RESEARCH TRENDS IN CEIT MS AND PhD. THESES IN TURKEY: A CONTENT ANALYSIS

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ABSTRACT

RESEARCH TRENDS IN CEIT MS AND PhD. THESES IN TURKEY: A CONTENT ANALYSIS

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The main aim of this study is to look for trends in the instructional technology field in Turkey and to visualize general tendencies in the field in research topics, research types, and methodologies. Content analysis research design was used in this study. In this study, the unit of analysis was MS theses and PhD. theses published in instructional technology departments in Turkey, and the researcher aimed to analyze all of the population. Hence, 215 MS theses and 32 PhD. theses were analyzed in this study.

The data were categorized according to characteristics of the MS theses and PhD. theses (author, university, advisor, and publication year), research topics, research methods, sample type, sample size, data collection methods and research settings. These categories were statistically analyzed. In these statistical analyses both frequencies of these categories and fluctuations of these categories in time were analyzed.

The findings of the study indicated that most of the MS theses were published in the Middle East Technical University and most of the dissertations were published

in Ankara University. In addition to this, most of the MS theses and PhD. theses used quantitative research methods, and experimental studies were the most popular type. Not surprisingly, the study results revealed that convenient sampling was the most preferred sampling method and most of the studies used 31 – 100 subjects in their samples. Moreover, questionnaires, aptitude tests and interview schedules were the most common data gathering instruments used, and higher education was the most preferred research environment for the studies analyzed. Finally, most of the MS theses and PhD. theses focused on delivery system media formats, comparison studies and learner variables.

Key words: instructional technology, research trends in instructional technology, trends in MS theses and PhD. theses.

ÖZ

TÜRKİYE'DE BÖTE ALANINDA YAPILAN YÜKSEK LİSANS VE DOKTORA TEZLERİNDEKİ ARAŞTIRMA EĞİLİMLERİ: BİR DOKÜMAN ANALİZİ

Uğur Erdoğmuş, Feray

Yüksek Lisans, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

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Bu çalışmanın temel amacı Türkiye' de eğitim teknolojileri alanındaki eğilimleri araştırmak ve araştırma konusu, türü ve yöntem açısından genel eğilimleri belirlemektir. Bu çalışmada doküman analizi metodu kullanılmıştır. Çalışmanın evrenini Türkiye'de eğitim teknolojileri bölümlerinde basılan tüm doktora ve yüksek lisans tezleri oluşturmaktadır ve araştırmacı evrenin tamamını incelemeyi amaçlamıştır. Bunun için bu çalışmada 215 yüksek lisans ve 32 doktora tezi incelenmiştir

Toplanan veriler tezlerin nitelikleri (yazar, üniversite, tez yöneticisi ve basım yılı), araştırma konusu, araştırma metodu, örneklem tipi, örneklem boyutu, veri toplama yöntemleri ve araştırma çevresi açısından sınıflandırılmıştır.

Araştırma bulgularına göre yüksek lisans tezlerinin çoğu Orta Doğu Teknik Üniversitesi'nde, doktora tezlerinin çoğu da Ankara Üniversitesi'nde basılmıştır. Ayrıca, tezlerin çoğunda nicel araştırma yöntemi ve çoğunlukla deneysel araştırma deseni kullanılmıştır. Beklenildiği gibi çalışma sonuçlarına göre tezlerin çoğunda

uygunluk örneklemesi kullanılmış ve çoğunlukla örneklem olarak 31 – 100 adet denek kullanmışlardır. Ayrıca, anket, başarı testi ve görüşme yöntemleri en popüler veri toplama yöntemi olarak bulunmuştur. Buna ilaveten yüksek eğitim kurumları araştırma ortamı olarak en çok tercih edilen araştırma çevresidir. Son olarak, tezlerin çoğunda medya dağıtım sistemi biçimi, medya karşılaştırma çalışmaları ve öğrenen değişkenleri incelenmiştir.

Anahtar Kelimeler: öğretim teknolojisi, eğitim teknolojisinde araştırma eğilimleri, yüksek lisans ve doktora tezlerinde eğilimler

To my Mum and Dad for their constant trust in me,

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CHAPTER 1

INTRODUCTION

1.1. Background of the Study

Like every aspect of our lives, technology is also affecting education. When a technological solution is invented, we see this invention taking place in education and it is used in instruction, management, organization or other parts in the education system. Technology is defined as "the systemic and systematic application of behavior and physical sciences concepts and other knowledge to the solution of the problem" (Gentry, 1995, p. 7). As stated in the definition, technology should be applied to the problems that we come across in our life in a *systemic* and methodological way. Hence, while we accept technology in education and start to use it, we need to adopt this new technology in an organized way and should consider its value for that situation.

The instructional technology field has evolved to serve a need for knowledge and theories that will help us to decide which technology should be used in education and for what purpose. The instructional technology field started to develop when instructors asked themselves how better instructional content, method, and context could be presented to learners. Comenius was one of the forerunners of the field. He lived in the seventeenth century and he set some valuable principles about instructional methods. In his principles, he stated that instruction should be relevant to students' *interest, age* and *capacity*; textbooks should include relevant pictures, tables and diagrams; real life learning environments should be developed, and learning should have a meaning for learners (Saetler, 1990). The instructional

technology field first came into existence with the use of audiovisual educational materials. As stated in Seels and Richey, (1994), published studies about how to use media effectively in the U. S. military are early documents in our field. After that, technological developments and studies about how to use these technologies effectively for educational purposes are the main studies of our field. In time, the research and theory of other disciplines like "psychology, engineering, communications, computer science, business and education" have had an influence on our field (Seels & Richey, 2004, p.68). Later, with developments in the technology, researchers and practitioners of the field have used technology to achieve learning and design learning environments which are appropriate for their purposes. Hence, when a technological development occurred, it was adapted to the educational field, like the invention of radio, motion pictures with audio, television, and computers (Reiser & Dempsy, 2007). Moreover, technological developments also affect the field. Because of the multidisciplinary nature of our field and of technological changes, the research trends in the field of instructional technology change. These alterations affect our field's definition, boundaries, and domain.

Throughout history, the boundaries and definition of instructional technology have changed with new technological inventions. In the beginning, instructional technology focused on the medium that technology used for educational purposes. Later, in the 1960's, the focus of the field shifted to the process and tried to find reasonable solutions to instructional problems. In 1963, instructional technology was defined by Ally as the "design and use of messages which control the learning process" (Reiser& Dempsy, 2007, p.4). In this definition, the process of how to design an instructional message gained importance. In time, the definition of our field changed according to the favorite educational theories of the day. The Association for Educational Communications and Technology (AECT) also published definitions in 1977, 1994 and 2006. Because of the interdisciplinary nature of this field, naming it has always been a big endeavor. The final definition that was produced by the AECT is "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Molenda, 2004, p.1). As is seen from the definition,

instructional technology is a broad field in scope because education can be anywhere and in any age and for any educational purpose. We can use educational technology in K-12, higher education, university, business, the military and so on. We also try to facilitate learning for a piece of instruction or a complete course. Moreover, our intended outcomes can vary according to learning environment and target learner population. We are not only a field which cannot come to an agreement on a definition, but also a field that has no strict distinction between itself and some other areas like human performance technology and knowledge management.

It is obvious that while focus and theories, which instructional technology field influenced, have changed in time, the research topics, methods, and context have also varied. For example, previous research in IT generally focused on whether a medium is beneficial for learning or not. After that, researchers focused on the process of instructional media development and tested the instructional design theories by developing materials through these methods. After constructivist learning theories and learner centered instruction became popular in education, instructional technology changed its focus and dealt with these topics.

In the literature there are not many studies about trends in research about the field. Edward P. Caffarella provides an analysis of the PhD. theses that were completed in the USA since 1977 and provides detailed information about the PhD. theses. He also studies the trends in these PhD. theses' topics (Caffarella, 1990, 1999). There is also a content analysis study by Donald P. Ely that aimed to discover the educational technology trends between 1988-1991 and to analyze related PhD. theses from 5 universities in the USA, 5 journals in the instructional technology field, some conference documents and all ERIC documents about educational technology entered up to 1991. As a result of his study he revealed the current trends in educational technology (Ely, 1992).

In addition to these studies, there are also some studies that aimed to find out the general tendencies in instructional technology research studies, but these used popular journals in our field. For example, in 2007 Hew, Kale and Kim studied the trends in topic, method, data collection method and learning settings of research

articles in 3 dominant journals in the instructional technology field. They analyzed 340 articles and found that media study and psychology of learning and instruction were the most common topics investigated from 2000 to 2004. Moreover, descriptive methods were used dominantly in the field, and surveys were the most common method for collecting data. In addition, higher education was the dominant research setting in their data (Hew, Kale & Kim, 2007).

There is a literature review study carried by Mihalca and Miclea, showing how the focus of instructional technology studies has changed. They concluded that trends in the IT field affected trends in learning theories. Moreover, there is a clear replacement in the research area of the planning content of the instruction with the context of the instruction and the effect size of the instructional technology in learning show differences but it is clear that it affects positively. Furthermore, learning is not related to how much information is supplied or how many materials are provided, but to learners' activities in the learning environment (Mihalca & Miclea, 2007).

In Turkey, we also use technology in education. For example, in the Strategic plan of the Council of Higher Education, the importance of quality of instructional content is stressed. The report shows that the CoHE's (The Council of Higher Education) main purpose is not just providing technological equipment to all universities, but providing a teaching environment that gives importance not only to what to teach but also how to teach this content in a better way by using technology (CoHE, 2007). In addition, the MoNE (Ministry of National Education) is trying to refine the Turkish educational system and use more technology based materials in education. With these goals in mind, in universities graduate students and academic staff conduct research studies on instructional technology. While we set goals about using technology in education and try to develop more qualified instructional environments, our academic research about the instructional technology field have greatly gained in importance. Considering the importance of the studies conducted in instructional technology in Turkey, the aim of this study is to identify the trends in

the instructional technology field in Turkey and to visualize general tendencies in the field in research topics, types, and methodologies.

1.2. Purpose of the Study

The purpose of this study is to clarify the academic research trends in the instructional technology field in Turkey. The study aimed to analyze the characteristics, research topic, sampling, research method, data collection method and research setting trends in academic studies. Hence, MS theses and PhD. theses are going to be analyzed in this study.

1.3. Research Questions

(1) What are the demographics of MS theses and PhD. theses in the field of instructional technology?

(2) What are the themes and trends in the research topics of MS theses and PhD. theses in the field of instructional technology?

(3) What are the research design types used in MS theses and PhD. theses in the field of instructional technology?

(4) What are the sampling techniques in MS theses and PhD. theses in the field of instructional technology?

(5) What are the data collection methods and instruments used in the field of instructional technology?

(6) What are the preferred research settings designed or used to carry out the study?

1.4. Significance of the Study

The Turkish Ministry of National Education, The Council of Higher Education and education departments of big organizations try to use technology efficiently and effectively to meet their learning outcomes. To design proper educational content

and context, the importance of the instructional technology field is rapidly increasing. Hence, academic studies in instructional technology gain importance because they provide valuable findings to academic studies and for the proper use and adaptation of technology in education by providing theoretical and practical information.

Although, there are some research studies about the trends in the instructional technology field, there are limited number of studies about the development of the instructional technology field and the research trends in Turkey.

This study aims to figure out the trends in MS theses and PhD. theses in the instructional technology field in Turkey and to visualize general tendencies in the field in research topics, types, and methodology. The study includes MS theses and PhD. theses in our field. Hence, the results of the study provide a clear picture of research trends in the instructional technology field. Moreover, in this study characteristics of the theses, such as the universities where they are produced, their writers, thesis advisors, and dates can be found. Then, the different research topics and their frequencies can be found in this study. This data provides information about tendencies in research areas in Turkey. Additionally, type of research topic, the researchers' choices of methodology to analyze this topic and answer their research questions, and their data collection method preferences are analyzed. Moreover, these studies clarify which research environments were used for these studies. These data will also show how these features of the theses fluctuate over the time.

The findings of this study will provide a view of instructional technology research in the field. It shows where we are in the field, which areas are studied and which are not. It also reveals what the boundaries of instructional technology are in our country. Moreover, it shows our research attitudes towards instructional technology problems and provides a critical point of view about research methodologies and data collection methods for these problems.

Obviously, the sampling has a big influence on the quality of the research. In addition to this, the fluctuation of tendencies in time can provide information about

changes of research attitudes in Turkey. This study also includes information about these issues. This information can provide a valuable contribution to the field by revealing the academic value of our research.

Finally, this study might give directions to graduate students and researchers while they are choosing their own research topics, designing their research and collecting data.

1.5. Definition of Terms

Instructional technology: Instructional technology is a field defined as "the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning" (Seels & Richey, 1994, p. 1).

Technology: Technology is defined as "the systemic and systematic application of behavior and physical sciences concepts and other knowledge to the solution of the problem" (Gentry, 1995, p. 7).

Educational technology: Educational technology is a broader term than instructional technology. Instructional technology is generally used for more practical studies. They also used interchangeably. It is defined as "[…] the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (AECT, 2004, p.3).

CHAPTER 2

LITERATURE REVIEW

This part of the study surveys studies in the literature about the research topic. The researcher first emphasizes the changing nature of the field and its definition and provides official definitions of instructional technology. Then historical development of instructional technology is reviewed up to now. After that, the researcher provides information about content analysis studies in the literature about research trends in instructional technology.

2.1. Definition of Instructional Technology

It is reasonable to define what technology is before defining instructional technology. Technology is defined as "the systemic and systematic application of behavior and physical sciences concepts and other knowledge to the solution of the problem" (Gentry, 1995, p. 7). As stated in the definition, technology should be applied to the problems that we come across in our life in a *systemic* and methodological way. Hence, while we accept technology in education and start to use it, we need to adopt this new technology in an organized way and should consider its value for that situation. At this point we have started to deal with instructional technology.

In instructional technology, drawing the boundaries of our study area, defining the field and even naming it has been an important issue over the years because it has a dynamic nature and both technological and theoretical developments

effect the definition of the field. In the early definitions of our field, instructional technology focuses on the instructional media (Reiser & Dempsey, 2007; Seels & Richey, 1994). In the 1920's there was a movement through the use of visual aids (film, pictures, etc.) for educational purposes (Reiser & Dempsey, 2007). After that, each technological development added new media tools and provided opportunities to use them for educational purposes. Sound recordings, radio broadcasts, audio films and television are some of these advancements (Reiser & Dempsey, 2007). In those times, instructional technologists studied how to use this media as instructional tools and how to send instructional messages via this media.

The first official definition of the field was formed by a commission from the Department of Audiovisual Instruction (henceforth known as AECT) in 1963. This definition is provided below.

> Audiovisual communication is that branch of educational theory and practice primarily concerned with the design and use of messages which control the learning process. It undertakes: (a) the study of the unique and relative strengths and weaknesses of both pictorial and nonrepresentational messages which may be employed in the learning process for any purposes; and (b) the structuring and systematizing of messages by men and instruments in an educational environment. These undertakings include the planning, production, selection, management, and utilization of both components and entire instructional systems. Its practical goal is the efficient utilization of every method and medium of communication which can contribute to the development of a learner's full potential (Ely, 1963, pp 18-19 in Seels & Richey, 1994).

This definition's main purpose is to provide a frame for instructional technologist (Seels & Richey, 1994). In this definition there was no emphasis on media but the writer focused on the importance of the "design and use of message" and following a process like "planning, production, selection, management and utilization of both components and entire instructional system" (Reiser & Dempsey, 2007). Hence, we understand from this definition that instructional technology was

defined as a field that designs the instructional messages by using a systematic process as explained in the definition.

After this definition, in 1970 the Commission on Instructional Technology produced two definitions for Instructional Technology. These are;

> In its more familiar sense, it [instructional technology] means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, textbook and blackboard.…the pieces that make up instructional technology [include] television, films, overhead projectors, computers, and other items of "hardware" and "software" (p.21)
>
> The second and less familiar definition of instructional technology goes beyond any particular medium or device. In this sense, instructional technology is more than the sum of its parts. It is the systematic way of designing, carrying out, and evaluating the whole process of learning and teaching in terms of specific objectives, based on research on human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction (p.21) (Reiser & Dempsey, 2007) .

