis involves combining summary information from related but independent studies. The objectives of a meta-analysis include increasing power to detect an overall treatment effect, estimation of the degree of benefit associated with a particular study treatment, assessment of the amount of variability between studies, or identification of study characteristics associated with particularly effective treatments. Meta-Analysis is both applied and basic research. Meta analysis is also widely used in basic research to evaluate the evidence in areas as diverse as sociology, social psychology, sex differences, finance and economics, political science, marketing, ecology and genetics, among others.
An often-recommended technique is the use of effect sizes to describe the practical significance of a statistical test result. When the \textit{treatment effect (or effect size)} is consistent from one study to the next, meta-analysis can be used to identify this common effect. When the effect varies from one study to the next, meta-analysis may be used to identify the reason for the variation (Vaske, Gliner & Morgan, 2002).

\subsection*{5.2 NEED FOR AND IMPORTANCE OF THE STUDY}

Educational Technology is a systematic integration of materials, communication system and psychology of learning. Educational Technology comprises the process and product dimensions of the interaction of teacher–learner. Educational Technology is a branch in the discipline of education which is revolutionizing it and correlating different disciplines of social and physical sciences with it. Educational Technology is a dynamic discipline, which is ever changing with the changing times.

There are a lot of advantages of Educational Technology that facilitates teaching-learning process which every educational system can use to improve student learning. These advantages are for both students and educators when successfully integrated into a learning environment. Some of these advantages include:

- Increased Access to Resources: Unlike the traditional classroom that is locked at the end of the school day, Educational Technology allows students to access educational resources from anywhere at any time for example using computer increased access to resources is especially valuable for students with special needs and those students who live in rural areas or developing countries.

- Interactive Learning Experiences: Many educators deliver information to their students in the form of lectures. Educational Technology allows students to access information through videos, podcasts, and a variety of other interactive media, which creates a more engaging learning experience for students.
• Student-Centered Learning: In a traditional classroom, students cannot control how lessons are planned. Through the use of Educational Technology, students can take control of their learning experiences. Students can decide when class is in session, as well as how the lesson material will be presented.

Regarding the use of Educational Technology and problems in using it, much research has been made in almost all the countries (both developed and developing), so also in Iran. Although, the use of Educational Technology is emphasized at all level of education (both students and colleges), it is commonly observed that Educational Technology is not being used effectively by School and University teachers in Iran. The review of literature on studies in Iran revealed that there are a lot of studies on obstacles in using Educational Technology in different cities of Iran. Some findings are different, some are similar. It is very difficult to draw any conclusion on obstacles to use Educational Technology, on implications from these studies for improvement of status of using Educational Technology in schools and universities. These points demand need for identifying, describing and analyzing the factors that obstruct the implementation of Educational Technology in teaching-learning process.

It is found that the most of teachers of all levels of education systems of Iran neither use equipments of Educational Technology nor use the principles of it. Why is it so? Considerable numbers of studies have been done on obstacles that cause some teachers at schools and universities not to use Educational Technology in their classes. They have reported different findings of which some are familiar and some are different and as such no generalization. Thus, it is attempted here to get a total result of all those studies done could be drown on ICT represented through 2nd technical meta-analysis and it is entitled:

Meta-analysis of Studies on the Obstacles in Using Educational Technology in the Education Systems of Iran

This research attempts to develop an understanding of the obstacles in using Educational Technology in the Education Systems of Iran and this intend
leads to think about how these obstacles can be overcome and Educational Technology can be used effectively. This study is based on the assumption that the valuable data can be gathered by studying the previous studies about schools and universities on some factors which prevent the teachers of schools and universities to use Educational Technology in their classes. And this attempt intended to think about the following questions:

