Chapter II
Review
Of Related Literature
CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter has been attempted to present the review of research studies on different variables selected for the present study and other variables related to the title. Any field of knowledge requires an adequate familiarity with the work which has already been done in the same area. As such the research studies related to the main areas of the present study: *Educational Technology and Meta–analysis* in Educational Technology in different countries have been reviewed from the different sources available and the details are presented under the following heads:

1. Studies on Educational Technology

2. Studies on Meta-Analysis in Educational Technology

2.1 STUDIES ON EDUCATIONAL TECHNOLOGY

Liu (2012) evaluated discussing teaching video cases online: perspectives of pre-service and in-service EFL teachers in Taiwan. This study investigated the application of an online video case discussion community into fostering pre-service and in-service EFL (English as a foreign language) teachers' professional development in Taiwan. This investigation revealed the nature and development of discussion discourse and the participating teachers' perceptions of this online learning experience. Also included were potential concerns or difficulties encountered by these community members. The findings showed that the pre-service and in-service teachers appeared to play different roles in discussing teaching video cases online. Yet, what they noticed in the teaching events shifted from diverse to similar focuses after engaging in online video case discussion for almost one year. These teachers further perceived professional learning opportunities in this community, albeit several issues might hinder some of them from joining the discussion frequently.

Despite the different contexts and purposes of the initiatives, the outcomes were remarkably similar in terms of a) the extent and patterns of contributions and b) the quality of the contributions. In both, there was some level of success in that the intended outcome was reached. However, in both, there were fewer contributions than anticipated and the quality of a large proportion of the contributions was disappointing. It was suggested that the reasons for this are related to four factors; the socio-cultural setting, the nature of the knowledge that was being built, the tools used and the way the activity was set up (including setting shared goals).

De Smet, Bourgonjon, De Wever, Schellens and Valcke (2012) investigated the researching instructional use and the technology acceptance of Learning Management Systems (LMS) by secondary school teachers. The predictive model further include: perceived usefulness, perceived ease of use, subjective norm, and personal innovativeness in the domain of information technology, experience and internal ICT support at school level. Informational use was found to be a precursor for communicational use, perceived easy to use of the LMS is the strongest predictor in LMS-acceptation. Internal ICT support had a direct effect on the informational use of the LMS and on subjective norm. Implications stressed that secondary school managers in education should take into account the importance of teachers' efforts and performance perceptions and the direct and indirect impact of internal ICT support on LMS adoption.

Lopez, Ahumada, Galdames and Madrid (2012) examined school principals at their lonely work: recording workday practices through ESM Logs. The main results supported the notion that, at the time of data collection, most of school Principals and Heads of Technical-Pedagogical Units were working alone, and if they were interacting with other people, they were always in command. Following underlying assumed roles, most school principals reported performing administrative tasks, while Heads of Technical-Pedagogical Units mainly addressed instructional issues, fostering a rigid framework for the assignment of tasks. Follow-up semi-structured interviews confirmed that participants were not working as a team but rather alone on important issues and urgent matters. Participants
regarded the use of the device as a very practical and useful tool to analyze their daily practices.

Baker, Bernard and Dumez-Feroc (2012) observed integrating computer-supported collaborative learning into the classroom: the anatomy of a failure. They presented an analysis of a longitudinal case study whose aim was to understand the processes of integration of a face-to-face and networked collaborative learning technology and pedagogy into a secondary school history-geography classroom. Results run counter to positive systems of ideas and values concerning collaborative learning and its technological mediation in that the scenario did not meet its pedagogical aims, having to be abandoned before its planned end. They discussed possible explanations for this "failure story" in terms of the articulation between everyday, technology-related and educational discourse genres, with their associated social "milieux," as well as the social structure of the classroom.

Pryor and Betts (2012) conducted the relative cost, effectiveness and suitability of synchronous training versus traditional on-site training approaches. The purpose of this Joint Applied Project (JAP) was to determine, through data collection, any life-cycle cost savings of a synchronous training approach versus the more traditional on-site new equipment training (NET) approach. By drawing expertise of both Program Management Offices as well as other life-long learning-based institutions (i.e. DAU, Naval Postgraduate School personnel for expertise in distance learning, the Army acquisition programs could be able to replace a significant portion of on-site training with synchronous training.

Gedik, Hanci-Karademirci, Kursun and Cagiltay (2012) scrutinized key instructional design issues in a cellular phone-based mobile learning project. Adding flexibility to the learning process, mobile learning offers great opportunities for education, especially for teenagers, who show great attentiveness to mobile technologies. This study aimed to reveal critical issues in designing mobile learning based on a program for 11th graders and to unfold students’ perceptions about reasons for participation, satisfaction, implementation processes, and specific content representation types.
Harnisch and Taylor-Murison (2012) analyzed transition and technology evaluation of blended learning delivered by university staff to 6th form students. This paper tackled two issues which were closely related: transition from pre-entry learning to studying at university and the role blended learning strategies might have in supporting this transition. This paper contributed to research in this field by identifying, from the key stakeholders of students' and deliverers' vantage points, factors that were specific to the blended learning process and contribute to a more structured and positive transition experience for the students. It looked at how blended methodologies could enhance the transition process, as well as what some of the barriers might be.

Craig, Gholson, Brittingham, Williams and Shubeck (2012) examined promoting vicarious learning of physics using questions with explanations. Two experiments explored the role of vicarious "self" explanations in facilitating student learning gains during computer-presented instruction. It was concluded that when key concepts were introduced in the context of deep questions along with explanations new learning was facilitated both in vicarious environments and in subsequent standard classroom activities.

Bowman (2012) criticized the student use of animated pedagogical agents in a middle school science inquiry program. Animated pedagogical agents (APAs) have the potential to provide one by one, just-in-time instruction, guidance or mentoring in classrooms where such individualized human interactions may be infeasible. Survey results revealed no statistically significant difference in student feelings toward the APAs between the two treatments. While treatment students reported that the APAs were unique, reliable, timely resources, interviews indicated little difference between their experiences with the curriculum and those of the control group.

Leslie et al. (2012) examined redundancy and expertise reversal effects when using Educational Technology to learn primary school science. Results indicated that older students with prior knowledge of the topic learned more from the auditory only presentation. For these students, the addition of visual information was redundant and so they were disadvantaged by the use of an audio-visual presentation. However, for younger students with no prior
knowledge of the topic, the difference between means reversed. Some of these students might require a visual presentation to make sense of the auditory explanation.

Leidner and Jarvenpaa (2012) conducted the information age confronts education: Case studies on electronic classrooms. The study found that there were many potential computer-based teaching methods and the methods could have different outcomes. The use of computer-based teaching methods requiring hands-on student use appear to offer an advantage over traditional methods and over computer-based methods not requiring hands-on student use in providing a forum for exploratory analysis during class and for acquiring technical procedural knowledge.

Lord and Travis (2011) experimented with 101 easy and inexpensive activities to do on school grounds, 'schoolyard science' can help students develop their observation and inquiry skills as well as an appreciation of their outdoor environment. The activities mostly made use of easily accessible materials. Non-schoolyard materials that would be needed in a particular activity. Engaging and thoughtful activities make "Schoolyard Science" a great starting point for teachers as they inspire students to appreciate learning in their own schoolyard.

Balash, Yong and Abu (2011) administered lecturers and Educational Technology: factors affecting Educational Technology adoption in teaching. The purpose of the study was to explore the main factors affecting Educational Technology adoption in lecturers’ teaching duty in one of the Iran Universities, Shahid Beheshti. The lecturers clarified two main factors affecting their adoption of Educational Technology-Based tools for teaching in their class;

a) Institutional support and 
b) Training and mentoring.

Tamilenthithi and Chuaungo (2011) evaluated the barriers to Educational Technology at high school level in Kolasib district (Mizoram). A significant difference was found in locality and educational qualifications. No difference
was found in gender and marital status of the teachers.

Suleman, Aslam, Javed and Hussain (2011) studied the barriers to the successful integration of Educational Technology in teaching-learning process at secondary school level in Khyber Pukhtunkhwa Pakistan. The researcher noted that poor availability of technologies was the main barrier to the technology integration. In addition, lack of technical support, lack of administrative support, lack of funding, lack of necessary skills and knowledge, load shedding, lack of internet facilities, lack of training opportunities, lack of time preparation and lack of incentives were also recorded.

Halfond (2011) investigated distance learning 2.0: It will take a village. Institutional resistance to online learning has been melting away during these recessionary times, as schools seek ways to address enrollment pressures without increasing faculty or classrooms. Serendipitous community-building was perhaps the most exciting byproduct of a robust online environment. Rather than the typical ships passing in the night, part-time students got to know one another as they progress through a common curriculum, regardless of their busy lives and competing demands. And the potential for student diversity was far greater as distance learning expands the school's sphere of influence beyond the limits of local homogeneity. These were truly exciting times for recreating and redefining the learning process - through the roles faculty play, the opportunities to test new tools and techniques, the access and interaction of students across diverse locales and lifestyles, and the reach of institutions beyond their narrow borders. The future of distance learning is more about creating community, enhancing education, academic courage, leadership and innovation.