In these two definitions there were new terms that are not mentioned in the former definitions. According to Seels & Richey, the emphasis on the specific objectives was due to the behaviors trend in those days (Seels & Richey, 1994). However, we can see that the first definition still defined the instructional technology as media. Seven years after this definition the AECT produced a new definition for our field. This definition was very long (about 16 parts). However, the first sentence of the definition provides an overview of the terms that had changed since the earlier definitions. According to AECT's 1977 definition, "educational technology is a complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems and devising, implementing, evaluating, and managing solutions to those problems involved in all aspects of human learning" (AECT, 1977, p.1). In the previous definitions the term *instructional technology* was

used as a synonym for *educational technology*, however in this definition the AECT stated that educational technology and instructional technology is not the same thing. The AECT stated that "instructional technology is a sub-set of educational technology, based on the concept that instruction is a sub-set of education" (AECT, 1977, p.3). In this definition we see that the field is also defined as a systematic process—like the 1963 definition of the field—and the steps of this process are described. It includes all the steps of the 1963 definition but also adds the analyses step to the process.

As we see, in the 1963, 1970 and 1977 definitions of the field, instructional technology was defined as a process (Reiser & Dempsey, 2007; AECT, 1977; Seels & Richey, 1994). However, in 1994 the AECT published a new definition for instructional technology and defined the field as both theory and practice, not only practice as the former definitions had claimed. They also stated that they used the term instructional technology interchangeably with the term educational technology. They defined instructional technology as "[…] the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning" (Seels & Richey, 1994, p. 1). In this definition, the domains of the field were clearly defined and interaction with these domains explained. In this definition there is no linear relationship between the domains of the field. Seels and Richey stated that each domain has its own study area and each domain is mature (Seels & Richey, 1994).

After this definition in 1995 a new definition was published by Gentry. In his book he defined the field as "the systematic and systemic applications of strategies and techniques derived from behavioral and physical sciences concepts and other knowledge to the solution of instructional problems" (Gentry, 1995). In this definition he emphasis the systematic nature of the field, implies the domains of the field and provides information about the fields that instructional technology benefits while developing theories.

Finally, the AECT composed a new definition for instructional technology: "educational technology is the study and ethical practice of facilitating learning and

improving performance by creating, using, and managing appropriate technological processes and resources" (Molenda, 2004, p.1). In the definition, report writers mentioned the major differences of this final definition from the previous definitions. These are that they have used the term "study" instead of "research" to enrich the scope of the field and include practical studies; that it emphasizes ethical issues; that the aim of the instructional technology has shifted to "facilitating learning" from supervising learning; that they underline the learning as an aim of the instructional technology to distinguish the field from information technology or performance technology; that they have used the term "improving performance" to clarify that the field's aim is guiding learning better than the other methods that are not developed with instructional technology strategies; that they used the term "appropriate" to state that methods and tools developed with instructional technology methods should fit the needs and characteristics of the target audience; and that they have used the term "technological" to stress that un-technological methods are tools that lie beyond the boundaries of the field (Molenda, 2004).

This new definition has been criticized both positively and negatively by those who study instructional technology. For example; Richey, who is one of the producers of the 1994 definition, criticized the new definition for reducing the importance of the design and development domains of the field and for its narrow comment on the performance of the field, by complaining that a new understanding about the efficient products are not the goal of instructional technology (Richey, 2008). On the other hand, Silber stated that this new definition is a good definition because it defines what our field is and draws the boundaries of our field with regard to the new developments in our field (Silber, 2008). Moreover he stated that by using the term "study" the new definition valued the practice in the field as well as its research and theory (Silber, 2008).

To sum up, defining our field is an important issue because of the developments in technology and learning theories. It is obvious that in time there will be new definitions of instructional technology.

2.2. Historical Development of Instructional Technology

2.2.1 Historical developments in instructional technology before the 1900's

Instructional technology began when educators started to ask themselves how information can be presented to learners better, according to their characteristics. Hence, we can trace the field's history up to the 16th century, although the term instructional technology was not used in those days. At that time, Comenius (1592-1670) stated very important ideas about learning and how to present information to learners. In his principles, he stated that instruction should be relevant to students' *interest, age* and *capacity*; textbooks should include relevant pictures, tables and diagrams; real life learning environments should be developed and learning should have a meaning for learners; and he also wrote the first text book that used illustrations and pictures (Saetler, 1990). After that, in the 18th century, there was a big change in the educational system. Until the 18th century, primary and secondary level education was generally individual and because of the need of societies Lancester set up monitorial instruction facilities and provided mass education in these facilities (Saetler, 1990). In the same period Pestalozzi, Froebel, and Herbartein stated important issues about education and made valuable contributions to field. For example, Pestalozzi gave importance to the individual differences of students and underlined learner motivation; Froebel pointed to the fact that learners learn when they need and he also established the first kindergarten (Saetler, 1990). Moreover, Herbartein developed an instructional method that has four steps. He described these steps as *clearness*: getting new ideas; *association*: drawing relationships between already known and new knowledge; *system:* separating relevant from irrelevant knowledge and *method*: testing the association with new situations and in addition to his method he stated that the problem of education was choosing proper materials (Saetler, 1990).

2.2.2 Historical developments in instructional technology after the 1900's

At the beginning of the 1900's Thorndike stated that instruction should aim at goals that are useful for society and he gave importance to educational measurement (Shrock, 1995). He also studied the design of instructional media, stated that related information should placed close together, that proper responses should rewarded and that wrong ones should be punished (Saetler, 1990). Moreover, at that time there were technological developments in instructional media. For example, "films, slides and photographs" were used in schools and "motion picture projector was one of the first media devices used in school" (Reiser & Dempsey, 2007, p.19).

In the early 1900s Dewey and Killpatrick underlined the importance of setting in the education by claiming that learning is the interaction between the learner and the learning environment, and especially Killpatrick give importance to project and problem solving in education (Saetler, 1990). Moreover, Burk, Wasbourne, Parkhurst, and Morrison studied individualized instruction and pointed out the importance of carefully planned assessment (Saetler, 1990). These studies of Wasbourne also provided workbooks that allowed students learn at their own pace and provided tests through which students could measure their knowledge before taking exams (Shrock, 1995). In those years there were also technological developments like radio broadcasting (1920-1930), sound recording and sound motion pictures which started to be used for educational purposes (Reiser & Dempsey, 2007). Although these technologies started to be used for educational purposes, the equipment problems, costs, difficulties in finding proper radio programs or films for the educational objectives and characteristics of the students, and the teachers' lack of ability to use the technology prevented the fulfillment of the high educational expectations from these technologies that ad been held, and then after the invention of TV and the start of its use for educational purposes, research on instructional radio disappeared (Cuban, 1986). Films and filmstrips were also used for instructional purposes in World War II in the US Air Forces. During the war about 400 training films and 600 filmstrips were used to give instructions and to

train soldiers, overhead projectors were first produced in this war and after the war media comparison studies (studies that compare the learning level of students that use new media and students that learn in traditional way) increased (Reiser & Dempsey, 2007).

In the early 1950's, theories of communication affected the field. For example Kurt Lewin, one of the theorists, developed the cognitive field theory that explained how a learner knows information and he also explained learning as occurring by exchanging information between a "communicator" (teacher) and a "communicant" (learner) via a medium (Saetler, 1990, p.69). Hence, the instructional medium gained importance because it was perceived as one of the three important elements in the learning process, and providing a proper medium for learning by using technology was one of the issues in instructional technology.

In the 1950's television became a very popular environment for instruction. There were close and open circuits broadcasting programs for instructional purposes in those days. The great interest in educational TV programs was related to the Federal Communication Commission that provided 242 TV channels for instructional purposes, and the Ford Foundation delivered more than $170 million dollars for educational TV (Reiser & Dempsey, 2007). However, the interest in educational TV decreased in the 1960s because of the resistance of teachers, and equipment and cost problems (Cuban, 1986).

Until the early 1960's, the instructional technology field was named as visual or audiovisual instruction. After the 1960's the terms instructional technology and educational technology were used to describe the field, and one of the important organizations in the field, the Department of Audiovisual Instruction, changed its name in 1970 to The Association for Educational Communication Technology (AECT) (Reiser & Dempsey, 2007).

2.2.3 Impact of learning theories on the development of instructional technology

Obviously, learning theories also affected the evolution of instructional theories. First, behaviorist learning theory made a valuable contribution to instructional technology. Saetler described six areas that show the contribution of behaviorism to the field. These are behavioral objectives, teaching machines, programmed instruction, individualized instruction, computer-assisted learning and the system approach to learning. Franklin Bobbitt developed the concept of behavioral objectives and stated that these objectives should measure "specified, quantifiable, and terminal behaviors" (Saetler, 1990, p.288). After the 1960's Skinner studied behaviorist learning theory; according to him because of our nature we tend to repeat actions that are reinforced and he advocated programmed instruction; he developed a teaching machine in 1954 and this machine the learner should answer a question and then the machine provides a feedback according to the learner's answer (Saetler, 1990). On the other hand, in individualized instruction the main emphasis was student motivation and self-paced learning materials, and F. S. Keller was one of the professionals who worked on individualized instruction. Computer-assisted instruction was started in 1950s and using computers for educational purposes, designing educational programs, using computers as media for delivering information in educational settings and so on has rapidly increased since then. The first Computer Aided Instruction program was designed by IBM in 1950 and by the early 1980's, with the increase in the availability of microcomputers, using computers for instructional purposes increased (Reiser & Dempsey, 2007). Finally, a system approach was started to be used by instructional technologists while developing instructional programs. The System approach, that is similar to flow charts and describes for instructional designers how to develop an instruction step by step, mainly includes defining goals of instruction, analyzing resources, planning action and assessing and revising the educational program (Saetler, 1990).

Second, cognitive learning theory also made contributions to instructional technology. According to cognitive learning theory, learning is described as a mental

activity in which the learner codes and structures the new knowledge in his or her internal memory; the aim of the instruction in cognitive learning theory is transferring knowledge to the learner, and an active involvement of the learner is needed; to increase the information processing, structuring the information is important and learning environments should be designed to provide opportunity for building relationships between new information and previous knowledge (Ertmer & Newby, 1993). Cognitive learning theorists claimed that people process information like computers process information, and they design computer programs that think like people (artificial intelligence). According to this theory, programs should be like LOGO (a program that teaches learners how to program computers), PLATO (a program that provides a discovery environment to improve mathematical development), DENDRAL (a program for chemists to evaluate the status of an unknown compound and guess its molecular structure with known data) and so on (Saetler, 1990).

Finally, according to constructivist learning theory, learning is constructed by the learner; knowledge is not dependent on its context, and knowledge can be constructed by experience in the proper learning environment (Ertmer & Newby, 1993; Dimock & Boethel, 1999). Hence, design of the learning environment and the materials in this environment are very important in the learning process. For example, with the help of hypertext and hypermedia learners can construct their knowledge at their own pace. In constructivist learning environments, generally, the teacher provides ill-defined problems to students and students try to solve these problems by using materials and information in the learning environment and technology which provide many resources to the students in "problem solving, thinking and reflection" (Dimock & Boethel, 1999, p. 19).

In conclusion, technological developments have had a big impact on the instructional technology field. Today, the rapid development in digital technology, computers, and communication devices (mobile phones, internet, and etc.) provide an opportunity for instructional designers to develop better learning environments. According to surveys, teachers' use of technology in the classroom has increased up

to 92% in USA; for example, distance education via the internet is considered a cheaper solution in higher education (Reiser & Dempsey, 2007). Hence, instructional designers are still studying what kind of, how and where these new technologies should be used in education.

2.3. Historical Development of Instructional Technology in Turkey

While the educational technology field evolved abroad, there were also developments in educational technology in Turkey. As stated before, studies in educational technology were not started when the term used but when educators started to ask themselves how information can be presented to learners better. From the time of the Ottoman Empire period to today there have been studies on educational materials and instructional methods to provide better learning environments to learners according to each period's social and technological situation.

Goktas(et al.), studied the educational technology in the Ottoman period in Turkey, and they stated that until the 16th century education was based on a traditional and religious structure; instructional methods were memorization, in some medreses (schools of that period) there was a student-centered learning environment and books, tablets, inkbottle and pencil were the primary materials used in medreses (Goktas, et. al., in press). In the 16th century there were important problems in the military area, and the necessity for modernization in the military education system become obvious. During the rule of Abdülhamid I, Selim III and Mahmud II some regulations were organized in the military education system (Goktas, et. al., in press). Until the Tanzimat period the education system was not divided into levels, but in this period primary, secondary and elementary levels were set up; blackboards, desks and schedules started to be used; and in 1847 the Ministry of Education took important decisions about the educational structure of the country. These

determinations are considered as the starting point of educational technology in Turkish History (Goktas, and et. al., in press). These endeavors could not provide a systematic educational system but the developments in the 1900's, like using experiments and observation in classrooms, provided bases for educational reform in Turkish Republic (Goktas, and et. al., in press).

After the Turkish Republic was established, the government made big reforms in education. These reforms also effected the development of educational technology. In 1926 the MoNE established a school museum and demonstrated instruction materials in this museum (Akkoyunlu & İmer, 1998). MoNE also provided materials like maps and experimental equipment to schools in the 1930's (Eğitek, n.d.; Akkoyunlu & İmer, 1998). The ministry also undertook studies to provide more technological learning environments to learners. For this purpose in 1951 an instructional movie center was established in Ankara, in 1962 an instructional radio center was set up and this center broadcasted physics, chemistry, geography and citizenship lectures in 1969 (Eğitek, n.d.; Akkoyunlu & İmer, 1998). At that time, TV also started to be used as an instructional medium. For example in 1968 instructional TV programs started to be broadcast (Eğitek, n.d.).

In 1950 to 1970 MoNE concentrated on the instructional equipment in schools and produced instruction tools. In those years also research was conducted on instructional technology in universities. Although radio and TV were used as mass instruction media, more structured distance education courses started in 1974 after the foundation of the Correspondence Course Center by the Ministry of Education (Odabaşı & Kaya, 1997). After correspondence distance education was founded, the demand for this education increased; however research showed that the programs were not effective for students and also there were administrative, media, method, and scheduling problems in the system (Odabaşı&Kaya, 1997). However, these problems did not stop distance education studies and in 1981 distance education courses opened in universities. For example, the Anadolu University provides many distance courses to students and Open High school also provides a distance learning environment in elementary level.

Rapid developments in technology and the increasing need to adapt these technological facilities in instructional environments forced MoNE to take serious decisions about the use of technology in education. For example, in the 1989 and 1996 five year strategic plans MoNE stressed the necessity of using scientific and technological methods to increase the quality of educational programs and instruction methods and materials (Akkoyunlu & İmer, 1998). After that, in the 1987 – 1988 academic year computer aided instruction started as a pilot project. Moreover, the MoNE started to establish computer laboratories for many schools and also supported developments in instructional software for schools. For this purpose, in 1998 a Head Office of Educational Technology was founded and this office's main goal was

- to ensure teachers use advanced technology effectively anywhere
- to provide environments for efficient technological applications
- to unify education and instruction with technology (Eğitek, n.d.)

In the light of these goals, today the Head Office of Educational Technology produces any kind of audible, visual, computer-based digital instruction material to be used in education.

To sum up, Turkey has been developing its educational system and use of instructional technology since the Ottoman period. With studies in distance education, the MoNE and Head Office of Educational Technology Turkey tries to improve the use of instructional technology.

As of 2008, there are 51 public and 4 private computer education and instructional technology departments in Turkey. 14 of the universities have graduate programs in the IT field and only 3 of them have doctorate program in this field.

2.4. Trend studies in instructional technology

2.4.1. Content Analysis studies in abroad

As stated in the evolution of the instructional technology part, the field's focus has been changing and according to theoretical and technological developments some topics have become the study area of the field and some study areas have moved out of the scope of the field. Moreover, as Ely has criticized, although fields like psychology, communication theory, system theory, and management theory provide a basis for instructional theory, there is still no common agreement on the field's definition and conceptual structure (Ely, 2008). This status of the field provides variations in the studied concepts. For example in the early 1900's, educational radio programs and research on these programs was popular, but now there is almost no study on this area. Because of the dynamic nature of the instructional technology field, content analysis studies about trends in the field are valuable. There are many studies about trends in popular journals in the field, in PhD. theses, in research methods and so on.