- What are the obstacles prevailed in Iran to use Educational Technology in schools and universities?
- Is there any significant relationship between Financial Limitations and the non-use of Educational Technology by Teachers of Schools and Universities?
- Is there any significant relationship between the Lack of Educational Technology Experts/Technologists and the non-use of Educational Technology by Teachers of Schools and Universities?
- Is there any significant relationship between the Lack of Necessary and Appropriate Training Facilities and the non-use of Educational Technology by Teachers of Schools and Universities?
- Is there any significant relationship between the Curriculum and Content of Books and the non-use of Educational Technology by Teachers of Schools and Universities?
- Is there any significant relationship between the Lack of Teachers’ Knowledge about Learning Theories in connection with Educational Technology and the non-use of Educational Technology by Teachers of Schools and Universities?
- How can these obstacles be overcome and Educational Technology can be used effectively?

Also, the meta-analysis approach was chosen for this research because of the following reasons:

- It is the analysis of analyses (in other words, it enables the synthesizing of literature by combining the findings of a Number of studies);
• Each data point used for analysis is obtained from an individual study rather from an individual participant. Rarely do single experiments provide sufficiently definitive answers on which to base policy decisions;

• A meta-analysis can also include studies over a large time and scope, potentially validating the factors over time;

• Because technology changes over time, the impact of factors at various stages of technological development can be combined **effect size**, a value which reflects the magnitude of the treatment effect or (more generally) the strength of a relationship between two variables, is the unit of currency in a meta-analysis.

5.3 STATEMENT OF THE PROBLEM

It is found that the most of teachers at schools and universities in all level of education systems of Iran neither use equipments of Educational Technology nor use the principles of it. Why it is so. A few studies were done on obstacles that cause some teachers at schools and universities not to use Educational Technology in their classes. This research intends to arrive at a conclusion from the results of these studies through meta-analysis and it is entitled:

*Meta-analysis of Studies on the Obstacles in Using Educational Technology in the Education Systems of Iran*

In order to derive the objective and hypotheses of the present study, the first 2 steps of Howitt and Cramer's meta-analysis (*1-Defining the variables of study. 2- Plan the database search*) were considered.

5.3.1 Objectives of the Study

The main purpose of the study was to arrive at a conclusion from all the findings of the related studies on Obstacles in Using Educational Technology in Education Systems of Iran. After going through the related studies on this topic, certain variables influencing the use of Educational Technology in teaching were identified and the following specific objectives have been formulated for this study. The present study has been undertaken with the following objectives:
1. To analyze the relationship between Financial Limitations and the non-use of Educational Technology by Teachers of Schools and Universities.

2. To analyze the relationship between the Lack of Educational Technology Experts/Technologists and the non-use of Educational Technology by Teachers of Schools and Universities.

3. To analyze the relationship between the Lack of Necessary and Appropriate Training Facilities and the non-use of Educational Technology by Teachers of Schools and Universities.

4. To analyze the relationship between the Curriculum and Content of Books and the non-use of Educational Technology by Teachers of Schools and Universities.

5. To analyze the relationship between the Lack of Teachers’ Knowledge about Learning Theories in connection with Educational Technology and the non-use of Educational Technology by Teachers of Schools and Universities.

5.3.2 Hypotheses Formulated

In the absence of theoretical or empirical evidence for the relationship between different variables and the use of Educational Technology by Teachers of School and Universities, following null hypotheses were formulated:

1. There is no significant relationship between Financial Limitations and the non-use of Educational Technology by Teachers of Schools and Universities.

2. There is no significant relationship between the Lack of Educational Technology Experts/Technologists and the non-use of Educational Technology by Teachers of Schools and Universities.

3. There is no significant relationship between the Lack of Necessary and Appropriate Training Facilities and the non-use of Educational Technology by Teachers of Schools and Universities.

4. There is no significant relationship between the Curriculum and Content of Books and the non-use of Educational Technology by Teachers of Schools and Universities.
5. There is no significant relationship between the Lack of Teachers’ Knowledge about Learning Theories in connection with Educational Technology and the non-use of Educational Technology by Teachers of Schools and Universities.