Li, Moorman and Dyjur (2010) examined inquiry-based learning and e-mentoring via videoconference: A study of mathematics and science learning of Canadian rural students. Results showed that inquiry-based learning with e-mentoring (IBLE) had enhanced students’ learning, most significantly on their affective development, including increased motivation, broadened understanding, and augmented career awareness.
Bashiruddin, Basit and Naeem (2010) surveyed the barriers to the implementation of e-learning system with focus on organizational culture. From the findings it was discovered that within each category defined by Khan E-learning (2005) frame work there were critical factors such as faculty and staff support, learning skills development, policies and organization change. Project Manager’s skill was the most significant factor within the category of Management Issues. Other factors such infrastructure planning, hardware issues and software issues also had the higher weight or higher degree of significance within technological issue. Content analysis and content design were frequently cited factors among the categories of pedagogical issues and interface design issues. Technical support, online and offline resources, instructional and counseling support were the critical factors within resource support issues and resource support issues, by evaluating how well courses are taught and supported by the institution the effectiveness of E-learning can be measured which will ultimately reflect the success of implementing E-learning in organization. Cultural diversity, educational cultural background differences, political influence, geographical diversity, learner diversity, technological, interface design and pedagogical issues, organizational cultural aspect, organizational culture, the legal issues and misalignment between business objectives and training needs which varied from organization to organization were the significant barriers towards the successful implementation of E-learning system. By behavioral change and by motivating the employees could new vitality and momentum could be brought for implementation success.

Davies, Howell and Petrie (2010) surveyed a review of trends in distance education scholarship at research universities in North America, 1998-2007(International Review of Research in Open and Distance Learning). Results from this study indicated that most of the distance education research conducted by graduate students in this period of time has been descriptive, often addressing the perceptions, concerns, and satisfaction levels of various stakeholders with a particular distance education experience. Distance learning is becoming accepted as a viable and important educational experience in its own right. And the decreased emphasis on studies focused
on technology issues, such as those analyzing the quality of distance Education Technology and questioning educators' ability to provide an acceptable technology-enabled distance learning experience.

Aghaee (2010) investigated social media use in academia. Through use of social media in academia, students have encountered with benefits—such as convenience, possibility of interaction anywhere/anytime, time-saving, low price and many others—in addition to facing to limitations—such as less effective or spontaneous contact, connection problems, lack of platform compatibility, less creative and innovative thinking, and other issues—which have been discussed in this study. Learners used social media to coordinate their collaborative/cooperative work, share documents and ask questions. Facebook, Wikipedia, YouTube and other popular social media sometimes used for educational purposes, too. The findings indicated that social media seems particularly beneficial for supporting educational learning; the technology and social media as a complement to support their studies and collaboration/cooperation.

Ross, Morrison and Lowther (2010) studied Educational Technology research past and present: Balancing rigor and relevance to impact school learning. Attention was devoted to describing varied experimental designs as options for achieving appropriate rigor and relevance of research evidence, and using mixed-methods research for investigating and understanding technology applications in complex real-life settings.

Li (2010) examined the social capital, empowerment and educational change: A scenario of permeation of one-to-one technology in school. The results of this case study indicated that changing teachers' conceptions did not necessarily affect change in their practices and student learning and the impetus for change came from the social capital and informal social forces in the school, and that parental support, permeation of technology in student learning and teacher empowerment were pivotal to the success of the implementation.
Avidov-Ungar (2010) surveyed 'islands of innovation' or 'comprehensive innovation', assimilate Educational Technology in teaching, learning, and management. The findings revealed a gap between the values of the management and those of the teachers and forces encouraging the adoption of new teaching methods reinforcing the belief that Educational Technologies could help improve existing teaching and develop alternative pedagogies. However, these forces only manage to create islands of innovation that did not expand into comprehensive innovation. The gap in values creates ineffectiveness that prevents expansion.

Meriluoto (2010) surveyed towards purposeful student computers-school work computer concept. A conclusion was made that while many other digital tools for education were well suited for their use, only a few computers were designed purely for students. While students in higher education did draw benefits of using standard laptops and computers in their study work, the students in primary and secondary education should be provided with special learning computers. Therefore a conceptual design was presented for a mobile student computer that helped the students focused on school work.

Barad (2010) investigated the effectiveness of CAI on students' achievement in physics teaching. The results were:

- Science teaching through CAI program was more effective for boys than girls in rural area;
- more effective for high IQ students then low IQ students in rural area;
- effectiveness of sex, method of teaching and IQ was shown on mean achievement score of posttest in rural area;
- interaction effects of sex and teaching method was shown on mean achievement score of posttest in rural area;
- interaction effects of sex and IQ was not shown on mean achievement score of posttest in rural area;
- interaction effects of teaching method and IQ was not shown on mean achievement score of posttest in rural area;
interaction effects of sex, method of teaching and IQ was not shown on mean achievement score of posttest in rural areas.

Moradi (2010) analyzed the barriers to entrepreneurial desire in computer students in Tehran University. Statistical population was 3600, (ICT, IT, Software, Hardware, Repair Hardware) students. Sample size was 319 in 12 centers. These factors; management, course content, administrative systems, financial limitations and the performance of university staff as the main barriers to student desire within academia were considered but available facilities, educational space did not affect in using it.

Cavucci (2009) conducted staff support for an analysis of barriers and possible solutions in integrating computer technology into the middle school curriculum: Findings from a mixed-method approach. The survey data identified five factors as possible barriers to the utilization computer technology in the classroom. These barriers were:

- technology equipment that did not function properly or did not function at all;
- the lack of training;
- the lack of time to successfully integrate computer technology into the classroom;
- the students’ familiarity with computer technology and/or lack of computer technology in students’ homes;
- the cost associated with computer technology classes at a university or college.

Rezaie (2009) experimented the barriers of development of e-learning in Agriculture Higher Education in the perspective of students. This study noted the lack of necessary and appropriate training facilities as obstacle in using Educational Technology.

Alper and Gulbahar (2009) studied trends and issues in Educational Technologies: a review of recent research in TOJET. The results showed that in order to improve the quality of research in the field Of Educational Technology; research studies should have a theoretical basis, the mixed
method of research (qualitative and quantitative) should be used to complement each other, the research studies should address K - 12 as much as Higher Education, new and emerging research topics should be sought, interdisciplinary topics should be investigated, and diversity in terms of sample selection, data collection, and research design should be sought.

Wei (2009) surveyed the state of new media technology research in China: A review and critique. School of Journalism and Mass Communications, University of South Carolina, USA Scholars argued that the history of communication technology is a history of social change, often in unpredictable ways under the influence of various socio-political forces and technological innovations.

Fitt, Walker and Leary (2009) investigated assessing the quality of doctoral dissertation literature reviews in instructional technology. In 2004, efforts to assess the quality of literature reviews in doctoral dissertations were pioneered by Boote and Beile. Their work represents an important response to the call for improved research skills among emerging scholars. The purpose of this study was to replicate their work in a focused area of education research, specifically instructional technology, and to examine the inter-rater reliability of the rubric. The findings suggested that dissertation literature reviews in instructional technology showed the same need for improvement as dissertation literature reviews from education as a whole. Potential avenues of research were identified as well as improvements for the rubric.

Ball (2008) examined an empirical investigation of the contribution of computer self-efficacy, computer anxiety and instructors’ experience with the use of technology to their intention to use emerging Educational Technology in traditional classrooms. Results showed overall significant models of the three aforementioned factors in predicting instructors’ use of emerging Educational Technology in traditional classrooms. CSE was a significant predictor of the use of emerging Educational Technology in the classroom, while CA and EUT were not found to be significant predictors. Two important contributions of this study include 1) an investigation of factors that contribute to instructors'
acceptance of an emerging Educational Technology that has been developed specifically to respond to current demands of higher education, and 2) an investigation of key constructs contributing to instructors’ intention to use emerging Educational Technology in the classroom.

Koo (2008) studied factors affecting teachers’ perceived readiness for Online Collaborative Learning (OCL): A case study in Malaysia. A moderately fit model was generated and able to inform that time constraint and insufficient access to technology such as computer and the Internet were confirmed to be the two impediments to OCL as perceived by the teachers. Besides, a new factor emerged, namely the factor of new learning paradigm, has shown positive impact on the teachers’ perceived readiness for Online Collaborative Learning (OCL). A majority of them agreed that school principal, training and guidance on OCL play an important role to support the implementation of this novice approach in schools.

Paraskeva, Bouta and Papagianni (2008) investigated the relationship between individual characteristics, computer self-efficacy as well as teacher prospects of secondary school teachers with regard to modern technologies if they integrate technology in educational practice. Factors related to the nature of the teacher’s personality, such as computer self-efficacy, self-concept, attitudes, motivation and needs were considered crucial to the integration and development of modern technologies in education.

Anbaj Chamani (2008) scrutinized the obstacles of using Educational Technology in the teaching-learning process in the perspective of teachers in Tehran 8th district. Except social factors, management – structural - educational factors were articulated as barriers in using Educational Technology.

Hogarth and Dawson (2008) administered implementing e-learning in organizations: what e-learning research can learn from Instructional Technology (IT) and Organizational Studies (OS) innovation studies. Given a high failure rate for e-learning implementations and the field's newness relative to the IT and OS disciplines, it was argued that e-learning research could benefit from greater interaction with these literatures and IT and OS
research could be amended to make them more directly applicable to e-learning systems.

Rahman Pour (2008) surveyed the challenges facing IT development in Iran's higher education with an emphasis on social and cultural challenges and human resources. The results were:

- Professors and students viewed social and cultural challenges in relation to Educational Technology especially in individual area;
- Staff, were the major challenges that higher education faced with in relation to development of Educational Technology.

Baumgartner et al. (2007) conducted open educational practices and resources: OLCOS roadmap 2012. The Open e-Learning Content Observatory Services (OLCOS) road mapping work was conducted to provide decision makers with an overview of current and likely future developments in Open Educational Resources (OER) and recommendations on how various challenges in OER could be addressed. The report covered the following areas: Policies, institutional frameworks and business models; Open Access and open content repositories; Laboratories of open educational practices and resources. The results were summarized in Roadmap Briefs, which may be used as starting points for discussing initiatives in OER and open educational practices on a strategic level.