For instance, one of these content analysis studies was conducted by Edward P. Caffarella. He made a content analysis study of 2689 dissertations in the instructional field from 1977 to 1998 and is continuing his study. According to his research he has stated the trends in dissertations as the following;

- Computer research like appropriate use of computers, software design, individual differences, effectiveness of computers, etc. were the most popular topics between 1977 and 1998 (15% to 25%)
- Dissertations about "Instructional development, instructional design and instructional system development" were studied through this time period at a rate of 5%- 2%.

- It is stated that research topics gain popularity according to new technologies, as educational film research was popular at the beginning of the study and in the 1990's multimedia and hypermedia research was popular.

- In this study's period, comparative studies in the dissertations decreased to around 5% and qualitative research methods increased. (Caffarella, 1999, p.4).

Another study about the research trends in instructional technology was conducted by Driscoll and Dick in 1999. In this research they randomly selected a 5 year period and randomly chose 20 articles published in Educational Technology Research and Development that period, and investigated the trends in inquiry types in the field. According to their findings, experimental inquiry was the most popular type of study in instructional technology research, at 23%, and most of these studies were published in Research Section of the journal (Driscoll & Dick, 1999).

Moreover, Tse-chi Hsu conducted a research which covers articles from 1971 to 1998. He studied 713 articles from the American Educational Research Journal, 638 articles from the Journal of Experimental Education and 875 articles from the Journal of Educational Research. According to his findings:

- Almost 75% of the articles studied "psychology in education, teachers, teaching/instruction and measurement/assessment" (p. 128)

- Experimental research, descriptive research, correlation studies, comparative research and surveys were the most popular research methods in the articles.

- Descriptive statistics, ANOVA/ANCOVA, correlation, regression, and t-test were popular data analysis methods in the articles.

- The popularity of quantitative studies was decreasing and using qualitative research methods, survey and descriptive studies had been increasing since the mid 1980s. (Hsu, 2005).

In addition to this, Hew, Kale and Kim made a content analysis study of 340 empirical studies published in Educational Technology Research & Development, Instructional Science, and the Journal of Educational Computing Research from 2000 to 2004. In their study they investigated changes in topic, research method, data collection method and research settings in selected articles from 2000 to 2004 (Hew, Kale & Kim, 2007). According to their study they concluded that

- Media study, the psychology of learning and instruction, instructional design approaches and research and evolution methodology were the most frequent study topics in articles
- Descriptive research methods were the most popular one in the articles.
- Survey/questionnaire was the most preferred data collection method in the articles
- Higher education and K-12 settings were the most frequently chosen research settings in these articles(Hew, Kale & Kim, 2007)

There is also a PhD. thesis written by Mona Masood. In this PhD. thesis she used the content analysis method to analyze 499 articles that were selected from Educational Technology and Research and TechTrends journals. Her research aimed to decide which study topics were used in the field and how these topics fluctuated in a 10 year period, what are the most preferred research methods in the field, and to analyze the analogy between the two journals and clarify which authors published more articles and were most frequently cited. According to her findings, she stated that: (1)the most popular topics are "delivery systems" and "instructional development"; (2) popular research methods are experimental studies (37%) and case studies (34%) in ETR&D and surveys (48%) and case studies (24%) in TechTrends; (3) H.J. Sullivan, J. D. Klein, M. J. Hannafin and D.H. Jonassen are the researchers who have published more articles than any other researchers in ETR&D and A. A. Carr-Chellman, M. Simonson, and S. A. Samaldino are the researchers who have published more articles than the other researchers in TechTrends; (4) D.H. Jonassen, M. J. Hannafin and R. M. Gagné are the top three authors cited in ETR&D and D.H.

Jonassen, H.J. Becker, and S. Hackbarth are the top three authors cited in TechTrends (Masood, 2004).

In addition to these studies there is also research on trends in specific areas in instructional technology, like distance learning. For example, in a content analysis study, Shih, Feng, and Tsai analyzed the trends in five Social Science Citation Index (SSCI) journals by studying 444 articles published from 2001 to 2005 related to "cognition in e-learning" (Shih, Feng & Tsai, 2008). They categorized the articles according to publication year, journal, and article topic. According to their findings "instructional approaches", "learning environments" and "metacognition" are the top three topics investigated in "cognition in e-learning" articles and questionnaires are the most preferred data collection method (Shih, Feng & Tsai, 2008). The authors also emphasized that there is an increasing tendency to use learners' log files and instant messages as data collection sources (Shih, Feng & Tsai, 2008). In another study that analyzes the articles about internet-based distance learning from journals (American Journal of Distance Education, Quarterly Review of Distance Education and Distance Education) according to their topics, research methods, and evaluation-related topics are the most popular research area in articles, and case studies are the most popular research methods (Karataş, 2008).

2.4.2. Content Analysis Studies in Turkey

In the Turkish literature there are a few studies about trends in educational technology. One of them is a symposium report that was prepared by Şimşek and et al. in 2007. In this study the researchers studied all PhD. theses published in all of the programs that are related to instructional technology. Hence, 64 PhD. theses about instructional technology that were published in Turkey were analyzed in this study. They categorized them according to topic, methodology and configuration. According to their findings (1) the most popular topics in PhD. theses are teaching-learning approaches, online learning, multimedia and using technology in education;

(2) about 79% of PhD. theses used quantitative methods in researches; (3) the most preferred research environments are universities; (4) the most preferred instruments for data collection are tests and questionnaires; (5) the most popular statistical method that are used in PhD. theses are descriptive methods; and the researchers concluded that in many topics there is not enough research conducted in Turkey (Şimşek et.al., 2007).

2.4.3. Trend studies

Beside content analysis studies, Donald P. Ely conducted periodical studies in 1988, 1989, 1992, 1996 and 2002. In his study he made a content analysis and used journals like the British Journal of Educational Technology, Educational Technology Research and Development, Educational Technology, Tech Trends and Educational and Training Technology International; he also considered PhD. theses from some universities in the USA, papers from conferences and inputs from the ERIC database. He used these sources to understand the phenomena current in those years.

According to his findings the following trends were found in the educational technology field in 1992.

1. Instructional design and development principles to produce technology-based learning environments
2. evaluation
3. use of media and technology in learning settings
4. distance education in any level and sector
5. educational technology's definition and scope
6. Computer technologies in schools
7. Telecommunication

8. Teachers' role in the teaching and learning process
9. Integration of technology and influence of technology on learners
10. Training instructional technologists (Ely, 1992).

Ely continued his content analysis studies to reveal the trend changes in instructional technology field and his latest study was published in 2002. According to this study

1. Students and teachers have access to computers
2. Internet has become the main source of information
3. There are many ways like the web, video conferencing ,etc. to share video materials
4. Use of more technology in educational settings is supported by policy makers
5. Distance education has become an important instruction environment
6. New instruction delivery systems are supported, like laptops and handheld computers
7. Use of technology in classrooms has increased because of the convenience of the use of technology
8. Using technology in schools, colleges and business for instruction is widely admitted (Ely, 2002).

CHAPTER 3

METHOD

This part of the study provides detailed information about the methodology of the study. The researcher first underlines the purpose of the study and then explains the design and provides detailed information about the research method that is content analysis. After that, the research sample is described. Then, the researcher provides information about the instrument used in this study by describing its type, how it was developed and what its features are. Next, the validity and reliability of the instrument are explained. Finally, the data analysis procedure is described.

3.1. The purpose of the study

The purpose of this study is to investigate the trends in IT by focusing on MS theses and PhD. theses in Turkey. The following research questions guide this research:

(1) What are the demographics of MS theses and PhD. theses in the field of instructional technology in Turkey?

(2) What are the themes and trends in research topics of MS theses and PhD. theses in the field of instructional technology in Turkey?

(3) What are the research design types used in MS theses and PhD. theses in the field of instructional technology in Turkey?

(4) What are the sampling techniques in MS theses and PhD. theses in the field of instructional technology in Turkey?

(5) What are the data collection methods and instruments used in the field of instructional technology in Turkey?

(6) What are the preferred research settings designed or used to carry out the studies in Turkey?

3.2. Design of the study

According to Holsti, "a research design is a plan for collecting and analyzing data in order to answer the investigator's question" (Holsti, 1969, p. 24). In this study, MS theses and PhD. theses -the written studies in the instructional technology field- are analyze with the aim to discover what the popular research types, methods and topics are in Turkey. Moreover, sample type, size, how the samples are organized, the research setting that the study organized and the instruments used to gather data were also investigated. In this study, the content analysis method was applied to PhD. theses and MS theses. Content analysis is defined as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use" (Krippendorff, 2004, p.18). It also defined as "a summarizing, quantitative analysis of messages that relies on the scientific method and is not limited as to the types variables that may be measured or the context in which the message are created or presented" (Neuendorf, 2002, p.10). Moreover, content analysis is defined as "a technique that enables researchers to study human behavior in an indirect way, through the analysis of their communications" (Freankel & Wallen, 2005, p. 483). Another definition of content analysis is "systematic assignments of communication content to categories according to rules and the analysis of relationships involving those categories using statistical methods" (Riffe, Lacy & Fico, 2005). In this study, the content analysis method was used to analyze MS theses and PhD. theses and to draw conclusions from the texts as in

Krippendorff' s definition, and the researcher systematically assigned content to predefined categories and analyzed statistically as Riffe, Lacy & Fico described. The "messages" and "communication content" that are underlined in the definitions can be written materials, audio/video sources, books, written media materials, etc. In this study, MS theses and PhD. theses are analyzed to reach data about the trends. Hence, content analysis is a proper method for this research.

As Krippendorff and Neuendorf underlined in their definition, content analysis is a scientific method. To meet the scientific study requirements, it should first be replicable, that is at different times and by different researchers when the same data are analyzed with the same method the result should be the same, and second it should produce valid results, that is researcher should measure exactly what is intended in the research questions (Krippendorff, 2004). In addition, Holsti stated that a content analysis study should include objectivity, system and generality (Holsti, 1969). He uses these terms with the following meanings:

- Objectivity: in the study each level of the study should be organized according to predetermined rules and procedures. Hence, the researcher does not affect the result of the study by his subjective decisions about the study. As a result of this objectivity any researcher who follows the same procedures with the same data gets the same results.

- Systematic means that what the contents or categories include and exclude is decided according to regular application of rules. As a result of this necessity, the researcher's tendency to choose only the materials that substantiate the researcher's hypotheses is eliminated.

- Generality means that findings of the content analysis should have theoretical relevance. (Holsti, 1969).

Obviously, content analysis has advantages and disadvantages. One of the advantages of content analysis is the messages and data gathered from documents

and it not being affected by the researcher's influence, subject or research setting, that is content analysis is an *unobtrusive* method (Krippendorff, 2004; Fraenkel & Wallen, 2005; Riffle, Lacy & Fico, 2005). The second advantage is that, because of the unstructured analysis procedure of the content analysis, the source of the data is preserved (Krippendorff, 2004). For example, in surveys, attitude tests or other structured data collecting methods, participants reflect their ideas through predetermined items, shapes or numbers. Hence, participants can sometimes have different ideas about the item that are not provided in the choices or some definitions or shapes are totally strange to them. In these cases, the data may not reflect the participant's ideas and decisions about the items precisely. However, because of the nature of content analysis, data is produced before the researcher's study. Hence, it is preserved to be shaped by the structured items of the instruments. The third advantage is that content analysis does not require participants so it is not affected by problems that are related to participants (Sarantakos, 2005). A fourth advantage is its being independent of time and space: because documents can be collected from various times, researchers can examine records to examine social life and previous times. So researchers are not limited to the present (Fraenkel & Wallen, 2005).A fifth advantage is that documents are always available, so if a researcher wants to use the same data it is available and this allows replication of the study (Fraenkel & Wallen, 2005). A sixth advantage is that using documents as data sources is easy, quick and cheap in most cases (Pershing, 2002). As a seventh advantage, it can be used in cases where research topic or setting is not reachable (Sarantakos, 2005). Finally, the content analysis method enables us to study a large body of data because of using coders or computer software ((Krippendorff, 2004; Riffle, Lacy & Fico, 2005).

On the other hand, this method has some disadvantages. These disadvantages described by Sarantakos in the following items.

- Some documents may not be accessible to the researcher; personal letters and diaries, for instance, might be difficult to obtain.

- Documents often contain information related to a small proportion of people, and are therefore not representative.
- Content analysis cannot study unrecorded events: it is therefore restricted to what has been documented.
- Documents often are not complete; the information may therefore be biased and often unreliable.
- Content analysis is less suitable for making comparisons than other methods
- Content analysis is susceptible to coder bias (Sarantakos, 2005, p.308).

3.3. Sampling and Population

In this study the target population is published MS theses and PhD. theses from CEIT MS and Ph.D. programs in Turkey. To identify the number of MS and PhD. theses that are included in this category, first, the universities which have graduate programs of instructional technology were identified. Hence, the CoHE's (The Council of Higher Education) web site was examined and 95 public and 36 private universities web sites were examined. According to the results, 14 universities have instructional technology graduate programs and 3 of them have instructional technology PhD programs. However, in Kahraman Maraş Sütçü İmam University, Fırat University and Ege University no thesis has been published in instructional technology because these Universities' master programs had just opened in the 2008 – 2009 academic year. In Ege University, the program opened in the 2005 – 2006 academic year but there is no published thesis in IT yet. Second, the CoHE's thesis database was analyzed to identify the theses published in those programs. In addition, universities' library web pages were used and MS theses and PhD. theses from instructional technology departments were identified. According to

the findings of this research, 247 published MS theses and PhD. theses were identified in such programs.

In this study a sampling method was not used because the number of theses was appropriate. Hence, all of the population was used. To collect the entire theses, first the CoHE's database was analyzed and theses that could be downloaded from this site were collected. The theses that gave permission to publish via the internet were collected from this database. 117 MS theses and PhD. theses were downloaded from CoHE's databases as PDF files. Then, to collect the missing MS theses and PhD. theses, the researcher contacted the CoHE and 28 MS theses and PhD. theses were taken. Finally, the remaining 102 theses were collected from Ankara University's, Gazi University's, Hacettepe University's and the Middle East Technical University's libraries. However, one of the theses that had been published in Marmara University was not accessible because the writer of the thesis restricted access to the thesis and did not allow the thesis to be read until 4.4. 2009. For this reason, this thesis could not be examined. As a result, the final number of MS theses and PhD. theses examined in the study is 247. The detailed information about universities, concerning whether they have a graduate program, a PhD program, and the number of MS theses and PhD. theses published by those universities is set out in Table 3.1. Moreover, the entire MS theses' and PhD. theses' list is in Appendix A.

Table 3.1. CEIT MS theses and PhD. theses published in Turkish universities

University	**Thesis type**		
	MS thesis	**PhD. thesis**	**Total**
	Count	**Count**	**Count**
Orta Doğu Teknik Üniversitesi	47	12	59
Ankara Üniversitesi	29	15	45
Gazi Üniversitesi	32	1	33
Çukurova Üniversitesi	27	0	27
Hacettepe Üniversitesi	24	0	24

Table 3.1. Continued

Sakarya Üniversitesi	19	0	19
Anadolu Üniversitesi	15	4	19
Marmara Üniversitesi	8	0	8
Dokuz Eylül Üniversitesi	6	0	6
Karadeniz Teknik Üniversitesi	6	0	6
Balıkesir Üniversitesi	2	0	2
Total	215	32	248

3.4. Instrumentation

3.4.1. Coding and Categorizing

In content analysis categorization of the content is very important. Category is defined as "a set of criteria that are integrated around a theme or value" (Sarantakos, 2005, p.302). Categories that are used in content analysis should be very clear and enable other researchers to have same results when they examine the same data with those categories (Fraenkel & Wallen, 2005). They should have the following features:

- "To be clearly defined and unambiguous
- To relate exclusively to the research topic
- to focus on a specific part of the research topic
- to be exhaustive, that is in combination of the whole topic

- to be accurate, unidimensional and mutually exclusive
- to be independent from each other" (Sarantakos, 2005, p.303)

In this study, the categories were not developed by the researcher. They were adapted from a similar PhD. thesis study that was published by Mona Masood (Masood, 2004). In her study, the trends of research studies about instructional technology published in two important journals were examined. She determined those categories by examining articles from those journals. Because of the similarities of this study and hers, the topic categories were formed by taking her study's categories and adding extra categories to them. The researcher has chosen Masood's categories because they include major topic clusters of the field and the explanation of these categories were clear. The categories are listed in Table 3.2.