5.3.3 Variables of the Study

After going through all the 24 selected research studies in detail, the following characteristics which have been researched upon were selected as variables of the present study.

- **Dependent Variable**: Non-use of Educational Technology by Teachers of Schools and Universities


5.4 OPERATIONAL DEFINITIONS OF KEY TERMS

**Meta-analysis**: Meta-analysis is the statistical procedure for combining data from multiple studies. When the treatment effect (or effect size) is consistent from one study to another, a meta-analysis can be used to identify the common effect. When the effect varies from one study to another, meta-analysis may be used to identify the reason for the variation. Meta-analysis, also referred as quantitative synthesis, is a general set of procedures for combining the results of many individual research studies addressing a single question (Glass, 1976, 1978).

**Effect size**: The effect size is the unit of currency in meta-analysis. It is a value which reflects the magnitude of the treatment effect or (more generally) the strength of a relationship between two variables in a statistical population. An effect size calculated from data is a descriptive statistics that conveys the estimated magnitude of a relationship without making any statement about whether the apparent relationship in the data reflects a true relationship in the population. In that way, effect sizes complement inferential statistic such as P value. In this study, it is represented by the most convenient measure of effect
Combined Effect: In the present study, the combined effect is defined as per random effect model. It indicated the overall estimate of effect size represented by the mean of effect size of all the studies considered for this study. Here, the combined effect represents (by effect size) all the population captured by the various studies considered.

Characteristics of studies: Some factors that prevent Teachers of Schools and Universities from using Educational Technology in their classes are considered as obstacles. These obstacles are termed as characteristics of studies which are nothing but the variables considered in the study:

- **Financial Limitations**: The limitations in terms of money that Teachers of Schools and Universities face in their careers at individual / institutional level.
- **Educational Technology Expert/Technologist**: A specialist in using and maintaining technical gadgets like Computer, Video, LCD, OHP, Printer, Video camera, etc to facilitate teaching-learning process.
- **Training Facilities**: This includes training programs organized, materials used, Resource Persons to give training, opportunities for teachers of school or university to attend training program, duration of the training program, etc.
- **Curriculum**: Sum total of all the equipments provided to students inside and outside classroom. It is run-a-way to achieve the intended goals of any program etc.
- **Learning Theory**: A learning theory is an attempt to describe how people and animals learn, thereby it helps us understand the inherently complex process of learning. There are three main categories or philosophical frameworks under which learning theories fall: behaviorism, cognitivism, and constructivism. Behaviorism focuses only on the objectively observable behavior of learning. Cognitive theories look beyond behavior to explain brain-based learning. Constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts (WWW.Wikipedia, com).
Educational Technology: Educational Technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing and etc (WWW.Wikipedia, com).

Education System of Iran: The details of the Education Systems of Iran are presented at two levels (a) School level, (b) University level/Teacher training.

a: School Level: These are 4 stages - (i) Primary school. (ii) Secondary school, (iii) High school/Conservatory school, (iv) Pre-university school

i. Primary school: It is for children from 7-12 years old. It has 5 grades (1, 2, 3, 4, and 5) with general lessons.

ii. Secondary school: It is for adolescents from 12-14 years old in 3 grades (1, 2, and 3). It has general lessons for all students.

iii (a) High schools: It is for teenage students from 14 – 16. It has 3 grades (1, 2, and 3) in 3 disciplines - Literature (humanities), Experimental discipline (science), Mathematics.

After 2010, the existing pre-university education was added to this stage itself as fourth grade.

iii (b) Conservatory: It is parallel for high school from 14-16 with the following subjects:

Art discipline, Accounting, Computer, Construction planning, Management & planning in family, Technical discipline, etc.

iv Pre-university: It is for teenage students 16-17. It is 1 grade in different disciplines. It was canceled as a separate level of education itself and added to high school level itself in 2010.

b (i) University level: It is for students of age group 16 and above. Associate Degree: 2 years, Bachelor Degree: 4 years, Master in Art or Science: 2 years, PhD: 3-4 years, (these programs are offered in: Mathematics, Humanities, Biotechnology, Etc.).
b (ii) **Teacher Training** is for training the students who want to be teachers. It is a 2 years program, after high school/ conservatory.