Al-Musawi (2007) studied current status of Educational Technologies at Omani higher education institutions and their future prospective. The findings showed a tendency for future expansion with less expensive technologies and the need for training.

Redditt (2007) conducted an evaluation of Educational Technology integration in middle school instruction to meet the challenge of addressing the educational needs of students enrolled in the 21st century classroom and to meet the vitally important national goal of raising the level of digital inclusion. The findings were:
• The teachers who participated in the study recognized the importance of technology integration as a priority need. In addition, the majority of teachers perceived technology to be important to student learning;

• The clarity of vision of the district's seamless technology integration in instruction and equitable access to the most up-to-date tools was not recognized by the teachers in the target organization;

• The complexity of technology integration in instruction could be strengthened through more time allocated for the teachers' training and/or professional development in content-specific learning opportunities;

• The quality of technology integration in instruction was inadequate. More time needs to be allocated by the district for joint planning between district leaders and teachers in the target organization.

Abdolmaleki (2007) administered the barriers to the use of educational facilities and Educational Technology in the perspective of elementary school teacher in Bostan and Golastan province. Teachers' resistant, education system problems, teachers' characteristics and the lack of teachers' knowledge about learning theories in connection with Educational Technology were mentioned as obstacles in using Educational Technology.

Parvin (2007) studied immersive auditory environments for teaching and learning. 3D audio simulations allowed for the creation of immersive auditory environments for enhanced and alternative interactive learning. Museums, schools, research and training facilities, as well as online educational websites all significantly could benefit from its use. Design dependence on project purpose, content, and audience was explored.

Karimi (2007) criticized the challenges and perspectives towards ICT application in information and communication processes in the process of teaching and learning in Isfahan Industrial University and Isfahan University. The results of the individual application of information and communication technology, the lack of facilities and internet connections, principals' knowledge about learning theories in connection with Educational Technology in the process of teaching-learning were considered challenges in view of
SheikhSadeghi (2007) observed the barriers of using Educational Technology, the amount of using it and examining the available facilities in Special school in Isfahan city. This research held these factors as obstacles:

- The Lack of Necessary and Appropriate Training Facilities;
- Financial limitations;
- Teachers' negative attitude towards Educational Technology.

Kim and Bonk (2006) stated the future of online teaching-learning in higher education. This finding affirmed that online surveys have offered the chance to be learner-centered because they allowed students to collect, analyze, and report on real-world data and projects, envision the Web in the next few years more than a tool for virtual teaming or collaboration, critical thinking, and enhanced student engagement, learner-centered techniques, a marked shift from traditional teacher-directed approaches, learning outcomes of online students would be either the same or superior to those of traditionally taught students by 2013, more blended learning—instruction that combines face-to-face with online offerings—than on fully online courses. Survey results showed more than half of the respondents (53%) were women. About half of the respondents predicted that monetary support for and pedagogical competency of online instructors would most significantly affect the success of their online programs. Instructors' technical competency was the third most pressing factor.

Mashaiekh (2006) administered the deterring factors of teachers in using Educational Technology in the teaching-learning process in view of elementary school teachers in Mazandaran province. This study claimed the following obstacles:

- The lack of necessary and appropriate training facilities and equipment;
- The lack of teachers' knowledge about learning theories in connection with Educational Technology and the new concepts of Educational Technology;
- They were used to apply traditional methods because of their simplicity.
Engelhardt, Hildebrand, Lange and Schmidt (2006) have investigated semantic overlays in educational content networks, the Hypermedia Learning Objects System (hylOs) approach - an educational content management system. Meaningful overlay relations between knowledge objects were shown to derive autonomously. A technology framework to extend the resulting semantic nets beyond repository limits was also presented.

Ongito (2006) observed the construct and obstacles to learning objects. Research about learning object should now focus more on how we can promote learning objects reusability and accessibility. The challenge that they were facing was development of learning objects (Meta-data).

Hannay and Newvine (2006) surveyed why students chose distance learning over traditional learning. Their study revealed that the main reason students chose to take classes online was that they had other commitments that made taking classes very difficult. Some of these commitments included childcare issues, shift work, long hours at work, and traveling for work, limited number of classes offered in the traditional classroom, online classes would be easier, and the comfort of not having to participate in a face to face classroom setting. Students “do not believe that they sacrifice a quality education for the convenience of utilizing distance learning.

Samiee (2006) evaluated the barriers of establishing e-learning education system in the perspective of teachers and principals in Tehran. This research embodied that teachers reported except technological factors, personal, social - educational factors have affected on using Educational Technology more than principals. And the lack of teachers' knowledge about learning theories in connection with Educational Technology and skills in using it, financial limitations were other obstacles.

Kabilan (2005) studied online professional development: a literature analysis of teacher competency. Findings from research indicated that teachers participating in Online Professional Development (OPD) activities and programs have gained a great deal of teacher competency. In spite of this, no research has been undertaken to systematically identify and acknowledge the types of teacher competencies that were frequently
associated with and attributed to OPD. The results indicated five major aspects: (1) motivation; (2) skills, knowledge and ideas; (3) self-directed learning; (4) interactive competence; and (5) computer technology awareness and skills.

Taghvae (2005) examined the barriers of using virtual learning in Tehran high schools in view of the principals. In view of them equipment factors (the weakness of structure and not having the necessary facilities to connect to the Internet) with the most deterrent were considered as the first barrier to use Educational Technology. Financial Limitations, from the perspective of principals, second barrier for the use of virtual education was considered. The third set of obstacles was identified as human factors (attitude - skill), mastery of English language, knowledge about computer, internet, creativity, innovation, searching morale.

Herrington (2005) experimented authentic tasks in e-learning designs. Constructivist approaches to learning design, while gaining increased acceptance in the higher education community, are the exception rather than the rule in the majority of web-based courses currently offered by universities throughout the world. This paper argued that authentic tasks that have guided complex and sustained learning endeavors could be adopted in web-based courses, and provided guidelines for implementation, together with examples of successful university courses.

O'Dwyer, Russell, Bebell and Tucker-Seeley (2005) found examining the relationship between home and school computer use and students' English/language arts test scores. While controlling for prior achievement and socioeconomic status, fourth-grade students who reported greater frequency of technology were used at school to edit papers were likely to have higher total English/language arts test scores and higher writing scores on fourth grade test scores on the Massachusetts Comprehensive Assessment System (MCAS) English/Language Arts test.

Michigan's Freedom to Learn (FTL) initiative (2005) administered an effort to provide middle school students and teachers with access to wireless laptop computers. The study has hypothesized that what teachers understand
about laptop computer use would influence how they really do with the computer in their classrooms. There could be the interplay between teachers’ understanding and their computer uses. Furthermore, knowing about teacher’s understandings of technology use would be able to help better define the effective integration of technology primarily in the context in which they were involved to incorporate technology.

Dadpour (2004) criticized the barriers in using Educational Technology in the teaching-learning process in view of high school teachers in Qaem Shahr in 2003-2004. The results demonstrated these obstacles:

- The lack of Educational Technology experts /technologists;
- The lack of necessary and appropriate training facilities;
- The disproportion between the curriculum, the content of books and devoted time;
- The lack of proper evaluation of teachers using it in the classroom;
- The lack of teachers' knowledge about learning theories in connection with Educational Technology;
- The lack of educational space;
- The lack of in-service, pre-service classes for it;
- The lack of belief towards Educational Technology;
- A large number of students in the classroom;
- Financial limitations.

Duncan (2004) stated the middle school principal as leader of change in the integration of technology in middle school instruction. As an integral part of the change to technology integration in classroom instruction, middle school principals had to understand how technology could positively impact student achievement. Principals supported technology integration through their actions; in showing a passion for technology, creating a shared vision for technology, and helping teachers develop technology integration skills through professional development that built expertise over time promotes strong technology integration. Current research stated professional learning communities should strongly function in schools. To facilitate the change to
technology integration, the principal should increase efforts in shared decision making in the area of technology, professional development activities that addressed the meaningful integration of technology into the curriculum should be provided, the principal should continue working alongside teachers in the professional learning community, hardware and software should be obtained, maintained, and experienced teachers should be included in the professional learning community as the change to technology integration is made.

Dallape (2004) observed technological developments that will influence teachers' use of technology to improve student learning in California's public elementary schools by the year 2007. By 2007 educators in California elementary schools would use technology to improve student learning to:

1. Match software to the curriculum and learning needs of students;
2. Maximize the use of the Internet for data collection and communication;
3. Add wireless equipment and connections to the Internet;
4. Implement technology that supports teachers' individualization of instructional strategies;
5. Design and implement teacher professional development training to eliminate barriers to integration of technology in the classroom.

Pourjavadi (2004) verified the obstacles in using Educational Technology in the teaching-learning process in the perspective of guidance school teachers in Tabriz city. These were conveyed as barriers:

- The lack of necessary and appropriate training facilities;
- The lack of belief towards Educational Technology;
- The lack of proper evaluation.

Hendricson et al. (2004) evaluated electronic curriculum or E-curriculum implementation at North American dental schools. The survey found that E-curriculum implementation among North American dental schools was following the classic innovation pattern in which a few early adopting institutions proceed rapidly while the majority of potential adopters made modifications slowly. Various faculty-related issues were reported as implementation barriers including lack of time, skill, and incentive to develop
educational software. They concluded that many North American dental schools, especially those with laptop programs, were functioning at the “learn by doing” phase of initial implementation in a four-stage innovation adoption model.