Table3.2. Research topic classes and categories

Instructional/educational technology as a whole	Instructional/educational technology as a whole
Other fields or disciplines	Other disciplines
Instructional process variables	Learner control, Interactivity, Program control, Feedback, Other
Instructional process elements	Orienting, instructional objectives, advance organizer, Information retrieval, Other

Table 3.2. Continued

Teaching/learning perspectives	Behaviorist, Cognitivist, Schema theory, Constructivist, Situated cognition, Anchored instruction, Generative learning, ARCS model, Chaos Theory, Other
Instructional methods	Cooperative learning/Collaboration, Metacognitive activity, Individualized instruction, Problem solving, Simulation (role-play), Other
Delivery Systems Media Format	Distance education, Audio graphic, TV & Audio Feedback, Two-way TV, Internet or Web-based, Classroom media, AV Media (films, slides, overhead transparencies, etc.), Student Response System, Computer-based instruction, Programmed instruction (drill & practice; read, response, feedback), Hypermedia, Multimedia, Intelligent tutoring system, Written Material
Instructional development (ID)	ID Models, Elements/ID phases, Analysis Design, Development, Implementation (user acceptance, adoption, perception), Evaluation, Other
Production Variables	Program attributes (stating objectives, introduction, music, etc.), 3-dimensional Message design (screen/visual), Semantic complexity, Cues, Animation, Link density, Other

Table 3.2. Continued

Learner Outcomes	Learner achievement, Fact, Concept, Principle, Procedure, Generic thinking skills, Attitudes, Interpersonal skills, Motor skills, Preferences, Discipline specific (mathematics: science, language, etc.), Other
Learner Variables	Motivation, Age/grade/developmental level, Gender, Prior knowledge, Mental storage & retrieval, Other
Learning Environment	Learning Environment
Evaluation	Usability, Formative evaluation, Summative evaluation, Adaptive Testing, Item response, Other
Performance technology (PT) & performance support systems	PT models, Electronic Performance Support System (EPSS), Job aid, Meeting, system/conferencing
Organizational change	Systemic change, School reform/restructuring, Non-school reform/restructuring, Other
The Profession	Ethics, Skills/competencies, Certification, Standards, Employment, Other
Culture	Organizational, National (ethic), Other
Teacher Variable	Support, Cognitive styles, Attitude, Instructional practice
Media Comparison Research	Media Comparison Research

After collecting research topic categories from Masood's study, a codebook was developed to use as a coding instrument. The codebook is an instrument that includes all of the "operational definitions" of variables (Neuendorf, 2002, p.111). According to the research questions, the codebook includes the following parts.

- Demographic features of MS theses and PhD. theses
- Categories of research topics (adapted from clusters and categories developed by Mona Masood)
- Categories for research methods (adapted from research methods described in Mona Masood's code book)
- Categories for sample
    - Size
    - type (the categories were designed according to Fraenkel & Wallen's sample type categories)
- Categories for instruments (the categories were designed according to the instrument types described by Fraenkel & Wallen)
- Categories for research setting

You can see the coding book in Appendix B.

3.4.2. Validity

"Validity is the extent to which a measuring procedure represents the intended, and only the intended, concept" (Neuendorf, 2002, p.112). In addition to this, Krippendorff defined validity as the "quality of research results that leads us to expect them as true" (2004, p.313).

In this research, the topic cluster and research method cluster of the instrument adapted from a valid and reliable instrument and the other parts are

formed according to categories defined in “How to Design and Evaluate Research in Education” by Fraenkel and Wallen. Moreover, the instrument was checked for external validity, face validity and content validity.

First, external validity is related to whether the sample of the study represents the population or not (Neuendorf, 2002). In this research, all the population (the entire MS theses and PhD. theses) was included in the research. Hence, the external validity is assured.

Then face validity is checked. Face validity is related to whether the instrument looks like it is going to measure what it is planned to measure or not (Neuendorf, 2002). Krippendorff said that we request face validity when agree with the results of the research because they look reasonable (2004). To provide face validity in this study, the researcher reexamined the Masood’s categories and made the necessary changes to these categories in order to adopt the instrument to this study. After this, the researcher gave the code book to an associated professor from the IT field to check whether it was sufficient to measure the intended data. He checked the document and found it applicable for this study.

Finally, content validity is controlled. Neuendorf defines content validity as “the extent to which the measure reflects the full domain of the concept being measured” (2002, p. 116). Hence, an instrument has content validity if it covers all aspects of the topic which it is intended to measure. The codebooks and defined categories’ content validity was checked by an associated professor from the instructional technology field and also an assistant professor of another university who studied in the IT field. They made some improvements and corrections and the instrument was given its final form.

3.4.3. Reliability

If a research procedure produces the same results when it is applied at different times and / or by different researchers, it means that it is a reliable procedure (Krippendorff, 2004; Neuendorf 2002). Reliability is a necessity for research, because it shows the credibility of the data (Krippendorf, 2004). In content analysis, the data is coded by the researcher. Hence, the trustworthiness of codes that are coded by researcher can be checked by other trained researchers. In other words, *intercoder reliability* ("the amount of agreement or correspondence among two or more coders") needs to be measured. To measure intercoder reliability, first a reliability subsample, 10% - 20 % of the population, should be assessed randomly (Lombard, Snyder-Duch & Bracken, 2002; Neuendorf, 2002). After that, coders should code the documents according to the same code book , first individually, and then the level of agreement between them should be measured according to some methods. Percent agreement, Holsti's method, Scott's *pi*, Cohen's *kappa* and Krippendorff's *alpha* are the recommended measurement techniques for intercoder reliability (Lombard, Snyder-Duch & Bracken, 2002).

As is mentioned before, in this research most of the parts in the codebook were adapted from another study. Although the adapted codebook's reliability was measured by the researcher and was found reliable (Krippendorff *alpha* 0.82), the population of the research was different, and a reliability measurement was also applied to this research's codebook. To measure reliability first, 8% of the population (20 MS theses and PhD. theses) were selected randomly and reliability subsample formed. After that, the researcher and a trained coder (a doctorate student in the instructional technology department) coded the subsample individually. Finally, the coder's and researcher's results were entered into the Statistical Package for Social Science(SPSS) package program version 15.0 , to measure the agreement level of the coder and researcher in order to calculate the intercoder reliability. Intercoder reliability was measured according to the percent agreement level of the coders. The intercoder reliability obtained by using Cohen's *kappa* was 0.87. According to

Krippendorff (2004), Neuendorf and Lombard (2002), Snyder-Duch & Bracken (2002), if Cohen's *kappa* value is greater than .80 it is acceptable for reliability. Hence, the data collected in this research can be considered as reliable.

3.5. Data Analysis Procedure

In this study the application of the content analysis method was planned according to steps that are described by Pershing. He stated that a content analysis should be conducted in the following steps.

1. Articulate the purpose
2. Decide on a specific type of analysis
3. Prepare for the analysis
4. Code documents
5. Sort and shift
6. Make discoveries
7. Think about things
8. Report findings (Pershing, 2002).

He also described the relationship between these steps as given in Figure 3.1

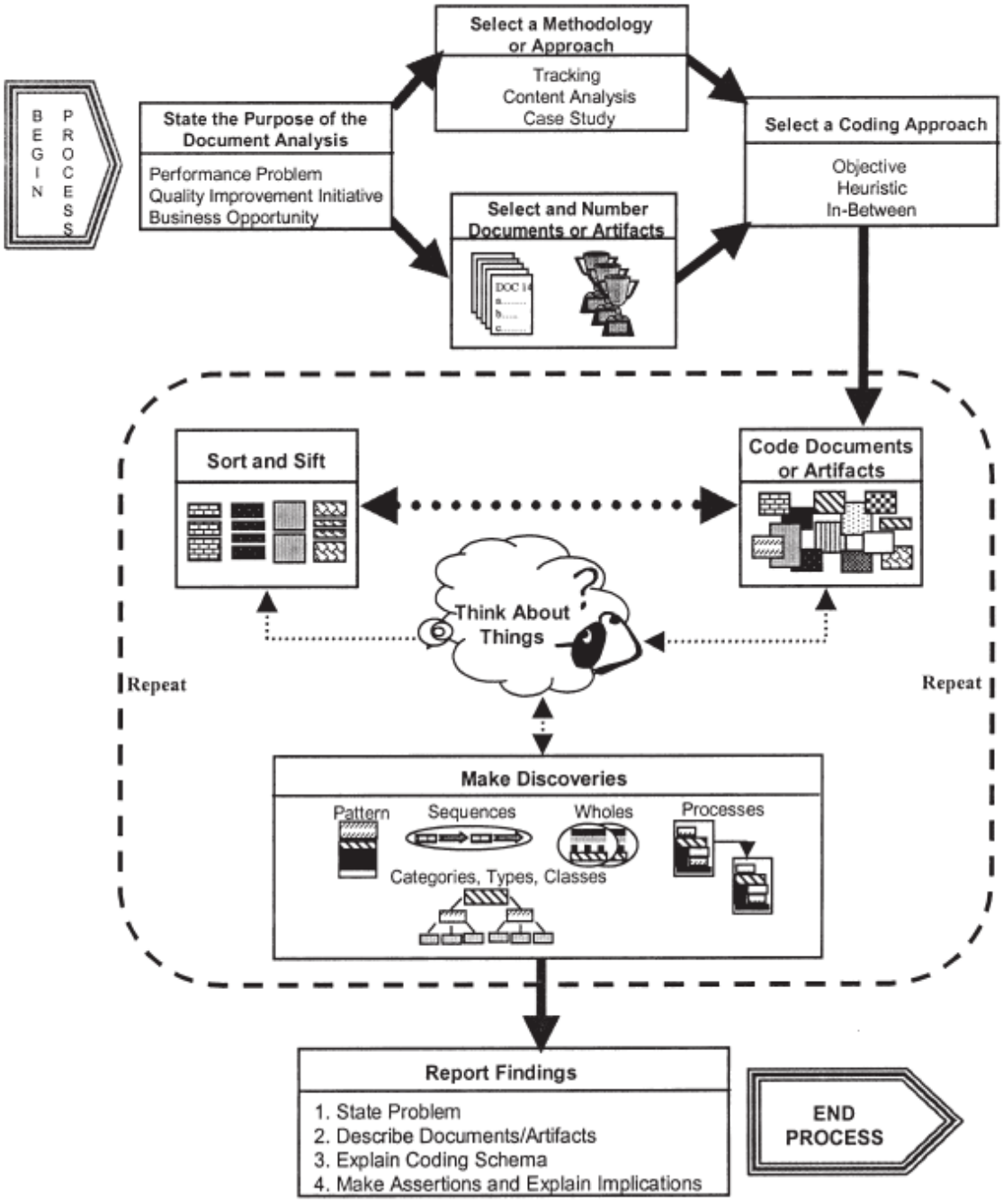

Figure 3.1. Document Analysis Process (Pershing, 2002, p.41)

According to these steps, first the purpose of the research is decided and its focus clarified with the sub research questions. The purpose and research questions are stated in the purpose of the study section.

Second, the type of analysis is selected. According to Pershing, document analysis has three types; tracking, content analysis and case study. As stated before, content analysis is used in this research. With the help of this method the demographic characteristics, research type, research method, sample characteristics and research topics of MS theses and PhD. theses are analyzed.

Then PhD. theses and MS theses are collected. After that, a proper coding instrument is prepared by adapting a valid and reliable one used by another researcher. Next, the coding process is started. During the coding process, new categories are discovered and added to the code book.

Finally, the descriptive statistics of the data are analyzed, in the present case this was done by using the Statistical Package for Social Science (SPSS) package, version 15.0.

3.6. Limitations of the study

There were some limitations while carrying out this study. Firstly, the total number of published MS theses and PhD. theses was not clear. The institutes and CoHE did not provide clear information about the number of theses published in graduate programs in instructional technology. The researcher tried to eliminate this limitation by visiting the web sites of all graduate programs in IT field, libraries and searching for information about published MS theses and PhD. theses. Moreover, CoHE's national thesis database was analyzed by searching various key words. However, the researcher found out that there were theses that were not published in CoHE' s national thesis database while searching theses in the libraries of the universities. In addition to that, some of the researchers limited access to their theses.

Although two of them could be found in their library collection, one of them was out of access. As a result, there were published theses that were not analyzed in this research.

Obviously, studying only with MS theses and PhD. theses in the field is also a limitation. MS theses and PhD. theses were not the only studies in IT. There are also articles, proceedings and books published in Turkey. These are also important source for trend analysis. However, there was only one researcher that conducted data analysis and time for this study was limited.

This study was a thesis study and there was only one analyzer (the researcher) in the coding period. A second coder was used only for reliability measurements. This is a limitation because if more coders were used in this study, the results would be more objective and would provide more reliable results.

CHAPTER 4

RESULTS

In this part of the study, the researcher provides detailed information about the findings of the study. In this chapter, findings about each research question is provided in detail and statistical data about the findings are provided in the text, in tables and in some questions graphs. The researcher also provides data about the fluctuation of the analyzed items through time and underlines the trends of the study according to the results.

RQ1. What are the demographics of MS theses and PhD. theses in the field of instructional technology?

In this study, authors, universities, publication years, advisors and thesis types (MS or PhD. thesis) were analyzed as demographic characteristics of the theses. Firstly, 247 theses were analyzed in this study and the list of authors is provided in Appendix A. Secondly, the numbers of universities that have MS and PhD. programs were investigated and the numbers of MS theses and PhD. theses that have been published in universities which have MS and PhD. programs in the instructional technology field have been analyzed. The results are presented in Table 4.1.

Table 4.1. Distribution of MS theses and PhD. theses according to universities

	MS theses			PhD. theses		
University	**Frequency**	**Percent**	**C. Percent**	**Frequency**	**Percent**	**C. Percent**
Anadolu Üniversitesi	15	7,0	7,0	4	12,5	12,5
Ankara Üniversitesi	29	13,5	20,5	15	46,9	59,4
Balıkesir Üniversitesi	2	,9	21,4	0	0	59,4
Çukurova Üniversitesi	27	12,6	34,0	0	0	59,4
Dokuz Eylül Üniversitesi	6	2,8	36,7	0	0	59,4
Gazi Üniversitesi	32	14,9	51,6	1	3,1	62,5
Hacettepe Üniversitesi	24	11,2	62,8	0	0	62,5
Karadeniz Teknik Üniversitesi	6	2,8	65,6	0	0	62,5
Marmara Üniversitesi	8	3,7	69,3	0	0	62,5
Orta Doğu Teknik Üniversitesi	47	21,9	91,2	12	37,5	100,0
Sakarya Üniversitesi	19	8,8	100,0	0	0	100,0
Total	215	100,0		32	100,0	

As interpreted from the table, most of the MS theses were published in the Middle East Technical University (METU) (21.9%), Gazi University (14.9%) and Ankara University (13.5%). On the other hand, most of the PhD. theses were published in Ankara University (46.9%), METU (37.5%) and Anadolu University (12.5%).

Thirdly, the publication years of MS theses and PhD. theses are also a demographic feature of MS theses and PhD. theses. A table of MS theses' and PhD. theses' distribution according to publication year is presented in Table 4.2. As is seen

in the table, most of the MS theses were published in 2006 (22.3%), 2005 (20.9%) and 2007 (17.7%) and most of the PhD. theses (40.6%) were published in 2005.

Table 4.2. Distribution of MS theses and PhD. theses according to publication year

	MS theses			PhD. theses		
Year	**Frequency**	**Percent**	**Cumulative Percent**	**Frequency**	**Percent**	**Cumulative Percent**
1999	2	0,9	0,9	1	3,1	3,1
2000	1	0,5	1,4	0	0	3,1
2001	6	2,8	4,2	0	0	3,1
2002	22	10,2	14,4	4	12,5	15,6
2003	23	10,7	25,1	1	3,1	18,8
2004	30	14,0	39,1	5	15,6	34,4
2005	45	20,9	60,0	13	40,6	75,0
2006	48	22,3	82,3	4	12,5	87,5
2007	38	17,7	100,0	4	12,5	100,0
Total	215	100		32	100,0	

Moreover, the distribution of MS theses and PhD. theses according to publication years can be seen in Figure 4.1.