### 5.5 SAMPLING DETAILS

#### 5.5.1 Population

A systematic review of methodology is at the heart of meta-analysis. This stresses the need to take great care to find all the relevant studies (published and unpublished), and to assess the methodological quality of the design and execution of each study (Mulrow, 1994). The population of the present study is all theses, articles, and project works available during 1993-2009 on Obstacles in Using Educational Technology in Education Systems in Iran. After reviewing all the studies from first and second hand sources, 55 studies which are suitable according to methodological issues like design of the study, devices used, selection of variables and statistical techniques used, and sampling method were selected and this formed the population of the study.

#### 5.5.2 Sample of the Study

After reviewing 55 articles, studies, and theses, which constituted the population of the study, 24 research studies which are suitable according to methodological issues which insist upon the application of inferential statistics for analysis of data were selected. This constituted the sample of the study. It is interesting to note that most of the studies constituting the sample of the study belonged to thesis group.

*Table 5.2: The details of the sample of the study*

<table>
<thead>
<tr>
<th>Type of studies</th>
<th>Frequencies</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theses</td>
<td>21</td>
<td>87.50</td>
</tr>
<tr>
<td>Project work</td>
<td>1</td>
<td>4.16</td>
</tr>
<tr>
<td>Research Articles</td>
<td>2</td>
<td>8.33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
5.6 DESIGN AND METHODOLOGY

The present study is a quantitative review study (providing a report of primary research using statistical methodology) which is analytical in nature and involved the method of meta-analysis. The basic purpose of meta-analysis is to provide the same methodological rigor to a literature review that we require for an experimental research. By far, the most common use of meta-analysis has been in quantitative literature reviews. Methodology used in this research is based on the steps and process Howitt and Cramer’s meta-analysis (2000):

5.6.1 Define the Variables of the Study

In this stage, the research variables were chosen in relation to the subject of the research. In the present research, after preliminary review of studies in the field of Educational Technology and discussion with certain experts as well as experienced teachers in the field, based on the common observation of the investigator as a teacher, certain variables were identified. Financial Limitations, Educational Technology Experts and Technologists, Training Facilities, Curriculum and Content of Books, Learning Theories, which are assumed to be influencing teachers of schools and universities not to use Educational Technology in teaching-learning process, were identified as independent variables and the non-use of Educational Technology was considered as dependent variable, which is the major focus of the research.

5.6.2 Plan the Database Search

The researcher planned the database search and prepared preliminary list of studies related to the topic through the available resources. The researcher planned the search for more number of relevant studies involving the chosen variables. In order to collect data and suitable studies for this research, the researcher went to the following sources* and prepared the preliminary list of 55 studies reported during 1993-2009 related to the selected topic: The Obstacles in Using Educational Technology in the Education Systems of Iran
**Sources:**

- visited a number of universities including Tehran, Isfahan, Allameh Tabatabai, Tarbiat Modarres, Khorasgan Islamic Azad University, Najaf Abad Islamic Azad University, Teacher Training centers, etc.
- referred the list of studies conducted in other province research centers.
- used the site of Training Institute, databases, indexed list and CDs like database of university of Mysore, database of different countries.

### 5.6.3 Obtain Research Reports and Select the Studies for Analysis

The researcher obtained copies of research reports of all the listed 55 studies, reviewed them in detail and selected 24 studies with inferential statistics for analyses of data (required condition for meta-analyses). The list of all the studies selected was prepared with name of the researcher, year of research and title of the research.