Kazemzadeh (2003) investigated the survey of obstacles to the use of Educational Technology in view of teachers in high school in Tehran city. The obstacles were:

- The lack of necessary and appropriate training facilities;
- The lack of belief towards Educational Technology;
- Structural and operational rules of schools;
- The lack of teachers' knowledge about learning theories in connection with Educational Technology.

Reed (2003) stated streaming technology improves student achievement. Study showed the use of standards-based video content, powered by a new internet technology application, increases student achievement. While there were many barriers to overcome regarding the adoption of streaming video technology, there were also ways around these barriers.

- Bandwidth limitations: Many schools, libraries and other places of learning currently didn't have sufficient bandwidth to support dependable video streaming; though the technology is coming. Where bandwidth is an issue, down-loading the video file is a viable option.

- Content challenges and issues: Selecting content that meets the needs of students, is standards-based and is available in clips of various lengths will contribute to a rich digital resource tool. The report also suggested that they selected "content that is easy to find and access, easy for students and teachers to use and accessible to people with disabilities" (Kerrey & Isakson, 2000).

- Teacher training: addresses the technical and practical application aspects of using video streaming in a variety of settings was suggested. Ways for
teachers to incorporate content clips into their existing lesson plans, methodology for creating new lesson plans, and ways for students to use video streaming in electronic reports and for research but a few topics to be addressed in teacher.

Paulsen (2003) studied experiences with learning management systems in 113 European institutions. One conclusion was that there was a host of commercial and self-developed systems that seemed to work satisfactorily in various educational institutions throughout Europe. The systems were not able to handle all the functions the institutions want, and they could be improved in many ways. But most systems encountered in the analyses seemed to be good enough for handling online education successfully. Another conclusion was that the European market was not dominated by the American LMS systems. In countries that have not used English as the first language, locally developed LMS systems have successfully ousted the American products.

Samsonov and Dubois (2003) investigated impediments to computer use in schools: a web-based pilot study. The results suggested that lack of time has been perceived by the respondents as the most important impediment, followed by lack of software and lack of equipment. However, most of the respondents did not offer smaller teaching load as the solution to the problem; instead, more equipment, more funding and more professional development were proposed as the ways to improve the situation with technology integration.

Soleimani (2003) observed the obstacles in using Educational Technology in the teaching-learning process in view of guidance school teachers in Ardebil city. The obstacles were:

- The lack of necessary and appropriate training facilities;
- The lack of educational space;
- The lack of proper evaluation of teachers using it in the classroom;
- The lack of teachers' knowledge about learning theories in connection with Educational Technology;
• The curriculum and the content of books;
• Teachers’ negative attitude towards Educational Technology.

Strickland (2003) scrutinized an exploration of the integration of technology into teacher education dissertation. The inquiry found that the teacher educators experienced issues and needs that directly affected the success or failure of their technology attempts. Such issues were time, relevance, centrality, community, and money. On the other hand, though there were computers in every classroom and a significant portion of classrooms in this country had an internet connection, the fundamental qualities of education have not changed. The implementation model was intended to support the study participants’ focus on their specific curricular goals and their pedagogical needs. Given the monetary and technical support afforded the teacher educators in this study, the discourse surrounding the use of technology in their practice initiated from their pedagogical needs rather than their financial or technical needs.

Piri (2003) identified the obstacles in using Educational Technology in the teaching-learning process in the perspective of high school teachers from 1998-1999 in West Azarbaiejan province. The obstacles were found:

➢ The lack of necessary and appropriate training facilities;
➢ Teachers’ negative attitude towards Educational Technology;
➢ The lack of proper evaluation of teachers using it in the classroom,

but the lack of educational curriculum and structural planning was not known as obstacle.

Lashkari (2003) evaluated the barriers in using Educational Technology application and evaluation of existing facilities in view of elementary school administrators and teachers. The results showed these obstacles in taking advantage of Educational Technology.

➢ The majority of teachers did not have the knowledge of new technologies;
The lack of computer equipments, access to the Internet, necessary, and appropriate training facilities at schools.

but they specially men had knowledge about learning theories in connection with Educational Technology, motivation for using it, and paid attention to students' individual differences.

Abate and Bagaka’s (2002) observed the middle school technology use-design impediments versus classroom needs. A learning activity-oriented viewpoint guided the research focus. Documented within the study were the typical learning activities and potential role for technology within the classroom learning environment of middle schools.

Boster, Meyer, Roberto and Inge (2002) evaluated the integration of standards-based video clips into lessons developed by classroom teachers and found increases student achievement. The study showed an average increase in learning for students exposed to the video clip application compared to students who received traditional instruction alone.

Cradler, McNabb, Freeman and Burchett (2002) surveyed how does technology influence student learning? Students with access to Scholastic Network and the Internet produced better projects than students without online access. Of the nine measures of performance, the online users received significantly higher scores relative to:

- presenting their work;
- stating a civil rights issue;
- presenting a full picture (who, what, when, where, why, how);
- bringing together different points of view; and
- producing a complete project (CAST, Table 2).

Research and evaluation showed that technology could enable the development of critical thinking skills when students use technology presentation and communication tools to present, publish, and share results of projects. When students used the Internet to research topics, share information, and complete a final project within the context of a semi-
structured lesson, they became independent, critical thinkers. They illustrated how alignment between content-area learning standards and carefully selected technology uses could significantly increase test scores. Collaborative activities and formative feedback were key components of instructional strategies that accompanied effective technology implementation. Leadership also was pivotal in aligning available technology resources with systemic school improvement goals. The research indicated the need for understanding the combined efforts necessary for technology to positively influence students’ academic performance.


- The lack of educational curriculum and structural planning;
- The disproportion between the curriculum, the content of books and devoted time;
- The lack of educational space;
- The lack of necessary and appropriate training facilities;
- The lack of belief towards Educational Technology;
- Teachers’ negative attitude towards Educational Technology, were named as barriers in using Educational Technology.

Abdolahi Mehr (2001) studied the survey of obstacles for using of Educational Technology in the process of teaching-learning process in the perspective of teachers in Qom, 1 district.

- Teachers’ negative attitude towards Educational Technology;
- The lack of belief towards Educational Technology;
- The lack of necessary and appropriate training facilities;
- The lack of educational curriculum and structural planning;
- The lack of teachers’ knowledge about learning theories in connection with Educational Technology;
- The lack of proper evaluation of teachers using it in the classroom.
Pelgrum (2001) evaluated the obstacles to the integration of ICT in education: results from a worldwide educational assessment. The main focus of this article was on the perceptions of educational practitioners (at the lower secondary level) regarding obstacles that seriously impeded the realization of ICT-related goals of schools. The article contained indicators regarding ICT (Information and Communication Technologies) in elementary and lower secondary schools, main obstacles and an exploration of the co-variation between obstacles and contextual factors at the country-level.

Jorn et al. (2001) examined the multi-college student survey: experiences with instructional technology report. Students reported strongly positive attitudes toward the effects of instructional technology on their educational experiences, strong satisfaction with online library resources and with the introduction of new instructional technology, very high levels of satisfaction with the accessibility of and the equipment in campus computer labs, highest priority for the spending of technology fees in keeping the software and hardware in the labs up-to-date and somewhat weaker satisfaction with the interactive aspects of technology as well as with the effects of technology on studying and assignment completion.

Attitudes toward and the use of Educational Technology was not affected by students’ gender or year in school, women did not have different attitudes toward technology than men. First-year students did not have significantly less experience with digital technology than other students, nor did they report greater or different impediments to their use of technology.

Miller, Schweingruber and Brandenburg (2001) studied middle school students’ technology practices and preferences: Re-examining gender differences. This article suggested that the gender gaps that once existed with regard to computer access, use, and perceived expertise are narrowing significantly. The conclusions suggested that the rapidity with which acculturation to the Web was taking place among America's youth might be responsible for less gender-biased technology outcomes in schools and, eventually, in the workforce.
Lagrange, Artigue, Laborde and Trouche (2001) investigated a meta-study on ICT Technologies in education towards a multidimensional framework to tackle their integration. Looking qualitatively at the more research-oriented second stage corpus, it was seen a slow evolution towards attention to more varied aspects of educational use of ICT Technologies and more dialectical cognitive approaches. So the difficult integration could be seen through this picture: innovations present a wealth of ideas and propositions whose diffusion was problematic; research struggled to tackle the complexity of the integration of evolving technologies.

Sivin-Kachala and Bialo (2000) analyzed 2000 research reports on the effectiveness of technology in schools - 311 research studies on the effectiveness of technology on student achievement. Their findings revealed positive and consistent patterns when students were engaged in technology-rich environments, including significant gains and achievement in all subject areas, increased achievement in preschool through high school for both regular and special needs students, and improved attitudes toward learning and increased self-esteem. The research report on the effectiveness of technology in school reviewed the positive effects of technology on student achievement, student motivation, the teacher's role, and the learning environment.

Roschelle, Pea, Hoadley, Gordin and Means (2000) identified four fundamental characteristics of how technology can enhance both what and how children learn in the classroom. They indicated that the use of technology was more effective as a learning tool when embedded in a broader education reform movement that included improvements in teacher training, curriculum, student assessment, and a school's capacity for change schools today face ever-increasing demands in their attempts to ensure that students were well equipped to enter the workforce and navigated a complex world and computer technology could help support learning, it was especially useful in developing the higher-order skills of critical thinking, analysis, and scientific inquiry. But the mere presence of computers in the classroom did not ensure their effective use. Some computer applications have been shown to be more successful than others, and many factors influence how well even the most
promising applications are implemented.

Saba (2000) studied the research in distance education: a status report. Researcher in this study compared learning outcomes of an online course with a similar course taught face-to-face. The study concluded that there was no difference between the two course formats in several measures of learning outcomes.