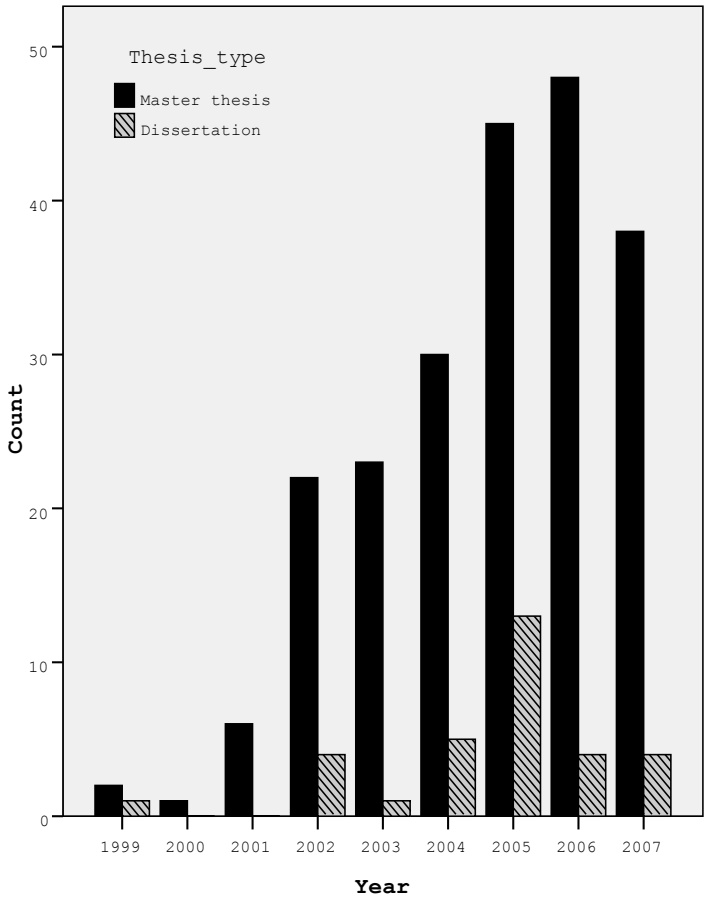

Figure 4.1. Distribution of MS theses and PhD. theses according to publication year

Thirdly, thesis advisors were analyzed and also how many MS theses and PhD. theses were supervised by each advisor was investigated. The results are presented in the Table 4.3.

Table 4.3. Distribution of MS theses and PhD. theses according to advisors

Thesis type	Advisor	Frequency	Percent	Cumulative Percent
MS thesis	Adile Aşkım Gülümbay	1	,5	,5
	Adile Aşkım Kurt	1	,5	,9
	Adnan Baki	3	1,4	2,3
	Ahmet Mahiroğlu	11	5,1	7,4

Table 4.3. Continued

	Ahmet Zeki Saka	1	,5	7,9
	Ayşen Gürcan Namlu	4	1,9	9,8
	Ayşen Karamete	1	,5	10,2
	Aytekin İşman	3	1,4	11,6
	Bilal Güneş	1	,5	12,1
	Buket Akkoyunlu	6	2,8	14,9
	Çetin Baytekin	9	4,2	19,1
	Deniz Deryakulu	4	1,9	20,9
	Eralp Altun	3	1,4	22,3
	Ergün Kasap	1	,5	22,8
	Gülsün Kurubacak	1	,5	23,3
	H. Ferhan Odabaşı	7	3,3	26,5
	Hafize Keser	10	4,7	31,2
	Hakan Poyraz	1	,5	31,6
	Hakan Tüzün	1	,5	32,1
	Halil İbrahim Bülbül	3	1,4	33,5
	Halil İbrahim Yalın	8	3,7	37,2
	Halil Yurdugül	1	,5	37,7
	Hasan Karaaslan	4	1,9	39,5
	Hasan Karal	3	1,4	40,9
	Işıl Kabakçı	1	,5	41,4
	Kürşat Çağıltay	6	2,8	44,2
	Levent Deniz	3	1,4	45,6
	M. Yaşar Özden	9	4,2	49,8
	Mehmet Ali Kısakürek	1	,5	50,2
	Mehmet Tekdal	18	8,4	58,6
	Mukaddes Erdem	3	1,4	60,0
	Murat İskender	1	,5	60,5
	Mustafa Karaağaçlı	2	,9	61,4
	Necmettin Teker	2	,9	62,3
	Nesrin Özdener	3	1,4	63,7
	Nurettin Şimşek	12	5,6	69,3
	Nursal Arıcı	3	1,4	70,7

Table 4.3. Continued

	Oğuz Kutlu	8	3,7	74,4
	Oğuz Serin	2	,9	75,3
	Orhan Torkul	1	,5	75,8
	Ömer Gemici	1	,5	76,3
	Özcan Erkan Akgün	2	,9	77,2
	Petek Aşkar	7	3,3	80,5
	S. Sadi Seferoğlu	1	,5	80,9
	Servet Bayram	2	,9	81,9
	Soner Yıldırım	17	7,9	89,8
	Tolga Güyer	1	,5	90,2
	Turan Çakır	1	,5	90,7
	Uğur Altunay	1	,5	91,2
	Ülkü Köymen	1	,5	91,6
	Yasemin Koçak Usluel	5	2,3	94,0
	Zahide Yıldırım	11	5,1	99,1
	Zeki Kaya	2	,9	100,0
	Total	215	100,0	
PhD. thesis	Ayşen Gürcan Namlu	2	6,3	6,3
	Deniz Deryakulu	1	3,1	9,4
	H. Ferhan Odabaşı	2	6,3	15,6
	Hafize Keser	6	18,8	34,4
	Halil İbrahim Yalın	1	3,1	37,5
	Kürşat Çağıltay	1	3,1	40,6
	M. Yaşar Özden	3	9,4	50,0
	Necmettin Teker	1	3,1	53,1
	Nurettin Şahin	1	3,1	56,3
	Nurettin Şimşek	6	18,8	75,0
	Soner Yıldırım	5	15,6	90,6
	Zahide Yıldırım	3	9,4	100,0
	Total	32	100,0	

According to the results, Mehmet Tekdal (8.4%), Soner Yıldırım (7.9%) and Nurettin Şimşek (5.6%) are the advisors who have guided most of the MS theses and

Hafize Keser (18.8%), Nurettin Şimşek (18.8%) and Soner Yıldırım (15.6%) are the advisors who have guided most of the PhD. theses.

Finally, according to thesis type, the number of MS theses and PhD. theses published in instructional technology departments are summarized in Table 4.4.

Table 4.4. MS theses and PhD. theses published in instructional technology departments

Thesis type	Frequency	Percent
MS thesis	215	87
PhD. thesis	32	13
Total	247	100,0

As it is seen in the Table 4.4, 87% were MS theses and 13% were PhD. theses.

RQ2. What are the themes and trends in research topics of MS theses and PhD. theses in the field of instructional technology?

In the analysis of research topics most of the MS theses and PhD. theses were focused on more than one research topic. For example, some of the studies focused on both learner and teacher variables or the study was both a media comparison study and an Instructional Development study. In some cases studies analyzed both learner outcomes like achievement and learner variables like gender, motivation or prior knowledge. Hence, in this study the researcher limited the variations in research topic to five. While coding the MS theses and PhD. theses, the researcher was thus able to record more than one research topic category if the study was also related to other categories. As a result the total of research topics used in MS theses and PhD. theses is 513, not 247.

Results showed that most of the studies focused on delivery system media formats (n=170). In addition, media comparison studies were also studied frequently. 63 of the MS theses and PhD. theses were media comparison studies. Another popular research topic is learner variables like motivation, gender, age, grade, developmental level, prior knowledge and mental storage & retrieval. 48 of the analyzed MS theses and PhD. theses researched this topic. Detailed information about the frequencies of studied research topics is found in Table 4.5.

Table 4.5. Instructional Technology Research Topics

Research topics	Frequency
Delivery system media format	170
Media comparison	63
Learner variables	48
Learner outcomes	36
Teacher variable	35
Instructional development	32
Teaching/learning perspectives	28
Instructional methods	22
Instructional/educational technology as a whole	15
Other field or disciplines	12
Production variables	12
Evaluation	10
Instructional process variables	8
Learning environment	7
The profession	6
Instructional process elements	4
Performance technology	2
Culture	2
Knowledge Management	1
Total	513

If we analyze the distribution of research topics according to thesis type, it is understood from Table 4.6 that in 215 MS theses the topics were used 446 times because many of the theses focused on more than one topic. Moreover, in MS theses popular research topics are the same as the most popular topics of all of the analyzed theses (both PhD. theses and MS theses) as a whole. In MS theses, delivery system media format (n=148) is the most popular topic, media comparison is the second most popular topic (n=55) and leaning variables (n=43) is the third most popular research topic.

Table 4.6. Distribution of research topic in MS theses

Thesis type	Research Topics	Frequency
MS thesis	Delivery system media format	148
	Media comparison	55
	Learner variables	43
	Teacher variable	33
	Instructional development	31
	Learner outcomes	26
	Teaching/learning perspectives	24
	Instructional methods	18
	Instructional/educational technology as a whole	12
	Production variables	11
	Other field or disciplines	10
	Evaluation	8
	Instructional process variables	8
	Learning environment	6
	The profession	6
	Instructional process elements	4

Table 4.6. Continued

	Culture	2
	Performance technology	1
	Total	446

Similarly, there were more than one research topics that studied PhD. theses. (See Table 4.7) Hence, the total frequency of research topics in 32 PhD. theses was 67. According to the results, in PhD. theses the most studied research topics are delivery system media format (n=22), learning outcomes – achievement, preferences, subject specific outcomes, etc. (n=10) and media comparison studies (n=8).

Table 4.7. Distribution of research topic in MS theses

Thesis type	**Research Topics**	**Frequency**
PhD. thesis	Delivery system media format	22
	Learner outcomes	10
	Media comparison	8
	Learner variables	5
	Teaching/learning perspectives	4
	Instructional methods	4
	Instructional/ educational technology as a whole	3
	Other field or disciplines	2
	Evaluation	2
	Teacher variable	2
	Learning environment	1
	Performance technology	1
	Knowledge Management	1
	Instructional development	1
	Production variables	1
	Total	67

If we analyze how the research topics vary in time, carrying out research about delivery system and media format increased rapidly from 1999 to 2006. Although it is still the most popular research topic in 2007, the percentage of this topic decreased slightly. In the same way, the percentage of media comparison studies increased up to 2006 and slightly decreased in 2007. The frequencies and percentages of research topics across publication years are provided in Table 4.8.

Table 4.8. Distribution of research topic by publication year

Year	Research topics	Frequency	Percent
1999	Delivery system media format	2	25,0
	Media comparison	2	25,0
	Learner variables	1	12,5
	Instructional process variables	1	12,5
	Instructional methods	1	12,5
	Learner outcomes	1	12,5
	Total	8	100,0
2000	Media comparison	1	50,0
	Delivery system media format	1	50,0
	Total	2	100,0
2001	Delivery system media format	4	23,5
	Instructional development	3	17,6
	Learner outcomes	3	17,6
	Evaluation	2	11,8
	Media comparison	2	11,8
	Teaching/learning perspectives	1	5,9
	Teacher variable	1	5,9
	Production variables	1	5,9
	Total	17	100,0
2002	Delivery system media format	13	24,1
	Teacher variable	9	16,7
	Learner variables	6	11,1

Table 4.8. Continued

	Instructional/educational technology as a whole	5	9,3
	Instructional methods	4	7,4
	Media comparison	3	5,6
	Teaching/learning perspectives	2	3,7
	Learning environment	2	3,7
	Instructional development	2	3,7
	Learner outcomes	2	3,7
	Evaluation	1	1,9
	Instructional process variables	1	1,9
	Instructional process elements	1	1,9
	The profession	1	1,9
	Production variables	1	1,9
	Other field or disciplines	1	1,9
	Total	54	100,0
2003	Delivery system media format	20	34,5
	Teacher variable	8	13,8
	Learner variables	6	10,3
	Media comparison	4	6,9
	Learner outcomes	4	6,9
	Instructional development	3	5,2
	Instructional methods	3	5,2
	Instructional process variables	2	3,4
	Instructional/educational technology as a whole	2	3,4
	Learning environment	2	3,4
	Performance technology	1	1,7
	The profession	1	1,7
	Culture	1	1,7
	Teaching/learning perspectives	1	1,7
	Total	58	100,0

Table 4.8. Continued

2004	Delivery system media format	24	32,0
	Instructional development	8	10,7
	Media comparison	8	10,7
	Teaching/learning perspectives	7	9,3
	Teacher variable	6	8,0
	Learner variables	5	6,7
	Learner outcomes	3	4,0
	Instructional/educational technology as a whole	3	4,0
	Evaluation	3	4,0
	Instructional methods	2	2,7
	Production variables	2	2,7
	Performance technology	1	1,3
	Learning environment	1	1,3
	Instructional process elements	1	1,3
	Other field or disciplines	1	1,3
	Total	75	100,0
2005	Delivery system media format	38	33,3
	Learner outcomes	17	14,9
	Media comparison	13	11,4
	Learner variables	11	9,6
	Teaching/learning perspectives	7	6,1
	Instructional methods	5	4,4
	Other field or disciplines	4	3,5
	Teacher variable	4	3,5
	Production variables	3	2,6
	Instructional/educational technology as a whole	3	2,6
	Instructional development	2	1,8
	Instructional process variables	2	1,8
	Instructional process elements	2	1,8
	Evaluation	1	,9

Table 4.8. Continued

	The profession	1	,9
	Culture	1	,9
	Total	114	100,0
2006	Delivery system media format	40	38,8
	Media comparison	16	15,5
	Learner variables	10	9,7
	Instructional development	7	6,8
	Teaching/learning perspectives	6	5,8
	Learner outcomes	5	4,9
	Other field or disciplines	4	3,9
	Teacher variable	3	2,9
	Instructional methods	3	2,9
	Evaluation	2	1,9
	The profession	2	1,9
	Production variables	2	1,9
	Instructional/educational technology as a whole	1	1,0
	Instructional process variables	1	1,0
	Learning environment	1	1,0
	Total	103	100,0
2007	Delivery system media format	28	34,1
	Media comparison	14	17,1
	Learner variables	9	11,0
	Instructional development	7	8,5
	Teaching/learning perspectives	4	4,9
	Instructional methods	4	4,9
	Teacher variable	4	4,9
	Production variables	3	3,7
	Other field or disciplines	2	2,4
	Instructional/educational technology as a whole	1	1,2
	Knowledge Management	1	1,2

Table 4.8. Continued

Instructional process variables	1	1,2
Learning environment	1	1,2
Evaluation	1	1,2
The profession	1	1,2
Learner outcomes	1	1,2
Total	82	100,0

RQ3. What are the research design types used in MS theses and PhD. theses in the field of instructional technology?

The results indicate that experimental studies (n=87, 35.2%) was the dominant research method used, followed by survey studies (n=61, 24.7%) and case studies (n=32, 13.0%). (See Table 4.9)

Table 4.9. Instructional Technology Research Methods

Research method	Frequency	Percent
Experimental	87	35,2
Surveys	61	24,7
Case study	32	13,0
Descriptive Research	19	7,7
Quasi-experimental	15	6,1
Correlational	13	5,3
Content analysis	5	2,0
Meta-analysis	1	0,4
Focus interview	1	0,4
Evaluational studies	1	0,4
Action Research	1	0,4
other	11	4,5
Total	247	100,0

Although the most used research method was the experimental method, it was not the most popular research method in 2002 and 2003. There was a decrease in using experimental research method most preferred in those years. On the other hand, survey was always one of the research methods by the students. Although it slightly decreased in 2004 from 29.2% to 22.9%, survey method again increased in the following years.

Case studies were the most preferred studies in 2002 and they also had a great percentage (25.0%) of preference in 2003. However, in the following year case studies suddenly dropped to 5.7 percent and then reached 12.1% in 2005. In the following years it remained between 7% – 10%. The changes of research method preferred in studies can be seen in Table 4.10 and they are also represented in Figure 4.2.