### 5.6.4 Subject to Statistical Analysis

Then the selected 24 studies were subjected of statistical analysis, which again is based on the steps of Howitt and Cramer’ meta-analysis (2000). This included the calculation of effect sizes, combined effect size and testing of hypotheses (actual meta-analysis). In addition to this, descriptive analysis of all the studies selected for research was also done in order to throw light on the nature of studies.
5.7 MAJOR FINDINGS OF THE STUDY

5.7.1 Descriptive Analysis

Descriptive analyses of the studies selected for meta-analysis revealed that:

- Most of the studies were done in the year 2003 (16.66%) and the remaining studies were spread over the period 1993 to 2009 (one each year).
- Most of the studies have been done in the province of Tehran (Capital of Iran) and Isfahan (29.16% & 26% respectively). Whereas the less research has been done in the states of Qom, Markazi, and Golestan (4.16% each);
- 50% of the studies have been done in the area of Educational Planning and Curriculum; then followed by in the area of General Education (20.83%) and Educational Management (12.50%);
- 87.50% of research studies in Iran were found to be theses; only one was Project Work and other 2 were Research Articles;
- More than 40% of the studies of research in Iran were found at high school level of education; whereas more or less equal percentage of the remaining studies were found at Elementary and University level of education;
- In most of the studies sampling method used, was simple random (45.45 %) and the least used method was census (3.03%). The other methods like Stratified (categorized) random, Cluster and Multistage sampling, Purposive sampling were used in considerable numbers of studies;
- The sample size of 200-300 was found in 33% of studies in Iran". It was followed by the sample size of 100-200 (29.16%) and the sample size of 300-400 (20.83%). Least % of studies was found in the sample size of less than 100;
- The tool used for data collection in all the 24 studies was questionnaire (100%).
- The higher percentage of the studies has used Chi square and all types of t-tests (28.125% each) whereas 18.75% studies have used analysis of variance (18.75%) and Correlation (9.375%) for analysis of data collected.
5.7.2 Inferential Analysis

Testing of hypotheses formulated (5) in the present research revealed that:

- The Financial Limitations at individual/institution level has significantly influenced on Teachers of Schools and Universities not to use Educational Technology in teaching-learning process and it was considered as an obstacle for teachers to use Educational Technology in Education Systems of Iran.

- The lack of Educational Technology Experts/Technologists has significantly influenced Teachers of Schools and Universities, not to use Educational Technology and it was considered as an obstacle for teachers to use Educational Technology in Education Systems of Iran.

- The Lack of Necessary and Appropriate Training Facilities had significant influence on Teachers of Schools and Universities not to use Educational Technology and hence it was considered as an obstacle for teachers to use Educational Technology in teaching-learning process in Education Systems of Iran.

- The Lack of Appropriate Curriculum and the Content of Books to use Educational Technology in classroom transaction had significantly influenced Teachers of Schools and Universities not to use Educational Technology in teaching-learning process in Education Systems of Iran.

- The Lack of Teachers’ Knowledge of Schools and Universities about Learning Theories in connection with Educational Technology had significantly influenced Teachers of Schools and Universities not to use Educational Technology and it was considered as an obstacle for teachers for using Educational Technology in Education Systems of Iran.

To conclude, Financial Limitations at individual / institution level, the Lack of Educational Technology Experts /Technologists, the Lack of Necessary and Appropriate Training Facilities, the Lack of appropriate Curriculum and the Content of Books, the Lack of Teachers’ Knowledge of Schools and Universities about Learning Theories in connection with Educational Technology were found to be obstacles in the use of Educational Technology by Teachers of Schools and Universities in Iran.
5.8 DISCUSSION OF THE FINDINGS

The Meta-analysis of 24 studies with respect to “Obstacles in Using Educational Technology in Education Systems in Iran” revealed that Financial Limitations, the Lack of Educational Technology Experts/Technologists, the Lack of Necessary and Appropriate Training Facilities, the Curriculum and the Content of Books, the Lack of Teachers’ Knowledge of Schools and Universities about Learning Theories in connection with Educational Technology are the obstacles for Teachers to use Educational Technology in Schools and Universities. This finding has been discussed here at length.