Haji Hoseinlo (1999) observed the barriers of using Educational Technology in the teaching-learning process in view of elementary teachers in Qoi city. The results portrayed these obstacles:

- The lack of teachers' knowledge about learning theories in connection with Educational Technology;
- The disproportion of the curriculum, and the content of books with devoted time;
- The lack of proper evaluation of teachers using it in the classroom;
- The lack of Educational Technology experts /technologists;
- Financial limitations.

McDonald and Gibson (1998) studied group development in asynchronous computer conferencing through patterns of interpersonal interaction of participants. They concluded that participants could deal with and resolve interpersonal issues in an asynchronous teaching and learning environment and form a cohesive working group.

Mirdamadi (1998) scrutinized the barriers in using Educational Technology in the teaching-learning process in the perspective of elementary school teachers in Isfahan city from 1997-1998. The results differentiated these factors as obstacles:

- the lack of Educational Technology experts /technologists;
- the unbalance of necessary and appropriate training facilities;
- Teachers' negative attitude towards Educational Technology;
- The lack of encouragement of teachers using Educational Technology in the teaching-learning process;
• Educational problems.

Tavakoli (1998) experimented the reason of not using Educational Technology in the teaching-learning process in view of guidance school teachers and principals in Toiserkan city. This research declared these factors as obstacles:

• The lack of teachers' knowledge of the role of Educational Technology in the teaching-learning process;
• The lack of necessary and appropriate training facilities;
• The disproportion between the curriculum, the content of books and devoted time;
• The lack of proper evaluation of teachers using it in the classroom;
• The disproportion between training facilities and the number of students;
• The lack of teachers' knowledge about learning theories in connection with Educational Technology.

Wenglinsky (1998) determined does it compute? The relationship between Educational Technology and student achievement in mathematics. The study found that the greatest inequities in computer use were not in how often they were used, but in the ways in which they were used. Computers were neither a cure-all for problems facing the schools nor mere fads without impact on student learning. When used properly, computers might serve as important tools for improving student proficiency in mathematics and the overall learning environment of the school. Technology had more of an impact in middle schools than it did in elementary schools. In eighth grade, where computers were used for simulations and applications to enhance higher-order thinking skills, the students performed better. Fourth-grade students who used computers primarily for ‘math/learning games’ scored higher than students who did not. Fourth graders did not show differences in test score gains for either simulations and applications or drill and practice.

Lee (1997) criticized the impediments to good computing practice: Some gender issues. The results showed that although in recent years barriers to the integration of computers have lessened for most teachers,
significant barriers remain e.g., lack of access, funds, knowledge and time. The failure of schools in providing the many layers of support needed to foster continued development, experimentation and widespread implementation of computers in educational settings.

Mirheidari (1997) observed the barriers in using Educational Technology in the teaching and learning process in the perspective of high school teachers from 1996 to 1997 in Isfahan. Results showed these barriers in using Educational Technology:

- Educational technologist and expert shortages;
- The lack of proper curriculum planning;
- The lack of necessary and appropriate educational facilities;
- The lack of proper evaluation of the performance of teachers using Educational Technology;
- The lack of teachers' knowledge about learning theories in connection with Educational Technology;
- A negative attitude toward technology training;
- Financial limitations.

Fabry and Higgs (1997) studied the barriers to the effective use of technology in education: Current status. While the number of computers in the classroom continued to increase and tremendous support for technology integration exists in government, business, and academia, a major discrepancy existed between the level of technology use expected of educators and the actual use and integration of technology in the classroom.

Pour Naqshband (1996) scrutinized the deterring factors in the use of Educational Technology in primary school. Teachers noted following as barriers to the use of Educational Technology:

- Relative prosperity and lack of disproportion between financial income and cost of living;
- The lack of Encouragement for teachers who were using Educational Technology;
• The Lack of a proper evaluation system for active teachers;
• The lack of teachers' sufficient mastery on materials;
• The lack of teachers' familiarity during the Education (at University or in-service training, short time) to learn new theories and everything about Educational Technology;
• The lack of qualified personnel, Educational Technologists and experts;
• The lack of attention to practical activities and using lab by principals at schools;
• The lack of teachers' knowledge about learning theories in connection with Educational Technology;
• The lack of enough motivation.

Waxman and Huang (1996) found that instruction in classroom settings where technology was not often used tended to be whole-class approaches, in which students generally listened or watched the teacher. Instruction in classroom settings where technology was moderately used had much less whole-class instruction and much more independent work, students were found to be on task significantly more of the time than students from the other two groups—in which technology was infrequently used (less than 10 percent of the time) or in which technology was slightly used (11 percent to 19 percent of the time). These findings show computer-based instruction increases students' time-on-task.

Farahani Vasheghani (1995) analyzed the barriers in using Educational Technology in the teaching–learning process in view of elementary school teachers in Arak city. This study specified obstacles as:

• The lack of educational curriculum and structural planning;
• The lack of necessary and appropriate training facilities (such as software, internet ...);
• The lack of teachers' knowledge about learning theories in connection with Educational Technology;
• The lack of educational space.
Rayward (1994) administered some schemes for restructuring and mobilizing information in documents: A historical perspective. Mobilizing the information stored in documents to advance learning and social well-being provided information science with a fundamental social objective. It also presented it with a characteristic set of technical and professional problems. Until recently, information storage and retrieval systems, for example the library, have not provided a direct solution to the problem of providing access to needed information. Instead they identified and provided physical access to written or printed documents that might contain information that was needed or might be useful. Creating systems to substitute what documents contain is a process of realistic simplification in the face of overwhelming technical and “epistemological” problems. It was speculative approaches to overcoming these problems in this paper.

Wetzel, Radtke and Stern (1994) have summarized the results of comparative studies until the mid 1990s. Invariably, comparative studies of distance education and classroom instruction have shown no statistically significant difference.

Worthen, Van Dusen and Sailor (1994) stated it was important to understand the extent to which computer-based instruction (CBI) and computerized Integrated Learning Systems (ILSs) affect students’ time-on-task behavior. The results indicated that students using the ILS spend more time actively engaged in the learning tasks than students in the non-ILS classroom. This appeared to be a very robust finding, occurring regardless of whether or not there was an adult present, that the ILS provided a highly motivating learning environment that engaged and maintained student attention. The level of on-task behavior was significantly higher than that found in more typical classroom settings. Further, the ILS showed a significant advantage in increasing time-on-task with at-risk students.

Swan and Mitrani (1993) compared the changing nature of teaching and learning in computer-based classrooms. The classroom interactions between high school students and teachers involved in (a) computer-based instruction and (b) traditional instruction. They found that student-teacher
interactions were more student-centered and individualized during computer-based teaching and learning than in traditional teaching and learning.

Sandholtz, Ringstaff and Dwyer (1992) observed teaching in high-tech environments: classroom management revisited. They found that high access to computers enabled teachers to individualize instruction more. The addition of computers to classrooms influences not only instruction but also classroom management, producing both unexpected problems and benefits. It highlighted three main issues relevant to practice and research. First, classroom management was not a skill that was mastered once and for all. Second, educational change took time. Finally, teacher change was not unidirectional. Teachers have progressed through stages of concern in an idiosyncratic manner.

Higgins and Boone (1990) surveyed hypertext computer study guides and the social studies achievement of students with learning disabilities, remedial students, and regular education students. Results indicated that:

- the computer study guide treatment was as effective as lecture;
- the lecture/computer study guide treatment was as effective as lecture;
- posttest scores were higher for the computer study guide group; and
- retention test scores were higher for the computer study guide group.

Dwyer, F. M. and Dwyer, C. A. (1990) experimented the effect of presentation mode and students’ prior knowledge on achievement (visual/verbal testing) of different educational objectives. The results revealed that all types of rehearsal strategies used to complement visualized instruction were not equally effective in facilitating student achievement of different educational objectives and that visual testing was an important instructional variable for facilitating the retrieval of optimum amounts of acquired information.

Salomon and Gardner (1986) examined the computer as educator: Lessons from television research. It argued that "computer researchers" should do the following:
• avoid asking whether computers teach better than some putatively comparable medium;
• utilize holistic as well as standard experimental research paradigms, particularly during the early phases of research;
• realize that learners bring many assumptions, proclivities, and active learning strategies to any encounter with a new medium or technology; and
• expect a range of usages and experiences and a variety of outcomes from any encounter between an individual and a computer. It was particularly important to carry out background research during the period before computers became completely pervasive in the educational environment.

Bahadori (n.d.) experimented the obstacles in using Educational Technology in the teaching-learning process in the perspective of Rodhen Azad University. The professors identified these factors as barriers of using Educational Technology:

• The lack of necessary and appropriate training facilities;
• The lack of belief towards Educational Technology;
• The lack of practical and technical skills;
• The lack of educational curriculum and structural planning;
• The lack of Legal obligation;
• Financial limitations;
• A large number of students in the classroom.

2.2 THE STUDIES ON META-ANALYSIS IN EDUCATIONAL TECHNOLOGY

Sosa, Berger, Saw and Mary (2011) surveyed effectiveness of computer-assisted instruction in statistics: A Meta-Analysis. The current study examined a range of specific features that presumably influence its effectiveness, such as the level of learner engagement, learner control, and the nature of feedback. Larger effects were reported in studies in which treatment groups received more instructional time than control groups.
Additional study characteristics might serve as meaningful moderators.

Cheung et al. (2011) have studied a meta-analysis of effectiveness of Education Technology for enhancing reading achievement. The findings of this study suggested that Education Technology generally produced a positive, though small, effect (ES=+0.16) in comparison to traditional methods.