Table 4.10. Distribution of research methods according to year

Year	Research Method	Frequency	Percent
1999	Experimental	2	66,7
	Surveys	1	33,3
	Total	3	100,0
2000	Experimental	1	100,0
2001	Experimental	2	33,3
	Surveys	2	33,3
	Descriptive Research	1	16,7
	Case study	1	16,7
	Total	6	100,0
2002	Case study	8	30,8
	Surveys	7	26,9
	Experimental	4	15,4
	Descriptive Research	4	15,4
	Quasi-experimental	1	3,8
	Correlational	1	3,8
	Content analysis	1	3,8
	Total	26	100,0

Table 4.10. Continued

2003	Surveys	7	29,2
	Case study	6	25,0
	Experimental	4	16,7
	Descriptive Research	4	16,7
	Quasi-experimental	1	4,2
	other	1	4,2
	Content analysis	1	4,2
	Total	24	100,0
2004	Experimental	14	40,0
	Surveys	8	22,9
	other	5	14,3
	Correlational	4	11,4
	Case study	2	5,7
	Descriptive Research	1	2,9
	Evaluational studies	1	2,9
	Total	35	100,0
2005	Experimental	21	36,2
	Surveys	14	24,1
	Case study	7	12,1
	Quasi-experimental	5	8,6
	Correlational	5	8,6
	Descriptive Research	2	3,4
	Content analysis	2	3,4
	Meta-analysis	1	1,7
	Action Research	1	1,7
	Total	58	100,0
2006	Experimental	22	42,3
	Surveys	12	23,1
	Quasi-experimental	6	11,5
	Case study	4	7,7
	Descriptive Research	3	5,8

Table 4.10. Continued

	other	2	3,8
	Focus interview	1	1,9
	Correlational	1	1,9
	Content analysis	1	1,9
	Total	52	100,0
2007	Experimental	17	40,5
	Surveys	10	23,8
	Descriptive Research	4	9,5
	Case study	4	9,5
	other	3	7,1
	Quasi-experimental	2	4,8
	Correlational	2	4,8
	Total	42	100,0

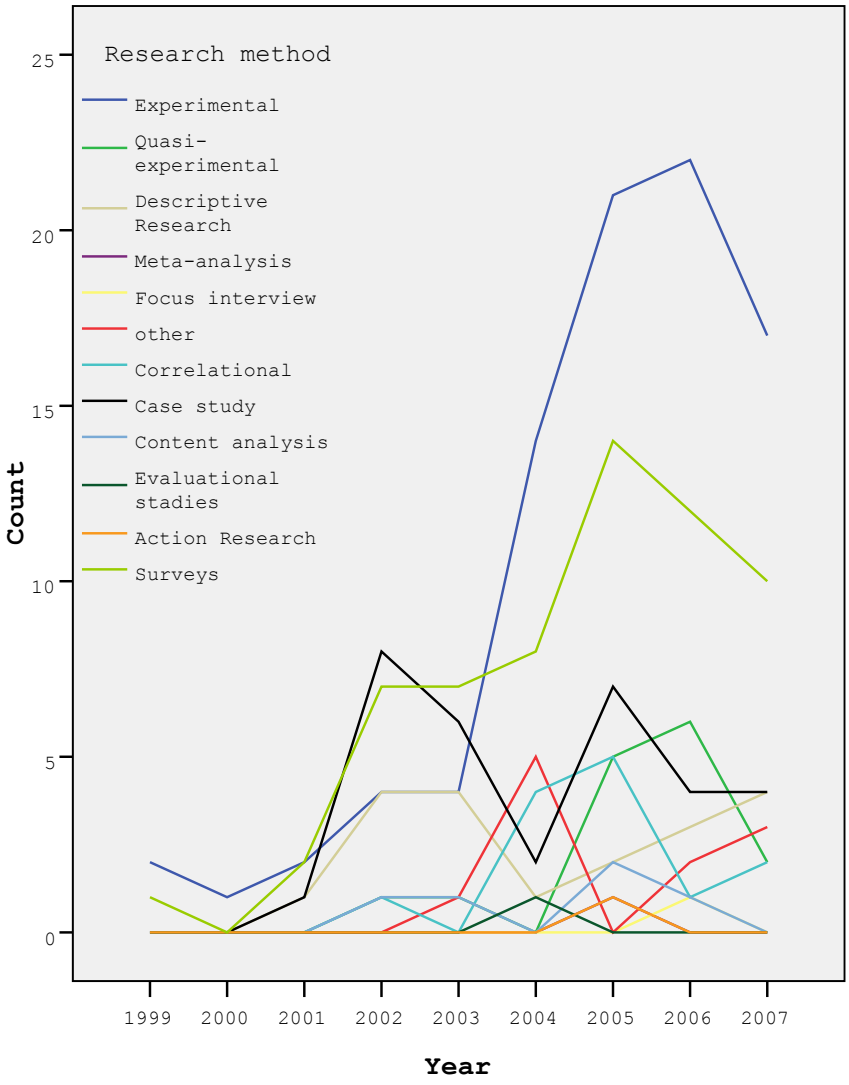

Figure 4.2. Research methods according to publication year

RQ4. What are the sampling techniques in MS theses and PhD. theses in the field of instructional technology?

There are many sampling methods in research methodologies. According to the results of this study, convenience sampling (n= 80, 32.4%) is the most popular sampling method in MS theses and PhD. theses. After that, the purposive sampling

method (n=58, 23.5%) is the second most commonly found way that researchers had chosen in thesis studies. Then simple random sampling (n=52, 21.1%) is the third most popular sampling method. However, it should be considered that research studies that apply the experimental method and purposefully or conveniently chose the research setting (school, group, level and etc.), and after that randomly set up the experiment groups, are also involved in this item. The detailed information about sampling types is in Table 4.11.

Table 4.11 Instructional technology sample types

Sample type	Frequency	Percent
Convenience sampling	80	32,4
Purposive sampling	58	23,5
Simple random sampling	52	21,1
all of the population	17	6,9
Cluster random sampling	8	3,2
Stratified random sampling	6	2,4
Two-stage random sampling	3	1,2
other	23	9,3
Total	247	100,0

Obviously, sample sizes are also an important feature of research studies. Results showed that (n=117) 47.4% of the studies used 31 – 100 subjects in their studies. In addition to that 16.2% (n=40) of the studies have 101 – 300 subjects. Finally, 14.2% (n=35) of the studies has 11-30 subjects in their studies. (See Table 4.12) The results also showed that 5.7% (n=14) of the sample were categorized as "other" in sample size. Because the researchers that did not use a sample, for example, design studies, Instructional Development studies or document analysis studies were grouped in this category.

Table 4.12. Sample sizes of instructional technology MS theses and PhD. theses

Sample size	Frequency	Percent
31-100 people	117	47,4
101-300 people	40	16,2
11-30 people	35	14,2
301-1000 people	28	11,3
More than 1000	9	3,6
0-10 people	4	1,6
other	14	5,7
Total	247	100,0

RQ5. What are the data collection methods and instruments used in the field of instructional technology?

Data collection methods that were used in the MS theses and PhD. theses are rating scale, interview schedule, attitude scale, personality or character inventories, achievement/aptitude tests, observation forms, performance checklist, anecdotal reports, time and motion logs, questionnaires and self-checklists. In the analyzed MS theses and PhD. theses researchers used more than one data collection method in their study. Hence the total frequency of data collection method that was used in the theses is 435.

The analysis showed that 72.4% of all data collection methods were questionnaires (n=138), achievement/aptitude tests (n=115) and interview (n=62). (See table 4.13)

Table 4.13. Instruments used in MS theses and PhD. theses

Instrument	Frequency
Questionnaires	138
Achievement/aptitude tests	115
Interview schedule	62
Attitude scales	39
Personality or character inventories	27
Observation form	22
Time and motion logs	7
Rating scale	2
Self-checklist	2
18	1
Performance checklist	1
Anecdotal reports	1
other	18
Total	435

Table 4.14 lists the frequencies of data collection methods in years, and Figure 4.3 shows the trends in data collection methods across the years. Questionnaire was the most popular method in 2002 (n=20, 38.5%). It dropped in 2003 (n=13, 35.1%) and 2004 (n=14, 25.0%). Then the usage of questionnaires as data collection method steadily increased in 2005 (n=32, 29.4%), 2006 (n=27, 29.7) and 2007 (n=25, 34.2%). In addition, in 1995, 1999, 2000 and 2001 achievement/aptitude tests were used, although the research numbers were small. Then from 2002 (n=8, 15.4%) to 2004 (n=16, 28.6%), the use of this data collection method increased. In 2005 it slightly decreased, 25.7% (n=28). After that, the use of this collection method increased rapidly in 2006 (n=29, 31.9%). Finally, it dropped 28.8% (n=21) in 2007.

The analysis has shown that scheduled interview was not used in MS theses and PhD. theses until 2002 (n=10, 19.2%). It increased in 2003 up to 21.6% (n=8). After that it decreased rapidly in 2004 (n=9, 16.1%) and 2005 (n=12, 11.0%). Then, in 2006 it slightly increased to 14.3 % (n=13) but dropped again in 2007 to 13.7% (n=10).

Table 4.14. Trends in data collection methods in years

Year	Instrument	Frequency	Percent
1999	Attitude scales	3	42,9
	Achievement/aptitude tests	2	28,6
	Questionnaires	2	28,6
	Total	7	100,0
2000	Achievement/aptitude tests	1	100,0
2001	Questionnaires	5	55,6
	Achievement/aptitude tests	4	44,4
	Total	9	100,0
2002	Questionnaires	20	38,5
	Interview schedule	10	19,2
	Achievement/aptitude tests	8	15,4
	Attitude scales	6	11,5
	Observation form	4	7,7
	Personality or character inventories	2	3,8
	Time and motion logs	1	1,9
	other	1	1,9
	Total	52	100,0
2003	Questionnaires	13	35,1
	Interview schedule	8	21,6
	Achievement/aptitude tests	6	16,2
	Attitude scales	4	10,8
	Observation form	2	5,4
	Personality or character inventories	1	2,7

Table 4.14. Continued

	Time and motion logs	1	2,7
	other	2	5,4
	Total	37	100,0
2004	Achievement/aptitude tests	16	28,6
	Questionnaires	14	25,0
	Interview schedule	9	16,1
	Attitude scales	4	7,1
	Personality or character inventories	4	7,1
	Observation form	4	7,1
	Time and motion logs	1	1,8
	other	4	7,1
	Total	56	100,0
2005	Questionnaires	32	29,4
	Achievement/aptitude tests	28	25,7
	Interview schedule	12	11,0
	Personality or character inventories	12	11,0
	Attitude scales	10	9,2
	Observation form	5	4,6
	Time and motion logs	2	1,8
	Self-checklist	2	1,8
	Anecdotal reports	1	0,9
	other	5	4,6
	Total	109	100,0
2006	Achievement/aptitude tests	29	31,9
	Questionnaires	27	29,7
	Interview schedule	13	14,3
	Attitude scales	6	6,6
	Observation form	6	6,6
	Personality or character inventories	4	4,4
	Rating scale	2	2,2
	Performance checklist	1	1,1

Table 4.14. Continued

	Time and motion logs	1	1,1
	other	2	2,2
	Total	91	100,0
2007	Questionnaires	25	34,2
	Achievement/aptitude tests	21	28,8
	Interview schedule	10	13,7
	Attitude scales	6	8,2
	Personality or character inventories	4	5,5
	Observation form	1	1,4
	Time and motion logs	1	1,4
	other	5	6,8
	Total	73	100,0

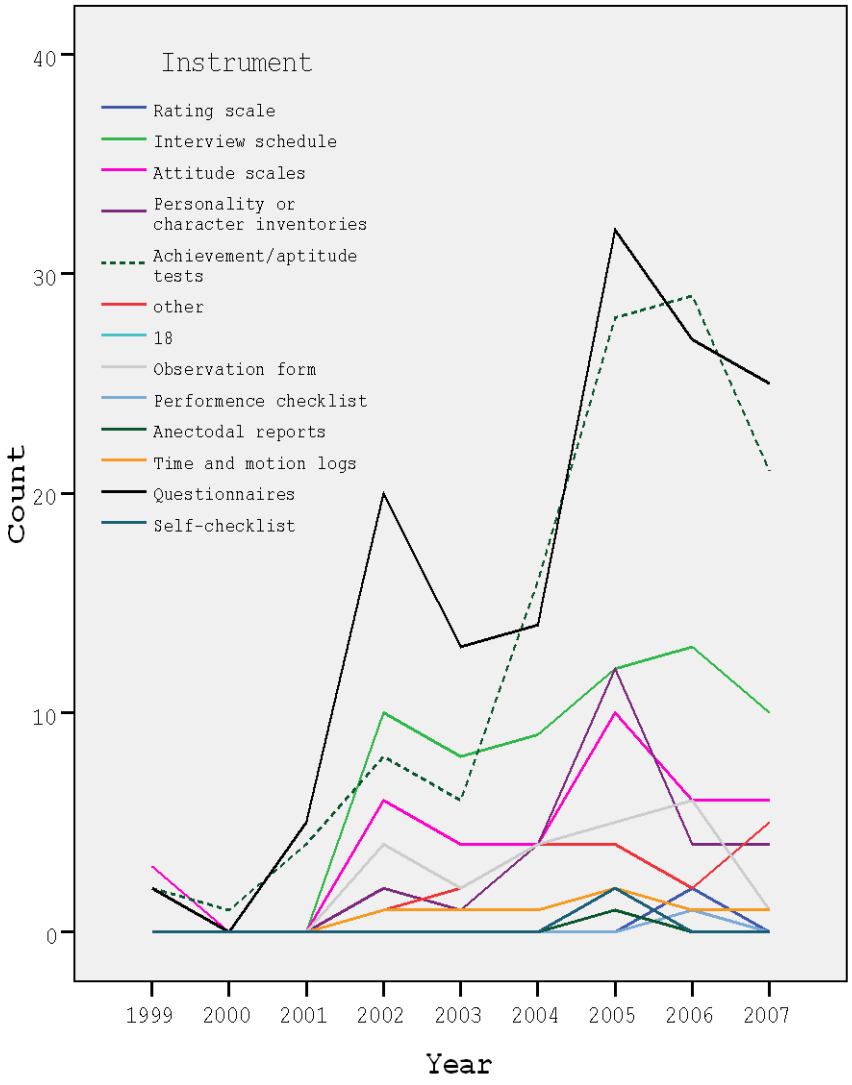

Figure 4.3. Trends in data collection methods across the years

RQ6. What are the preferred research settings designed or used to carry out the study?

In this study, research settings are divided into 10 categories. These are early childhood education, primary school (1 – 5), primary school (6 – 8), high school, technical vocational school of higher education, higher education, graduate level, in-service training, special groups and training (corporate, etc.). Not surprisingly, in

some of the analyzed studies researchers studied in more than one research setting. As a result the total frequency of the research setting is 287.

According to the results (see Table 4.15), most of the studies were conducted in higher education settings (n=99). Secondly, primary education (6 – 8) was preferred as a research setting in MS theses and PhD. theses (n=58). Thirdly, high schools (n=48) have been chosen as a research setting.

Table 4.15. Research settings used in MS theses and PhD. theses

Research setting	Frequency
Higher education	99
Primary school(6-8)	58
High school	48
Primary school(1-5)	44
Other	19
Technical vocational school of higher education	10
In-service training	3
Early childhood education	2
Graduate level	2
Special group	1
Training (corporate, etc.)	1
Total	287

This study showed that early childhood education was rarely preferred as a research setting. On the other hand, studies of primary schools' first part (1-5) were started in 2002 and did not fluctuate until 2005. In 2005 studies in this research setting increased to 20.5% of all studies carried out that year and slightly decreased to 19.0% in 2006. This reduction increased in 2007 when only 16.3% of the studies were conducted in primary school 1 – 5 levels. On the other hand, studies in primary school (6 – 8) started in 2001(16.7%) and decreased to 9.7% in 2002. Then it again

increased to 16.0% in 2003. Although it decreased to 12.5% in 2004, in 2005 this research setting reached 26.0% and became the second most popular research setting in that year, reaching its peak. After that year, although it was decreasing slowly, it again remained one of the popular research settings.

High school is frequently preferred as the research setting. Although it has a percentage of 50 in 1999, there were only 4 studies and this percentage does not properly explain the importance of this setting. However, there was an increase in the percentage of studies that used this research setting in 2002. Then it decreased to 4% in 2003. However, in 2004 this research setting was used frequently, with 25% of studies being conducted in high schools in that year. It decreased to 11.0% in 2005 but again rose to 20.7% in 2006. However, it slightly decreased to 16.3% in 2007.

Obviously, technical vocational schools of higher education have many students but it was not frequently chosen as a research setting in MS theses and PhD. theses. There were a few studies in 2002 (6.5%), 2004 (12.5%), 2005 (1.4%) and 2007(4.1%).