The finding that the non-use of Educational Technology by teachers in teaching-learning process is significantly related to Financial Limitations is on par with the results of studies by Mirheidari (1997), Haji Hosseinlo (1999), Abdolahi Mehr (2001), Dadpour (2004), Taghvae (2005), Samiee (2006), Moradi (2007), Sheikh Sadeghi (2007), Kwacha (2007), Aypay and Ozbasi (2008), Qablan, Abuloum and Al-Ruz (2009), Cavucci (2009), Unal and Ozturk (2012), and Bahadori (n.d.) who have reported that Financial Limitations is one of the obstacles for using Educational Technology by teachers in teaching-learning process. Potashnik and Capper (2002) also indicated that the use of computers and the Internet is still in its infancy in developing countries because of so many factors.

Financial Limitation at individual or institutional level leads to many problems like:

(i) Lack of Educational Technology Facilities at Schools and Universities as well as home;

(ii) Lack of Training Facilities for teachers to get tuned to the use of Educational Technology in teaching–learning process and research/innovation on the use of Educational Technology for better learning on the part of students;

(iii) Unfavorable attitude and disinterest towards ICT/Educational Technology among teachers. Because of this, many of the teachers whether at school
level or university level may not attempt to use Educational Technology in their academic work.

Another result of this study indicated that there is significant relationship between the Lack of Educational Technology Expert/Technologists and the non-use of Educational Technology by Teachers of Schools and Universities. This result is in line with the results of studies by Mirdamadi (1998), Haji Hosseinlo (1999), Dadpour (2004), and Kwacha (2007). As there are no adequate numbers of Educational Technology Expert/Technologists in Iran, it is not possible to orient/train teachers at schools and universities regarding how to handle technological gadgets like computers, video, LCD, OHP (Overhead Projector), printer, video camera, etc. use them in schools and universities and also to overcome the problems which are very simple and manage the show during the session. As such, teachers are not able to handle the situation, where in they have to put both the academic and technological effort to attain the goal. Further, teachers are pre-occupied with many other responsibilities in addition to teaching and research. They may give academic input for the use of technology and technologists can help teachers by relieving them from technological responsibilities, so that teachers can support the use of Educational Technology for better learning among students. But, it is not happening so and hence the Lack of Educational Technology Experts/Technologists is considered as an obstacle to use Educational Technology at schools and university level.

This finding may be explained as follows: Facilities for teachers in terms of number of training programs organized by different agencies apart from their institutes, duration of the program organized, Educational Technology materials used may not be satisfactory. There may not be many numbers of Resource Persons to train teachers. As such teachers may not use Educational Technology effectively in teaching-learning process.

One more finding of this study indicated that there is a significant correlation between the Curriculum and the Content of Books and non-use of Educational Technology or ICT. This result is in line with the results of studies by Mirheidari (1997), Haji Hosseinlo (1999), Ertmer (1999), Roschelle, Pea, Hoadley, Gordin and Means (2000), Baradaran (2002), Soleimani (2003), Dadpour (2004), Hendricson et al. (2004), Moradi (2007), Anbaj Chamani (2008), Fathi Vajargah, Jahani and Azadmanesh (2010) and Bahadori (n.d.).

In the process of teaching-learning, two factors that have the key roles are the Curriculum and the Content of Books suitable to the present day needs and demands of the society as well as recent development in the field of education. This being the era of computers and technology, there is a great demand for the use of Educational Technology/ICT in all walks of life and so also in the field of education. As such, the Curriculum and the Texts of Books are revised to make provision for the inclusion of ICT/Educational Technology content (both theory and practice) in them. This is also supported by the opinion of certain experts and experienced teachers of schools and universities with whom an informal discussion was held by the investigator. They opined that the present Curriculum and Text Books do not lend much for the compulsory use of Educational Technology in classroom transaction and as such teachers also do not show much interest in using Educational Technology to promote effective learning among students.