Petscher (2010) conducted a meta-analysis of the relationship between student attitudes towards reading and achievement in reading. Results indicated that the mean strength of the relationship between reading attitudes and achievement was moderate (Zr=.32), while stronger for students in elementary school (Zr=.44) when compared with middle school students (Zr=.24).

Cook (2009) scrutinized the failure of e-learning research to inform educational practice, and what we can do about it. This meta-analysis of internet-based instruction concluded that existing research provided reassurance that e-learning was better than nothing and similar (on average) to traditional instruction, but yielded little guidance on how to effectively use e-learning. E-Learning research to-date has done little to inform educational practice, and further no-intervention-controlled studies or comparisons with traditional instructional methods were not needed.

Papastergiou (2009) experimented exploring the potential of computer and video games for health and physical education: A literature review. This study aimed at critically reviewing recently published scientific literature, 34 relevant articles on the use of computer and video games in Health Education (HE) and Physical Education (PE). The overviewed articles suggested that electronic games presented many potential benefits as educational tools for Health Education (HE) and Physical Education (PE), and that those games might improve young people's knowledge, skills, attitudes and behaviors in relation to health and physical exercise. The games could potentially enhance young people's physical fitness, motor skills and motivation for physical exercise. The findings presented a positive picture of the educational effectiveness of electronic games.
Rasinen, Virtanen and Miyakawa (2009) conducted a curriculum analysis: Meta-analysis in 5 EU countries. Analysis of technology education in the curricula of five eu-countries and framework for content analysis - the Finnish example. The viewpoint was to find out gender-related, encouraging or discouraging reasons why girls dropped out of technology and lost their interest in technological careers. In this article the curriculum of Austria, Estonia, Finland, France and Germany was dealt with.

Timmerman and Kruepke (2008) examined computer-assisted instruction, media, richness, and college student performance. This meta-analysis examined the effect of computer-assisted instruction (CAI) upon college student performance, addressed the impact of various study characteristics upon effects, and explored how media richness theory might predict CAI performance gains. Findings indicated that student performance gains were larger for CAI than traditional instruction. CAI benefits were greatest for social science disciplines, when the traditional instruction format was lecture/discussion, for undergraduate samples, in studies published after 1994, and for CAI delivered in multiple units. Analyses of media richness constructs indicated that CAI increased performance when delivered with an audio channel and was designed for a specific set of students. CAI benefits were greatest for social science disciplines, when the traditional instruction format was lecture/discussion, for undergraduate samples, in studies published after 1994, and for CAI delivered in multiple units. Analyses of media richness constructs indicated that CAI increases performance when delivered with an audio channel and was designed for a specific set of students.

Lam, McNaught and Cheng (2008) studied pragmatic meta-analytic studies: learning the lessons from naturalistic evaluations of multiple cases and explored the concept of pragmatic meta-analytic studies in e-learning. This study indicated that in Hong Kong the basic and non-interactive e-Learning strategies were often valued by students, while their perceptions of interactive strategies that were potentially more beneficial fluctuate.
Moran, Ferdig, Pearson, Wardrop and Blomeyer (2008) have analyzed technology and reading performance in the middle-school grades: a meta-analysis with recommendations for policy and practice. The results demonstrate that technology could have a positive effect on reading comprehension (weighted effect size of 0.489).

Genevieve (2007) studied restricted versus unrestricted learning: synthesis of recent meta-analyses. Only meta-analyses that quantify student learning outcomes were reviewed.

1- Shachar and Neumann (2003) conducted a meta-analysis to answer the research question: “Is there a difference in the Final Academic Performance of students enrolled in DE programs compared to those enrolled in traditional F2F programs?” While there was wide variability in research findings on the relative (2003) 0.00 to 0.40 effectiveness of DE and TE, in general, DE results in mildly superior student learning outcomes.

2- In 2004, Bernard and his colleagues conducted a meta-analysis of 232 studies published since 1985 that compared the effects of DE and TE on student achievement, attitude, and retention. Results suggested that methodology was a good predictor of student achievement; methods used to study achievement under different instructional conditions (i.e., DE and TE) were predictive of achievement outcomes. Pedagogy predicted student achievement; in both DE and TE, sound instructional practice facilitated student learning. Instructional practice was more important to student achievement than the inclusion of media in the learning process. In terms of overall achievement, there was a small but significant effect favoring DE. In mathematics, science, and engineering courses, TE students out-performed DE students. In courses related to computing, military, and business, DE students out-performed TE students. DE results in slightly superior student learning outcomes.

3- In 2004, Allen and his colleagues conducted a meta-analysis of 38 studies that compared DE and TE on “at least one assessment of student performance in the course related to mastery of some content or skill taught in the course”. With regard to course content, DE lowered student performance
in military-related instruction, increased achievement in foreign language learning, and had no effect on achievement in the remaining content areas. DE results in mildly superior student learning outcomes.

4- In 2001, Cavanaugh conducted a meta-analysis of studies published since 1999 that compared kindergarten through twelfth grade TE and DE students on measures of academic achievement. DE students consistently performed as well as students in classroom-based programs. There was no difference in student learning outcomes.

Conclusion of recent meta-analyses: In evaluating the effectiveness of DE, it was difficult to conduct true experiments and easy to conduct quasi-experiments. Because initial (i.e., prior to DE instruction) group equivalence was not established or ensured (i.e., by random assignment of students to DE or TE), subsequent differences in student achievement (i.e., after DE instruction) could not be interpreted with certainty. Random assignment of students to DE or TE courses would ensure equivalent student characteristics across conditions. Alternatively, teachers and students in DE and TE could be systematically matched to ensure that instructional format was the only difference between groups.

King and He (2006) surveyed a meta-analysis of the technology acceptance model. The results showed the Technology Acceptance Model (TAM) to be a valid and robust model that has been widely used, but which potentially has wider applicability. The study confirmed the value of using students as surrogates for professionals in some TAM studies, and the power of meta-analysis as a rigorous alternative to qualitative and narrative literature review methods.

Allen et al. (2006) criticized evaluating the effectiveness of distance learning: a comparison using meta-analysis. The results demonstrated no clear decline in educational effectiveness when using distance education technology.

Ayres and Langone (2005) examined intervention and instruction with video for students with autism: a review of the literature. This literature
reviewed synthesizes these findings and examined critical features of each of the studies that contributed most to the ways of educators, caregivers and others could best employ video to teach young people with autism.

Eng (2005) observed the impact of ICT on learning: a review of research. Findings from these meta-analyses have indicated small positive effects and consequently a need for more in-depth and longitudinal studies into the impact of ICT on learning in the future.

Felix (2005) examined what do meta-analyses tell us about CALL effectiveness? The synthesis of meta-research since 1991 including 20,000 subjects suggested consistent positive findings related to L1 spelling, writing and reading.

Lakkala, Muukkonen and Hakkarainen (2005) evaluated patterns of scaffolding in computer-mediated collaborative inquiry. The scaffolding needed for such a process might be examined from three perspectives: the organization of activities, the affordances of tools, and process-level guidance. The purpose of the present study was to assess three tutors' contributions to university students' computer-mediated discourse organized as a question-driven inquiry process. More elaborate scaffolding to foster students' meta-cognitive awareness of the inquiry strategies was generally lacking in all three tutors' data.

Waxman, Lin and Michko (2003) investigated a meta-analysis of the effectiveness of teaching and learning with technology on student outcomes. This result indicated that teaching and learning with technology had a small, positive, significant \( (p < .001) \) effect on student outcomes when compared to traditional instruction. The mean study-weighted effect size for the 3 studies that contained behavioral outcomes was -.091, indicating that technology had a small, negative effect on students' behavioral outcomes. The overall study-weighted effects were constant across the categories of study characteristics, quality of study indicators, technology characteristics, and instructional/teaching characteristics.
Goldberg, Russell and Cook (2003) reviewed the effect of computers on student writing: A meta-analysis of studies from 1992 to 2002. Meta-analyses were performed including 26 studies conducted between 1992–2002 focused on the comparison between K–12 students writing with computers vs. paper-and-pencil. These articles indicate that the writing process is more collaborative, iterative, and social in computer classrooms as compared with paper-and-pencil environments. The results of the meta-analyses suggest that on average students who use computers when learning to write are not only more engaged and motivated in their writing, but they produce written work that is of greater length and higher quality.

Dochy, Segers, Bossche and Gijbels (2003) studied the effects of problem-based learning (PBL): a meta-analysis. The review revealed that there was a robust positive effect from PBL on the skills of students. The combined effect size was significantly negative. It was concluded that the combined effect size for the effect on knowledge was non-robust. As possible moderators of PBL effects, methodological factors, expertise-level of students, retention period and type of assessment method were investigated showed that both for knowledge - and skills-related outcomes the expertise-level of the student was associated with the variation in effect sizes. The results for skills gave a consistent positive picture. For knowledge-related outcomes the results suggested that the differences encountered in the first and the second year disappear later on. A last remarkable finding related to the retention period was that students in PBL gained slightly less knowledge, but remember more of the acquired knowledge.

Kavale (2001) has reviewed "Decision Making in Special Education: The Function of Meta-Analysis". The decision process combines elements of knowledge, wisdom, and experience. The meta-analytic findings were shown to contribute to unraveling many of the complex issues in deciding whether to use a particular practice.

Cavanaugh (2001) summarized a quantitative synthesis of studies of the effectiveness of interactive distance education using videoconferencing and telecommunications for K-12 academic achievement through meta -
analyses. Effect sizes for 19 experimental and quasi-experimental studies including 929 student participants were analyzed. The overall mean effect size was 0.147, a small positive effect in favor of distance education. This synthesis supported the use of interactive distance education to complement, enhance, and expand education options because distance education can be expected to result in achievement at least comparable to traditional instruction in most academic circumstances.