Not surprisingly, higher education is the most popular research setting in MS theses and PhD. theses. In each of 1995 and 2000 there was only one study and it was conducted in higher education. After that, in 1999 half of the studies were carried out in this setting. In 2001, 66.7% of the studies were conducted in this setting. Then, in 2002 there was a decrease in percentage of studies (35.5%) conducted in higher education. However, it increased up to 60.0% in 2003. In 2004 the percentage again fell to 32.5% and continued to decrease in 2005 (31.5%) and 2006 (24.1%). It increased again in 2007 to 32.7% and became the most preferred research setting in that year. The detailed information about research settings distribution is provided in Table 4.16. Graduate level, in-service training, special groups and training (corporate, etc.) were rarely chosen as research settings in MS theses and PhD. theses. Figure 4.4 represents the variations in research setting over the years.

Table 4.16. Distribution of research settings in years

Year	Research setting	Frequency	Percent
1999	High school	2	50,0
	Higher education	2	50,0
	Total	4	100,0
2000	Higher education	1	100,0
2001	Higher education	4	66,7
	Primary school(6-8)	1	16,7
	High school	1	16,7
	Total	6	100,0
2002	Higher education	11	35,5
	High school	6	19,4
	Primary school(1-5)	4	12,9
	Primary school(6-8)	3	9,7
	Technical vocational school of higher education	2	6,5
	Graduate level	1	3,2
	Other	4	12,9
	Total	31	100,0
2003	Higher education	15	60,0
	Primary school(6-8)	4	16,0
	Primary school(1-5)	3	12,0
	High school	1	4,0
	Other	2	8,0
	Total	25	100,0
2004	Higher education	13	32,5
	High school	10	25,0
	Primary school(6-8)	5	12,5
	Technical vocational school of higher education	5	12,5
	Primary school(1-5)	3	7,5
	Special group	1	2,5
	Other	3	7,5
	Total	40	100,0

Table 4.16. Continued

2005	Higher education	23	31,5
	Primary school(6-8)	19	26,0
	Primary school(1-5)	15	20,5
	High school	8	11,0
	Early childhood education	1	1,4
	Technical vocational school of higher education	1	1,4
	Graduate level	1	1,4
	In-service training	1	1,4
	Other	4	5,5
	Total	73	100,0
2006	Primary school(6-8)	14	24,1
	Higher education	14	24,1
	High school	12	20,7
	Primary school(1-5)	11	19,0
	In-service training	2	3,4
	Early childhood education	1	1,7
	Training corporate, etc.)	1	1,7
	Other	3	5,2
	Total	58	100,0
2007	Higher education	16	32,7
	Primary school(6-8)	12	24,5
	Primary school(1-5)	8	16,3
	High school	8	16,3
	Technical vocational school of higher education	2	4,1
	Other	3	6,1
	Total	49	100,0

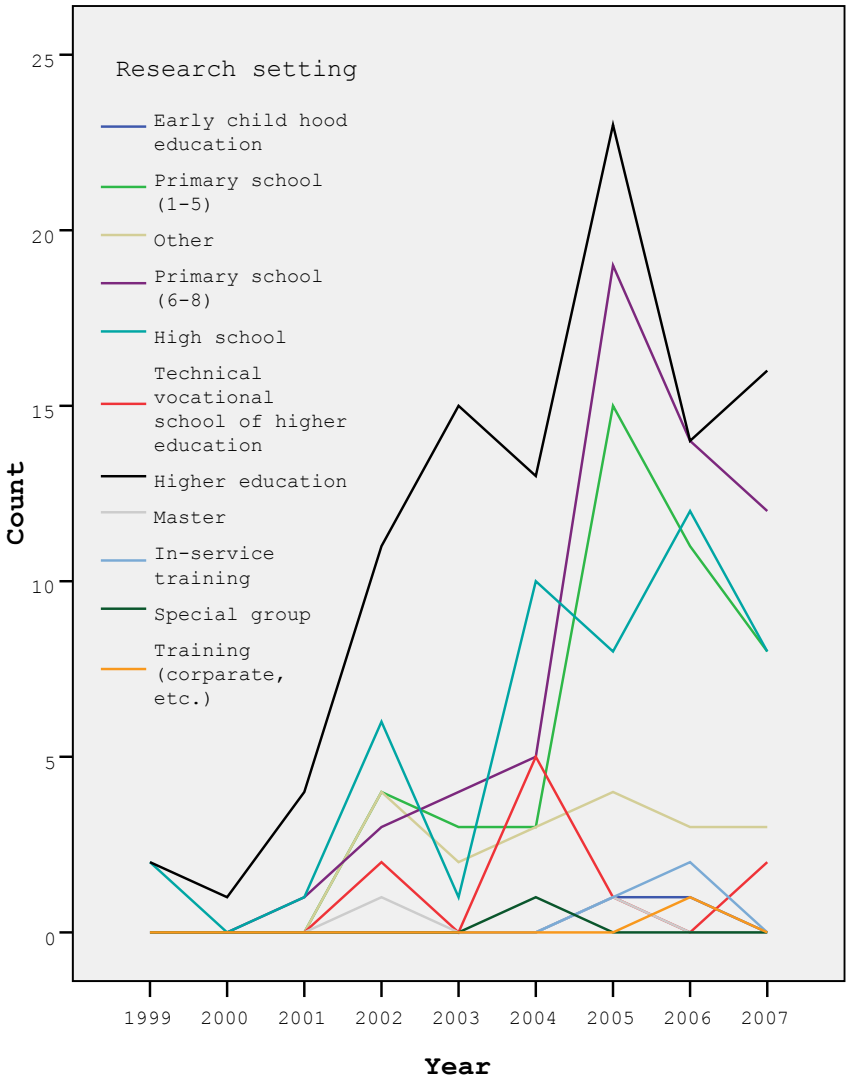

Figure 4.4. Number of research settings across the years

CHAPTER 5

DISCUSSION

In this study, the researcher used the content analysis method to reveal the current trends in instructional technology studies in Turkey. The MS theses' and PhD. theses' characteristics, research topics, research methods, sampling features, data collection methods and research settings were analyzed in this study. In this chapter, the results that were provided in the previous chapter are going to be discussed.

5.1. Characteristics of MS theses and PhD. theses

In this study, 247 MS theses and PhD. theses were analyzed and according to the results 215 (87.0%) of them were MS theses and 32 (13.0%) of them were PhD. theses. The total publication number and also the number of PhD. theses is very small. According to Caffarella's study results, there were 2689 PhD. theses that were published in 1977 - 1998 in the USA (Caffarella, 1999). It is obvious that there is a huge difference between the PhD. these studies in Turkey and the USA. In Turkey, although studies related to instructional technology started earlier, instructional technology departments were only established in 1998. Hence, until the establishment of instructional technology departments, studies related to using technology in education were conducted under other departments such as science education, math education, curriculum and instruction and so on. According to this

study, among the CEIT departments, the first MS thesis was published in 1999 and the first PhD. theses were published in 1999. As a result, the huge difference between the thesis publication numbers is due to the difference in establishment years of departments. Moreover, the number of universities is also different in the USA and Turkey. In Turkey there are 11 universities that have a graduate program and 3 universities that have a PhD. program in instructional technology. On the other hand, in the USA there are 55 instructional technology PhD. programs (Caffarella, 1999). This is also a reason for the limited number of MS and PhD. theses published in Turkey.

In addition to these, the results showed that there are 54 academics who worked as thesis advisors in the analyzed MS theses and PhD. theses in Turkey. On the other hand there were more than 200 thesis advisors in the USA in the instructional technology field (Caffarella, 1999). The number of the academics in the field also affects the numbers of thesis and PhD's completed in the field.

Finally, it should be kept in mind that all of the IT programs in the USA are graduate programs. On the other hand, in Turkey there are also undergraduate programs in this field.

5.2. Research Topics in IT

The results of this study showed that the delivery system media format (distance education, classroom media, computer-based instruction, written materials or etc.) was the most studied topic in the MS theses and PhD. theses. The reason for this result is probably the rapid technological developments. When a new technology is produced, the question about how to use this technology in education comes to mind. As was explained in the 2004 definition of the field, "Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources." (Molenda, 2004). In the light of this definition and this study's results, it can be

assumed that researchers of the analyzed theses tried to develop usable technological procedures to provide better learning environments. Moreover, according to the definition, "creating, using and managing" technological devices or software for instructional purposes are the main goals of the field. Hence, it is not a surprise to find out that "delivery system media" was the most popular research topic in MS and PhD. theses.

Finances and supports are probably the second reason for the popularity of this topic in MS and PhD. theses. This support may be either commercial or governmental. For example, in 1981 Anadolu University began to provide distance education in higher education level, in 1988 computer aided instruction was started as a pilot study by MoNE and continued to spread throughout the country, computer laboratories were established and instructional programs were provided by Eğitek (Akkoyunlu & İmer, 1998). These developments may have led to media studies and provided opportunities to researchers of these topics. For a parallel example, in the 1950s Ford Foundation delivered more than 170 million dollars in support of educational TV and this resulted in a lot of studies that investigating the place of TV in education (Reiser & Dempsey, 2007).

Obviously, media is a broad term. There are many types of media. For example, computers are one of the devices that are used as media in education. Computer-based instruction, distance education via the internet and some of the classroom media like Power Point presentations, videos, audios and etc. are all presented to learners via computers. When we look at similar studies, both in Caffarella' s and Masood' s, and in Hew, Kale and Kim's studies, using media in education was the most popular topic studied in PhDs and ETR&D and TechTrends journals.

In this study, the second most popular topic that was used in MS and PhD. theses was media comparison studies. This trend possibly reflects the passion of the researchers for providing evidence for the positive effects of media. As is well known, media comparison studies are studies in which traditional learning environments and media supported learning environments are compared according to

learners' achievements, motivation, etc. in an experimental environment. Although these kinds of studies are popular in the field, there are serious criticisms of them. For example, Clark claims that media or media attributes make no contribution to student learning and he states that media comparison studies are hopeless because teaching method has not been taken into account in these studies and as a result the validity of the studies is doubtful (Clark, 1994). In addition to this, he analyzed many media comparison studies and concluded that the results of these studies show that there was no significant difference between the traditional learning environment and learning environments with media (Clark, 1994). Moreover, continuing media comparison studies will not be enough to provide evidence for whether there is any media effect on learning or not (Hastings & Tracey, 2005).

The second reason for the popularity of this research topic can be the researchers' assumptions, which is that a new technology's affect on learning is a new research area. As Clark criticized

> The problem here is that designers and media producers look to previous programs developed for specific contexts and media in order to find methods to use in new programs. If the medium in question is new, the chances of finding previous research specific to that medium are slim and the developers may conclude that there is no research and so draw on their own personnel history to design programs and so reinvented the wheel (Clark, 1994, p. 8).

In other words, when a technological device or program (for example mobile phones) is developed, researchers think that their study about using that new technology in education is a new research area. However, there have been many studies about media use in educational settings and these studies should be considered in studies about new media. Hence, comparing new media and the traditional learning environment is not a new research area but a new example for media comparison studies.

Finally, the third most popular research topic in MS and PhD. theses was learner variables. Learning variables are motivation, age/grade/developmental level, gender, prior knowledge, mental storage/retrieval, etc. In the studies that used this topic, generally researchers tried to explain the relationship between the characteristics of learners and the use of computers, media or a learning method. For example, there were studies that measured the students' anxiety levels, prior knowledge and attitude to computers or some instructional methods. Hence, the popularity of this topic is probably because of the importance of learners' characteristics on learning. Also, learners' characteristics may be important in the application of new instructional developments.

5.3. Research Methods in IT

As this study shows, the experimental method was the dominant research method in MS theses and PhD. theses. The first reason for this result is the research topics that are used in the theses. Media comparison studies are one of the popular topics in the field, and establishing a media comparison study requires an experimental method in the research design. The second reason is probably that in experimental study design researchers can measure the effect of an independent variable on dependent variables (Fraenkel & Wallen, 2005). In theses, researchers generally uncover the effect of a method, media or instruction technique on learning, motivation and so on. Hence, they used this method. Furthermore, experimental study is an appropriate method to check the cause and relationship hypotheses (Fraenkel & Wallen, 2005). In theses, researchers aimed to validate an instructional media, method, setting, etc. as having an effect on some learner/teacher variable or outcome. This is probably one of the reasons for these results. Parallel to our findings, in the literature, Driscoll & Dick's, Hsu's, Hew, Kale and Kim's, and Mosood's studies concluded that experimental studies are dominant in the field (Driscoll & Dick, 1999; Hsu, 2005; Hew, Kale & Kim, 2007; Masood, 2004).

The results of the study showed that the second most popular research method was survey. Survey research aimed to reveal “opinions, behaviors, or characteristics of a population of interest” and designing a representative population is essential in survey designs (Slavin, 2007, p. 105). The ease of survey studies is probably the reason for its popularity. Moreover, researchers wanted to analyze the opinions of learners, teachers, parents, administrators about computer use in education and their attitudes to some variables. As a result, the survey method is a proper method for these research questions.

Finally, case studies were also popular in theses. Case studies provide “evaluation of a single example of a program or setting through extensive data collection” (Slavin, 2007, p. 150). These studies enable researchers to investigate a phenomenon in a special case deeply, and these studies do not worry about the generalizability of results. With these studies IT researchers can study the effects of an instructional technique, method or an instructional program in a case. Hence, the ease of establishing the subject group, and lack of any need to generalize may be reasons for its popularity.

5.4. Sampling

This study revealed that convenient and purposive sampling methods were the most preferred sampling methods in theses. Without considering the representativeness of the population, researchers design their sample according to their simplicity to access the subjects. This result probably occurred because of the difficulties in reaching a representative sample. Bureaucracy may be the second reason for this result. Obtaining required permissions, and providing necessary ethical conditions for each subject may limit the researcher. Moreover, the existence of a time limit is probably one of the other reasons. Especially in MS theses, researchers have very limited time to complete their studies and instead of a

representative sample, working with a convenient or purposive one may allow researchers complete their study.

Results also showed that simple random sampling was another popular sampling method. However, it should be kept in mind that the experimental studies in which researchers first chose the school or class according to its convenience and then assigned the subjects randomly to treatment or control groups were also categorized as random sampling method in this study. This indicates that pure random sampling method is used rarely. The popularity of this method is related to the popularity of the experimental method in the studies. It is obvious that when an experimental design is established, sampling should be random. Hence, this sampling method became popular.

Additionally, in most of the theses researchers worked with 31 – 100 samples in theses. The reasons for this result may be limited time, official procedures, and ethical procedures.

Finally, the similar research trend studies were not providing information about the trends in sampling in the studies. As a result, comparison with other studies is not possible in this result.

5.5. Data collection methods

Data collection methods are very important to reach proper data for research questions. According to this study, questionnaires and achievement/aptitude tests were the most frequently used data collection methods in MS theses and PhD. theses. The first reason for this is that survey was one of the most popular research methods in theses, and questionnaires are "widely used and useful instruments for collecting survey information" (Cohen, Marrion & Marrison, 2000, p. 245). Moreover, questionnaires were also used in studies to provide more information about students.

The second reason is probably the nature of the questionnaires. They can be applied even though researchers are not present at the time of application and they are easy to analyze (Cohen, Marrion & Marrison, 2000). Additionally, achievement/aptitude tests were the other popular data collection type because of the dominance of experimental research in the field. The researchers who had used experimental methods in their study applied achievement or aptitude tests to provide evidence about the effects of their treatment on learning. Hence, this data collection method became as popular as the research methods.

Interview schedule was the other popular data gathering method in the studies. This is probably because this data gathering method is primarily used in qualitative studies and also because it is preferred when a deeper investigation is needed. Interviews aimed to collect information about interviewee's "own behavior or that of others; attitudes; norms; and values" (Bryman, 2008, p.192). In the studies that focus on small groups, interviews provide more information about the subjects because in interview not only can the researcher collect information about the subject but s/he can also check that the subject understands the question as the researcher designed and that s/he provides the exact answers. On the other hand, in questionnaires sometimes participants do not understand the question, provide incorrect answers or do not answer the items. The popularity of this data collection instrument may be because of these features of interviews.

Similar to this study, Hew, Kale and Kim also found out that questionnaires were the most popular research method in 3 important journals' articles (Hew, Kale & Kim, 2007), and in the same way, Şimşek et al.'s results showed that questionnaires were the most popular instrument in PhD. theses in IT in Turkey (2007).