But in Iran, because there is no inclusion of ICT in Curriculum, the teachers teach based on their experiences and there is no sign of using Educational Technology in the Content of Books. So Many Studies reveal that the Curriculum and the Content of Books as an obstacle to Use Educational Technology in educational settings. At first, changing the Content of Books and Curriculum based on Educational Technology is a must for using
Educational Technology at classes for the progress of education level. Then, it is necessary for teachers to know how one could implement ICT in the Curriculum. Teachers of today should realize the significance and need for presenting different learning experiences so as to overcome the individual differences among pupils and make attempts to effectively use media and methods generated by Educational Technology. They must be given opportunities for acquisition of new knowledge. This can be made possible by promoting ICT based training programs introduced in their Curriculum. There needs to be a shift in pedagogical approaches and reform of teacher education programs. Necessary skills and the level of future teachers’ readiness are key factors in implementing new ICTs. Therefore, schools of teacher education play a crucial role in preparing future teachers to become proficient in the integration of ICTs into the Curriculum. It is important to recognize the different types of teacher education Curriculum and associated differences of purpose, impact and in this line, leaders should be aware of those needs.

The final finding of the present research through meta-analysis indicated that there is significant correlation between the Lack of Teachers’ Knowledge of Schools and Universities about Learning Theories in connection with Educational Technology and use of Educational Technology or ICT in their classes. This result is in line with the results of studies by Mashaiekhi (1993), Farahani Vasheghani (1994), Pour Naghshband (1996), Mirheidari (1997), Haji Hosseinlo (1999), Abdolahi Mehr (2001), Baradaran (2002), Soleimani (2003), Kazemzadeh (2003), Lashkari (2003), Dadpour (2004), Samiee (2005), Taghvae (2005), Moradi (2007), Karimi (2007), SheikhSadeghi (2007), Anbaj Chamani (2008), Abdolmaleki (2008), Rahman Pour (2008), and Bahadori (n.d.). Teachers’ essential skills, knowledge about content as well as learning theories and readiness are main factors in implementing Educational Technology in teaching-learning process. In addition to the content competency, it is very important for teachers to have pedagogical competency too, which depends more on the knowledge of learning theories. There are different learning theories according to different schools of pedagogy. Piaget's theory of constructivist learning has had wide
ranging impact on learning theories and teaching methods in education and is an underlying theme of many education reform movements. Constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge or experience. In other words, learning involves constructing one’s own knowledge from one’s own experiences. The teacher acts as a facilitator who encourages students to discover principles for themselves and to construct knowledge by working to solve realistic problems.

Some teachers may have contributed to a conceptual distraction for integration of ICT into the teaching and learning process demands. So teachers’ perceptions of the role and the educational use of the computer drive their lesson planning, management and implementation of ICT in the classroom. Hence, when teachers lack these skills and knowledge about theories, their vision and perception of computer use is justly wiped out and doesn’t use the ICT as a teaching and learning tool.
5.9 EDUCATIONAL IMPLICATIONS

In addition to the major finding of the present research “Meta-analysis of Studies on the Obstacles in Using Educational Technology in Education Systems in Iran”, it can be noted that there are several challenges pertaining to ICT/Educational Technology application in Iran such as lack of proper national policy for using ICT in education, lack of continuity in ICT use, lack of systematic training and development of programs, lack of writing and editing the school books according to ICT and so on. It should be considered that the education systems of Iran are centralized and, all general decisions are made at central level. As such, any initiative by the government to encourage the use of Educational Technology/ICT by teachers at school and university level should be at the central level for the whole country.