Mahmood, Hall and Swanberg (2001) have scrutinized factors affecting information technology usage: a meta-analysis of the empirical literature. The results of this meta-analysis led to the conclusion that there existed a strong and significant positive relation between the perception of ease of use and the perceived usefulness of an IT system to the actual amount of usage. Another factor that indicated a high level of IT usage was the organizational support of IT within an enterprise.

Lou, Abrami and d’Apollonia (2001) criticized the small group and individual learning with technology: a meta-analysis. The results indicated that, on average, small group learning had significantly more positive effects than individual learning on student individual achievement (mean ES = +0.15), group task performance (mean ES = +0.31), and several process and affective outcomes. However, findings on both individual achievement and group task performance were significantly heterogeneous. Through weighted least squares univariate and multiple regression analyses, they found that variability in each of the two cognitive outcomes could be accounted for by a few technology, task, grouping, and learner characteristics in the studies.

Murphy, Penuel, Means, Korbak and Whaley (2001) have administered a critical issue: Using technology to improve student achievement. They found from this meta-analyses evidence of a positive association between use of DES (discrete educational software (DES) programs) products and student achievement in reading and mathematics, an association consistent with earlier reviews of the research literature on the effectiveness of computer-based instruction. Students in the early grades, from pre-K to grade 3, and in the middle school grades appeared to benefit most from DES applications for reading instruction, as did students with special reading needs.
Cook, Heath and Thompson (2000) observed a meta-analysis of response rates in web- or internet-based surveys. The present meta-analysis explored factors associated with higher response rates in electronic surveys reported in both published and unpublished research. The number of contacts, personalized contacts, and pre-contacts were the factors most associated with higher response rates in the Web studies that were analyzed.

Soe, Koki and Chang (2000) investigated the effect of computer-assisted instruction (CAI) on reading achievement: a meta-analysis. This meta-analysis reviewed 17 research studies based on students K-12 and revealed that CAI had a positive effect on reading achievement. Although the effects of CAI in 17 studies were not homogeneous, there seemed to be no particular study characteristic that might have caused the heterogeneity.

Machtmes and Asher (2000) from another recent meta-analysis of 19 studies out of an original pool of 700, which met the carefully selected criteria of authors, confirmed that it did not appear to be a difference in achievement between distance and traditional learners.

Lee (1999) experimented the effectiveness of computer-based instructional simulation: a meta-analysis. The meta-analysis led to following conclusions:

- Within the presentation mode, the hybrid simulation was much more effective than the pure simulation;
- Simulations were almost equally effective for both presentation and the practice modes if the hybrid simulation was used;
- Specific guidance in simulation seemed to help students to perform better;
- When students learn in the presentation mode with the pure simulation, they showed a negative attitude toward simulation.

Chua, Chen and Wong (1999) evaluated computer anxiety and its correlates: a meta-analysis. Findings of this meta-analysis are:

- female university undergraduates were generally more anxious than male undergraduates, but the strength of this relationship was not conclusive;
• instruments measuring computer anxiety were generally reliable, but not compatible with one another; and

• computer anxiety was inversely related to computer experience, but the strength of this relationship remains inconclusive.

Kadiyala and Crynes (1998) stated where's the proof? A review of literature on effectiveness of information technology in education. The authors' review summarized the research findings on computer assisted instruction over the past fifteen years. Many of the studies were themselves reviews and meta-analyses, which cover hundreds of studies, over approximately 2180 studies either directly or indirectly. Research strongly supported the use of technology as a catalyst for improving the learning environment. Educational Technology has been shown to stimulate more interactive teaching, effective grouping of students, and cooperative learning. A few studies, which estimated the cost effectiveness, reported time saving of about 30%. At first, professors could be expected to struggle with the change brought about by technology. However, they would adopt adapt, and eventually learned to use technology effortlessly and creatively.

Whitley (1998) surveyed gender differences in computer-related attitudes and behavior: a meta-analysis. These effect sizes varied as a function of study population — adult, college, high school, and grammar school — with the largest differences generally found for high school students. Gender differences in beliefs about computers approached zero and did not vary by study population. Gender differences in computer-related behaviors were small and did not differ as a function of study population.

Niemiec, Sikorski and Walberg (1996) investigated learner-control effects: a review of reviews and a meta-analysis. The meta-analysis yielded an average effect size that was small and negative suggesting that the average student would be slightly better off without it. Although learner control had theoretical appeal, its effects on learning seemed neither powerful nor consistent.

Fletcher-Flinn and Gravatt (1995) surveyed the efficacy of computer assisted instruction (CAI): a meta-analysis. Studies which controlled for
teacher and materials, and were of longer duration, and studies using pencil and paper equivalents of CAI showed no learning advantage over traditional forms of instruction.

Azevedo and Bernard (1995) examined a meta-analysis of the effects of feedback in computer-based instruction. Results indicated that the diagnostic and prescriptive management strategies of computer-based adaptive instructional systems have provided the most effective feedback. The implementation of effective feedback in computerized instruction involves the computer’s ability to verify the correctness of the learner’s answer and the underlying causes of error.

Bangert-Drowns (1993) analyzed the word processor as an instructional tool: a meta-analysis of word processing in writing instruction. Word processing groups, especially weaker writers, improved the quality of their writing. Word processing students wrote longer documents but did not have more positive attitudes toward writing. More effective uses of word processing as an instructional tool might include adapting instruction to software strengths and adding met cognitive prompts to the writing program.

Lipsey and Wilson (1993) investigated the efficacy of psychological, educational, and behavioral treatment: confirmation from meta-analysis. Meta-analysis reviews showed a strong, dramatic pattern of positive overall effects that could not readily be explained as artifacts of meta-analytic technique or generalized placebo effects. Moreover, the effects were not so small that they could be dismissed as lacking practical or clinical significance. Although meta-analysis has limitations, there are good reasons to believe that its results were more credible than those of conventional reviews and to conclude that well-developed psychological, educational, and behavioral treatment was generally efficacious.

Niemiec and Walberg (1992) summarized the effects of computers on learning. This paper synthesized the results of thirteen quantitative reviews of computer-based instruction (CBI). This meta-analysis consolidated approximately 250 individual research efforts. The average and typical effect of CBI was to raise outcomes by .42 standard deviations. Although several
differential effects were noted, the overall effect of CBI was to place the average student using it at approximately the 66th percentile of the control group distribution.

Fletcher, Hawley and Piele (1990) conducted a meta-analysis of the effectiveness of computer-controlled interactive videodisc instruction at three different settings: higher education, industrial training, and military training. The overall effect size for military training was found .39, indicating an improvement in student performance from 50% to 65% for the computer-based group. The effect sizes for industrial training and higher education, on the other hand, were .51 and .69, respectively, suggesting that achievement scores in interactive videodisc instruction were moderately higher than those in conventional instruction. They found that CAI affected educational gains including reductions in the needs, class size, cost and time for training.

Jones (1990) evaluated the gender difference hypothesis: a synthesis of research findings. A content analysis of these articles provided adequate statistical information to conduct a meta-analysis on 147 tests of the gender difference hypothesis. When an effect size of .5 was required to infer a gender difference on a criterion variable of interest, only 6 (or 4%) of the 147 tests in the synthesis population provided sufficient evidence to support a gender difference hypothesis.

Kulik, Kulik and Bangert-Drowns (1990) criticized the effectiveness of mastery learning programs: a meta-analysis. The effects appeared to be stronger on the weaker students in a class, and they also varied as a function of mastery procedures used, experimental designs of studies, and course content. Mastery programs had positive effects on student attitudes toward course content and instruction but might increase student time on instructional tasks. In addition, self-paced mastery programs often reduced the completion rates in college classes.

Clark (1983) surveyed reconsidering research on learning from media. Recent meta-analyses and other studies of media's influence on learning were reviewed. Consistent evidence was found for the generalization that there were no learning benefits to be gained from employing any specific
medium to deliver instruction. Research showing performance or time-saving gains from one or another medium was shown to be vulnerable to compelling rival hypotheses concerning the uncontrolled effects of instructional method and novelty.

Cohen (1981) examined student ratings of instruction and student achievement: a meta-analysis of multi-section validity studies. A hierarchical multiple regression analysis showed that rating/achievement correlations were larger for full-time faculty when students knew their final grades before rating instructors and when an external evaluator graded students' achievement tests. The results of the meta-analysis provided strong support for the validity of student ratings as measures of teaching effectiveness.

Kulik, Kulik and Cohen (1980) stated the effectiveness of computer-based college teaching: a meta-analysis of findings. The meta-analysis showed that computer-based instruction made small but significant contributions to the course achievement of college students and also produced positive, but again small, effects on the attitudes of students toward instruction and toward the subject matter they were studying. Computer-assisted instruction also reduced substantially the amount of time needed for instruction. In general, the meta-analysis found little relationship between study findings and design features of the experiments, settings for the studies, or manner and date of publication of the findings.
2.3 CONCLUSION

The details of the studies found from the review of related literature about Educational Technology and its subsets presented in the preceding pages are given in the table No. 2.1.

**Table 2.1: The number & kinds of studies reviewed**

<table>
<thead>
<tr>
<th>Year of the survey</th>
<th>The number of comparative or experimental survey</th>
<th>The number of research survey</th>
<th>The number of comparative or experimental Meta-analytic survey</th>
<th>The number of Meta-analytic survey</th>
<th>Total number of survey in year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2010</td>
<td>1</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2007</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2006</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>2003</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2001</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>2000</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>1999</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>1998</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>1997</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1996</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>1994</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1993</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1992</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1990</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1986</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1983</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1981</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1980</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Not mentioned</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>87</td>
<td>19</td>
<td>27</td>
<td>148</td>
</tr>
</tbody>
</table>
As the table 2.1 shows that there are considerable surveys about Educational Technology and issues related to it from 1992 until 2012 every year continually. Most of the studies (12) are in 2012, then followed by 2010 (11), 2001(10) respectively. Out of 148 studies, 46 studies (31.08%) on meta-analysis, 19 studies (12.837%) on comparative or experimental meta-analytic surveys and 27 studies (18.12%) on meta-analysis themselves.

In the present study, out of 148 there are 34 surveys (22.97%) on the barriers, challenging or deterring factors of using Educational Technology which have included the variables of this study:

The lack of Necessary and Appropriate Training Facilities, 25 cases (16.891%);

The lack of Schools and University Teachers’ Knowledge about Learning Theories in Connection with Educational Technology, 23 cases (15.540%);

Financial Limitation, 14 cases (9.459%);

The Curriculum and Content of Books, 12 cases (8.108%);

The lack of Educational Technology Experts / Technologists, 5 cases (3.378%).

The review of research shows that among the variable of the present study, the lack of Necessary and Appropriate Training Facilities (16.891%) is the first obstacle in using Educational Technology. And the lack of Educational Technology Experts/Technologists at schools or universities (3.378%) is the least considered obstacle in using Educational Technology.

Also, the review of research studies revealed that many of the previous investigations in Educational Technology focused on the different barriers in the perspective of elementary, guidance, high school, university teachers and principals in areas of using Educational Technology in the teaching-learning process, the integration of it in education, e-learning, virtual learning, evaluation, the construct and obstacles, curriculum, status of teaches with regard to the psychological, administrative, teaching technique, and materials, the personal variables with respect to gender and other issues.

Numerous of the studies have documented the issues regarding to
Educational Technology in teaching-learning process like video cases online in the perspectives of pre-service and in-service English foreign language (EFL) teachers, learning management systems, factors affecting Educational Technology adoption in teaching, institutional support, training and mentoring, educational qualification of teacher, internet access, simulations, and educational games, empowerment and educational change, the methods, teachers’ perceived readiness, teacher’s individual characteristics, computer self-efficacy, principal, wireless laptop computers, classroom needs, technological developments.

Some of these studies have highlighted the relationship between Educational Technology and students’ learning like integrating computer-supported collaborative learning into the classroom, transition and technology-evaluation of blended learning, facilitating student learning in different science, use of animated pedagogical agents, effectiveness of CAI on students' achievement, their observation and inquiry skills, social media use, an evaluation of the educational needs of students, auditory environments, 3D audio simulations, video clips, gender differences, interactions between students and teachers, hypertext computer, entrepreneurial desire in students, and so on.

There are some studies on the comparison of Educational Technology with tradition method approaches like synchronous training versus traditional on-site training approaches, the contribution of computer self-efficacy, computer anxiety and instructors’ experience, online teaching and learning in higher education, the effectiveness of distance learning versus traditional classes and etc.

A few attempts have been made to throw light on research in Educational Technology such as studied trends, issues and current status in Educational Technologies in different countries, new media technology research, assessing the quality of doctoral dissertation literature reviews, worldwide survey, the past and present research trends in education, in distance education, summarizing the results of comparative studies.
Fewer efforts have been made to study about **various areas in Educational Technology** like restructuring and mobilization and teaching through it, semantic overlays in educational content networks, group development, asynchronous computer conferencing, television research, computer and video games, decision making, gender differences, online professional development, e-learning in organizations, authentic tasks in e-learning designs.

It is evident that most of the studies related to **meta-analysis on different subjects in Educational Technology** deal with the effect of distance education (DE) and traditional education (TE), student learning, assessment, comparing the subjects, the efficacy of computer assisted instruction (CAI), simulation, computer anxiety, feedback, second language learning, problem-based learning, gender differences, collaborative inquiry, problem-based learning, the curricula, pragmatic meta-analytic studies, response rates in web- or internet-based surveys, research on learning from media, effectiveness of Educational Technology for enhancing reading achievement, videoconferencing and telecommunications, the efficacy of psychological, educational, and behavioral treatment, and other subjects.

These studies revealed that the main barriers in using Educational Technology are in three areas:

1. Teachers’ personal variables and characteristics with respect to gender, educational qualification, locality, marital, lack of necessary skills and knowledge about computer, internet, sufficient mastery on materials status, time, relevance, centrality, community, money, incentives, computer self-efficacy, self-concept, motivation, needs, negative belief and attitude towards Educational Technology teachers' resistant, and the lack of teachers' and principals' knowledge about learning theories in connection with Educational Technology knowledge about learning theories in connection with Educational Technology, the simplicity of traditional methods, mastery of English language, creativity, innovation, searching morale, professional development.
2. School issues: The lack of or poor availability of Educational Technology Experts/Technologists, technical support, equipment factors like hardware, software, administrative support, faculty and staff support, funding and Financial Limitations, load shedding, internet facilities, training opportunities, course content, administrative systems, the lack of training, structural, educational factors, the lack of Necessary and Appropriate Training Facilities, structural planning, the disproportion between the curriculum, the content of books & devoted time, the lack of educational space, the lack of in-service, pre-service classes for it, a large number of students in the classroom, the lack of principals’ support, design and implement teacher professional development training, structural, operational rules of schools, The lack of proper evaluation of teachers using it, the lack of monitoring and Legal obligation, the performance of university staff, learning skills development, policies and organization change, project manager’s skill, educational system problems.

3. The informal social forces: like teacher empowerment, management, the students’ familiarity with computer technology and/or lack of computer technology in students’ homes, the cost associated with computer technology, social and cultural challenges, social - educational factors, infrastructure planning, online and offline resources, instructional, counseling support, cultural diversity, educational cultural background differences, political influence, geographical diversity, learner diversity, the legal issues technological, interface design and pedagogical issues, organizational cultural aspect, misalignment between business objectives and training needs. Lack of role models, access, learning styles, social expectations, and the absence of gender-sensitive computer games, a variety of functions (e-mail, chat, games, etc.).

Most of the results of mentioned meta-analytic studies show that teaching and learning with technology had a positive, significant effect on student outcomes when compared to traditional instruction, a positive effect on relation between the perception of ease of use and the perceived usefulness of an IT system to the actual amount of usage, a high level of ICT
usage was the organizational support of ICT within an enterprise, effective use of distance learning approaches replace a significant portion of on-site training with synchronous training, shift from traditional teacher-directed approaches, online classes would be easier, and the comfort of not having to participate in a face to face classroom setting, DE results in mildly superior student learning outcomes, viable and important educational experience in different subjects like English/language arts, writing, the video clip application, mathematics, etc., a great deal of teacher competency five major aspects motivation, skills, knowledge and ideas, self-directed learning, interactive competence and computer technology awareness and skills, authentic tasks of successful university courses and also blended methodologies could enhance the transition process, facilitated both in vicarious environments and in subsequent standard classroom activities, the technology and social media as a complement to support their studies and collaboration/cooperation, strongly students’ positive attitudes toward the effects of instructional technology on their educational experiences, strong satisfaction with online library resources, with the accessibility of and the equipment in campus computer labs, their highest priority for the spending of technology fees, support learning useful in developing the higher-order skills of critical thinking when students use technology presentation and communication tools to present, publish, share results of projects, independent, increased performance on measures of reading comprehension, met cognition, components of IQ, transfer to novel tasks, analysis, scientific inquiry, to be on task behavior significantly, actively engaged in the learning tasks, reading attitudes and achievement, student-teacher interactions were more student-centered and individualized than in traditional teaching-learning process, increasing performance, classroom learning, short duration, academic content areas, word processing groups especially improved the quality of weaker writers’ writing, well-developed psychological, educational, and behavioral treatment, reductions in the needs, class size, cost and time for training, a significant positive effect on achievement in for both regular education and special needs students, electronic games improve young people’s knowledge, skills, attitudes and behaviors in relation to health and physical exercise, physical fitness, motor skills and motivation for physical exercise.
A few studies reveal Educational Technology/ICT does not have effective results in some parts for example for Poor, urban, and rural students, teachers of urban and rural students were less likely to have had professional development in technology than suburban teachers. Instruction in classroom settings where technology was moderately used had much less whole-class instruction, DE lowered student performance in military-related instruction, sometimes there is no effect on achievement in the some content areas, not to be a difference in achievement between distance and traditional learners, did not meet its pedagogical aims, a negative effect on students’ behavioral outcomes.

To conclude, the greatest inequities in Educational Technology/ICT were not in how often they were used, but in the ways in which they were used. Educational Technology was neither a cure-all for problems facing the schools nor mere fads without impact on student learning. When used properly, Educational Technology might serve as an important tool for improving student proficiency. Consequently, it is needed to clarify how and when to use Educational Technology in the teaching-learning process and it is vital for more in-depth and longitudinal studies into the impact of Educational Technology/ICT on teaching-learning process in the future.

It was seen a slow evolution towards attention to more varied aspects of Educational Technology/ICT. Hence, this has necessitated the importance of research studies on this subject and in the entire world. The review of related literature available revealed that the results of studies in some parts significantly affirm the effectiveness of applying Educational Technology in teaching-learning process but in some parts do not affirm it. And also, there are some inconsistent results in this field especially on barriers and obstacles in using Educational Technology. Hence, there is a need to bring together these results that lead to the present study through meta-analysis.