According to a lot of research studies, integration of ICTs improves the quality of education, and then it helps teachers to teach meaningfully and students to learn better. Educational Technology/ICT significantly facilitates the learning and development of knowledge. It offers to developing countries the golden opportunities to improve education systems and prosper the level of their knowledge. Educational Technology/ICT can improve the flexibility and quality of learning by providing access to high-quality, multimedia resources. Tinio (2003) opines that ICT is a powerful tool for educational change and reform. When used appropriately, different ICTs help expand access to education, strengthen the relevance of education to the workplace, and raise educational quality by creating an active process connected to real life. ICT/Educational Technology has the potential to accelerate, enrich, and deepen skills, to motivate and encourage students, to help relate school experience to work practices, create economic viability for tomorrow’s workers as well as strengthening teaching and helping schools change (cited in Yusuf, 2005).

Teacher has an important role to play in the teaching-learning paradigm shift towards using ICT to facilitate to development of cognitive skills in evaluating, analyzing problems and applying the knowledge. The teachers should know well about new educational media and technology, and apply it
as useful gadget for teaching. So, it is important for teachers to practice and learn through ICT during their pre-service experience. Therefore, schools of teacher education play a crucial role in preparing future teacher to become proficient in interpretation of ICT into the curriculum and using ICT for better teaching.

Tam (2000) explores how the combination of constructivism theory and Education Technology transform distance learning from a highly industrialized mass production model to one that emphasizes subjective construction of knowledge and meaning derived from individual experiences. Constructivist learning works well with web-based activities. Students entering this environment bring with them their prior knowledge. They engage in a web-based activity such as searching the internet, gathering information, organizing their thoughts, or communicating with peers via email thus adding to their cognitive infrastructure. Therefore, the government should prepare schools and universities for using them as tools for education and training teachers for this purpose.

While the curricula and teaching methods are important, it is necessary to have appropriate facilities and equipments. According to Tileston (2000) today students were born in audio, video and motional world. Teachers of today should realize the significance and need for presenting different learning experiences so as to overcome the individual differences among pupils and make attempts to effectively use media and methods generated by Educational Technology for new world. Increasing the quality of teaching and learning has been an important concern for education. Integration of ICT enhances the quality of education by helping teachers to do well and by helping students to learn and do more effectively. Hence, the curriculum and text books need to be revised at school and university level.

Teachers must be given opportunities for acquisition of new knowledge. This can be made possible by promoting ICT based training programs introduced in their Curriculum. There needs to be a shift in pedagogical approaches and reform of teacher education programs. According to Spillane (1999), teachers who have a strong engagement
towards their own professional development are more motivated to undertake activities, which lead to a better understanding of the goals of an innovation. Hence, having a recognition system for innovative and effective use of ICT integration in schools will motivate teachers to use ICT in teaching. Increasing the quality of teaching and learning has been an important concern for education. Integration of ICTs enhances the quality of education by helping teachers to do their job and by helping students to learn more effectively. To include, teachers are the backbones of education systems and the keys for change in each country. For improving the level of education, their role is very important. The teacher has an important role to play in the teaching-learning paradigm shift, with ICT facilitating the development of a higher level of cognitive skills in evaluating arguments, analyzing problems and applying what is learnt. If the teachers are eager towards their own professional development, these are more motivated to do activities for better results and innovation. Therefore, government should play a decisive role in preparing teachers to become proficient in the integration of ICT into their curriculum and teaching.
5.10 SUGGESTIONS FOR FURTHER RESEARCH

Following topics have been suggested for further research:

1) The comparative study between development countries and developing countries with respect to the use of Educational Technology in school and university education.

2) Meta-analysis of the results of different studies on e-learning, virtual class, internet literacy, etc and student achievement.

3) Meta-analysis of the results of different studies on the knowledge and use of ICT by teachers and their level of performance.

4) Comparative study of different approaches of Meta-analysis to consolidate the results of different studies on ICT and teacher performance.