5.6. Research Settings

The settings in which the studies were conducted were also analyzed in this study. The results indicated that higher education was the most popular setting used in studies. This is probably because of ease of access to this setting. The researchers of the theses were university students and they were thus also a part of this setting. As a result, conducting a study in their own environment would be more convenient for them. Another reason may be the participant's developmental level. In higher education participants may easily adapt to the research area and answer the questionnaire, interview, or other test more properly. Furthermore, in some studies the application of the analyzed media, method or design requires a special learning environment. In these cases the researcher needs to establish a new learning setting and generally it is not in parallel with the curriculum. Hence, researchers prefer to apply their research design to higher education in which they can more easily establish the required setting.

According to the results of this study, the second part of primary education (levels 6 – 8) held second place in the popularity ranking. The reason for this result may be the target area of the IT departments in Turkey. Although IT studies are not limited to a grade level, in Turkey IT departments have focused on primary education. Hence, the popularity of this setting would be the result of this attitude.

The results showed that there were almost no studies set in early child hood education. Although using IT is important at that level, and conducting research about IT applications at that level is easy because of their flexible curriculum, working with little children and analyzing the data gathered from this level may be very difficult. Hence, it was not preferred as a study setting.

In the literature, there were not many studies researching trends in research settings. One of the studies that analyzed the research setting trends was Hew, Kale and Kim's study and they, similarly, concluded that higher education and K-12

settings were the most preferred research setting in articles published in three well known IT journals (Hew, Kale & Kim, 2007).

5.7. Conclusion

The trends about a field provide information about the current status of the field. Instructional technology is continuously developing. Moreover, it interacts with other fields such as psychology, computer science, and so on. These features of the field provide a wide spectrum for research topics. The trends of the studies carried out in the field provide answers about the current status of the field and research styles of the researchers.

In this study, the main goal was to unfold the research trends in IT in Turkey. To reach this goal, this study tried to find answers for six sub research questions. These asked about, first, the characteristics of MS theses and PhD. theses analyzed, and according to the results it was found that there is a smaller number of theses in the IT field and there is small number of graduate programs about the IT field in Turkey when we compare it with the USA. Moreover, the Middle East Technical University is the university that has produced most of the published studies. It is also understood that 2006 was the most productive year in theses publication. Second, most of the studies focused on the use of media in education and media comparison. Learner variables were also a popular trend in those studies. Third, studies dominantly used experimental, survey and case study methods in their research design. Fourth, researchers in general established their samples according to convenience, purpose of their study and randomly. Fifth, in parallel to research methods questionnaires, achievement/aptitude tests and interviews were the most preferred data collection methods. Finally, higher education, primary education and high school were the most preferred research settings.

This research revealed that in our IT studies, there is a trend in topics, research method, sampling, instruments and setting and in some cases these trends are parallel to those of other countries' trends.

5.8. Implications for Further Research

This study showed that in Turkey some research topics were investigated many times and there is a need to study other topics to enrich the scientific knowledge about these topics and their applications in Turkey. For example, there were few studies about instructional process elements, instructional process variables, production variables, learning environment, evaluation, performance technology, profession, ethics and culture. Developing studies about these areas can illuminate the condition in Turkey about these topics and provide information for international literature.

Obviously, experimental studies can be helpful to measure the effects of independent variables on dependent variables. However, studies that are controlling more variables and providing more precise results can be designed. Moreover, by using qualitative research methodologies researchers may contribute to the theoretical framework of the field.

In addition to this, sampling is very important in generalization of the study results, and instead of the current trend working with more representative samples can increase our research results' validity. Moreover, using different kinds of data collection method can enrich our study results and provide extra dimensions to our analyses.

Finally, working with the current curriculum can provide useful data for practitioners and eliminate criticisms about the quality and benefits of academic studies in real life situations.

5.9. Suggestions for Further Research

In this study, the researcher did not clarify the exact number of theses published in IT in Turkey. In the previous research, the number of theses may be unfolded by face to face interactions between the institutes that have graduate programs in IT. Also, using more coders in data analyzing process can provide more accurate results in further research.

In this research, the researcher also wanted to analyze the significance level of the theses and consistency of the results of the studies with previous theses or studies. However, the limited time of the thesis study was a barrier. With the analysis of these features, researchers may enlighten the current research quality of IT studies in Turkey. However, to analyze the significance level of studies was not applicable because most of the studies did not state the significance level of their findings.

Finally, there were also published articles, books and proceedings in IT studies. If a future study also analyzes trends in these academic studies, a better picture of the research trends in Turkey can be drawn.

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APPENDIX A

LIST of MS THESES and PhD. THESES

	Author	University	Year	Thesis type
1	Ertuğrul Ergün	Anadolu Üniversitesi	2002	MS thesis
2	Zekiye Doğan	Anadolu Üniversitesi	2004	MS thesis
3	Özcan Özgür Dursun	Anadolu Üniversitesi	2004	MS thesis
4	Duygu Çokgüler(Terzi)	Anadolu Üniversitesi	2004	MS thesis
5	Tayfun Tanyeri	Anadolu Üniversitesi	2004	MS thesis
6	Esra Eke Demirci	Anadolu Üniversitesi	2005	MS thesis
7	Esin Ekenel	Anadolu Üniversitesi	2005	MS thesis
8	Abdullah Kuzu	Anadolu Üniversitesi	2005	Dissertation
9	Işıl Kabakçı	Anadolu Üniversitesi	2005	Dissertation
10	Betül Sabancı	Anadolu Üniversitesi	2005	MS thesis
11	Çiğdem Atman	Anadolu Üniversitesi	2005	MS thesis
12	Şemseddin Gündüz	Anadolu Üniversitesi	2005	Dissertation
13	Adile Aşkım Gülümbay	Anadolu Üniversitesi	2005	Dissertation
14	Turgay Alakurt	Anadolu Üniversitesi	2006	MS thesis
15	Hakkı Bağcı	Anadolu Üniversitesi	2007	MS thesis
16	Faruk Dirisağlık	Anadolu Üniversitesi	2007	MS thesis
17	Mustafa Eker	Anadolu Üniversitesi	2002	MS thesis
18	Ömer Kaçmaz	Anadolu Üniversitesi	2002	MS thesis
19	Eyüp ırgat	Anadolu Üniversitesi	2002	MS thesis
20	Yıldızay Bedel	Ankara Üniversitesi	2006	MS thesis
21	Özden Demirkan	Ankara Üniversitesi	2006	Dissertation
22	Mehmet Kurt	Ankara Üniversitesi	2006	Dissertation
23	Eylem Çelik	Ankara Üniversitesi	2006	MS thesis
24	Fikret Arslan	Ankara Üniversitesi	2006	MS thesis
25	H. Mine Veznedaroğlu	Ankara Üniversitesi	2005	MS thesis
26	Şirin Karadeniz	Ankara Üniversitesi	2005	Dissertation
27	Ebru Kılıç	Ankara Üniversitesi	2006	Dissertation
28	Gülin Onat Bayır	Ankara Üniversitesi	2005	Dissertation
29	Muhammet Günay	Ankara Üniversitesi	2002	MS thesis
30	Abdülkadir Anaç	Ankara Üniversitesi	2001	MS thesis
31	Ayşe Somuncu	Ankara Üniversitesi	2000	MS thesis
32	Ülkey Tabar Başıbüyük	Ankara Üniversitesi	2002	MS thesis
33	Ferda Akgül	Ankara Üniversitesi	2002	Dissertation
34	Cem Birol	Ankara Üniversitesi	2002	Dissertation
35	Hüseyin Uzunboylu	Ankara Üniversitesi	2002	Dissertation
36	Olcay Burçin Fidan	Ankara Üniversitesi	2003	MS thesis

LIST of MS THESES and PhD. THESES (Continued)

37	Cemalettin Maden	Ankara Üniversitesi	2005	Dissertation
38	Ayşe Haşimoğulları	Ankara Üniversitesi	2002	MS thesis
39	Hüseyin Katırcı	Ankara Üniversitesi	2002	MS thesis
40	Özcan Erkan Akgün	Ankara Üniversitesi	2002	MS thesis
41	Mehmet Ali Tüy	Ankara Üniversitesi	2002	MS thesis
42	Gülgin Bangir Alpan	Ankara Üniversitesi	2004	Dissertation
43	Abidin Yüzgeç	Ankara Üniversitesi	2003	MS thesis
44	Alaattin Parlakkılıç	Ankara Üniversitesi	2003	MS thesis
45	Mustafa Semerci	Ankara Üniversitesi	2004	MS thesis
46	Özlem Parlak	Ankara Üniversitesi	2004	MS thesis
47	Ebru Kılıç	Ankara Üniversitesi	2002	MS thesis
48	Alaattin Parlakkılıç	Ankara Üniversitesi	2007	Dissertation
49	Can Güldüren	Ankara Üniversitesi	2004	MS thesis
50	Özcan Erkan Akgün	Ankara Üniversitesi	2005	Dissertation
51	Levent Çelik	Ankara Üniversitesi	2004	Dissertation
52	Seçil Kaya	Ankara Üniversitesi	2005	MS thesis
53	Çiğdem Özgen	Ankara Üniversitesi	2005	MS thesis
54	Gümrah Ballı Şahin	Ankara Üniversitesi	2005	MS thesis
55	Ömür Uysal	Ankara Üniversitesi	2005	MS thesis
56	Elif Ersoy	Ankara Üniversitesi	2005	MS thesis
57	İkbal Karakoç	Ankara Üniversitesi	2005	MS thesis
58	Sultan Ördekçi	Ankara Üniversitesi	2005	MS thesis
59	Nilüfer Erol	Ankara Üniversitesi	2005	MS thesis
60	Gülcan Büdüş	Ankara Üniversitesi	2005	MS thesis
61	Erkan Çalışkan	Ankara Üniversitesi	2005	MS thesis
62	Necmi Eşgi	Ankara Üniversitesi	2005	Dissertation
63	Serçin Karataş	Ankara Üniversitesi	2005	Dissertation
64	Murat Çatmalı	Balıkesir Üniversitesi	2006	MS thesis
65	Eray Yılmaz	Balıkesir Üniversitesi	2005	MS thesis
66	Ahmet Uyar	Çukurova Üniversitesi	2007	MS thesis
67	Serhat Bahadır Kert	Çukurova Üniversitesi	2004	MS thesis
68	Melkaç Değer Demir	Çukurova Üniversitesi	2004	MS thesis
69	Mine Makaracı	Çukurova Üniversitesi	2004	MS thesis
70	Mesut Özonur	Çukurova Üniversitesi	2004	MS thesis
71	Arife İnci Kurt	Çukurova Üniversitesi	2006	MS thesis
72	Oğuzhan Atam	Çukurova Üniversitesi	2006	MS thesis
73	Adem Avcı	Çukurova Üniversitesi	2006	MS thesis
74	Akın Efendioğlu	Çukurova Üniversitesi	2006	MS thesis
75	Seval Sönmez	Çukurova Üniversitesi	2005	MS thesis
76	Emine Yaşarsoy	Çukurova Üniversitesi	2006	MS thesis
77	Mehmet Can Şahin	Çukurova Üniversitesi	2005	MS thesis
78	Mustafa Yeniad	Çukurova Üniversitesi	2006	MS thesis
79	Berna Şahin	Çukurova Üniversitesi	2006	MS thesis
80	Eyyup Şadi Zorlu	Çukurova Üniversitesi	2006	MS thesis
81	Bora Şen	Çukurova Üniversitesi	2006	MS thesis
82	Hilal Gökçe DEmirci	Çukurova Üniversitesi	2006	MS thesis
83	Sezen Baran	Çukurova Üniversitesi	2005	MS thesis
84	Ayşe Tekdal	Çukurova Üniversitesi	2005	MS thesis

LIST of MS THESES and PhD. THESES (Continued)

85	Emrah Emre Özkeskin	Çukurova Üniversitesi	2007	MS thesis
86	Asuman Yiğit	Çukurova Üniversitesi	2007	MS thesis
87	Aysun Yılmaz Eroldoğan	Çukurova Üniversitesi	2007	MS thesis
88	Nejla Burcu Yıldıran	Çukurova Üniversitesi	2007	MS thesis
89	Bader Güneş	Çukurova Üniversitesi	2007	MS thesis
90	Murat Gökcül	Çukurova Üniversitesi	2007	MS thesis
91	Hüseyin Kesikin	Çukurova Üniversitesi	2007	MS thesis
92	Serkan Dinçer	Çukurova Üniversitesi	2007	MS thesis
93	Alev Ateş	Dokuz Eylül Üniversitesi	2005	MS thesis
94	Emel DİkbaŞ	Dokuz Eylül Üniversitesi	2006	MS thesis
95	Uğur Çelik	Dokuz Eylül Üniversitesi	2006	MS thesis
96	Zehra Kibar	Dokuz Eylül Üniversitesi	2006	MS thesis
97	Derya Öztürk	Dokuz Eylül Üniversitesi	2007	MS thesis
98	Seçil Yolcu	Dokuz Eylül Üniversitesi	2007	MS thesis
99	Yolaman Annagylylov	Gazi Üniversitesi	2006	MS thesis
100	Kemal Yıldız	Gazi Üniversitesi	2004	MS thesis
101	Rıdvan Kağan Ağca	Gazi Üniversitesi	2006	MS thesis
102	Mustafa Kemal Oran	Gazi Üniversitesi	2006	MS thesis
103	Ümmü Çetin	Gazi Üniversitesi	2007	MS thesis
104	Sibel Somyürek	Gazi Üniversitesi	2004	MS thesis
105	Mustafa Yekta	Gazi Üniversitesi	2004	MS thesis
106	Aysun Aydoğmuş	Gazi Üniversitesi	2006	MS thesis
107	Bilal Atasoy	Gazi Üniversitesi	2004	MS thesis
108	Erinç Karataş	Gazi Üniversitesi	2004	MS thesis
109	Gonca (yıldırım) Kayabaş	Gazi Üniversitesi	2007	MS thesis
110	Elif Özhamam	Gazi Üniversitesi	2007	MS thesis
111	Sema Atasever	Gazi Üniversitesi	2007	MS thesis
112	Gülten Güngörmüş	Gazi Üniversitesi	2007	MS thesis
113	Erhan Güneş	Gazi Üniversitesi	2007	MS thesis
114	Serpil Şen	Gazi Üniversitesi	2007	MS thesis
115	Selçuk Özdemir	Gazi Üniversitesi	2005	Dissertation
116	Naciye Ağca	Gazi Üniversitesi	2006	MS thesis
117	Mesut Ünlü	Gazi Üniversitesi	2007	MS thesis
118	Ceren Özdem	Gazi Üniversitesi	2007	MS thesis
119	Sema Çevikoğlu	Gazi Üniversitesi	2006	MS thesis
120	Nazım Deniz Nazlı	Gazi Üniversitesi	2006	MS thesis
121	Arzu Öztürk	Gazi Üniversitesi	2006	MS thesis
122	Ali Döngel	Gazi Üniversitesi	2006	MS thesis
123	Selda Kayak	Gazi Üniversitesi	2005	MS thesis
124	Yaşar Başkaya	Gazi Üniversitesi	2005	MS thesis
125	Mustafa Coşar	Gazi Üniversitesi	2005	MS thesis
126	ErkinYanyalı	Gazi Üniversitesi	2004	MS thesis
127	Zeynep Kılıç	Gazi Üniversitesi	2004	MS thesis
128	Serdar Çiftci	Gazi Üniversitesi	2006	MS thesis
129	Esra Kıdıman Çorapçı	Gazi Üniversitesi	2004	MS thesis
130	Mustafa Açıkgöz	Gazi Üniversitesi	2003	MS thesis
131	Annaoraz Karabagshiew	Gazi Üniversitesi	2003	MS thesis
132	Hasan Ordu	Hacettepe Üniversitesi	2004	MS thesis
133	Meltem Koca	Hacettepe Üniversitesi	2006	MS thesis

LIST of MS THESES and PhD. THESES (Continued)

134	Kerem Gültekin	Hacettepe Üniversitesi	2006	MS thesis
135	Şule Özbişirici	Hacettepe Üniversitesi	2006	MS thesis
136	Burcu Bütün Kuş	Hacettepe Üniversitesi	2005	MS thesis
137	Serpil Tuti	Hacettepe Üniversitesi	2005	MS thesis
138	Tülin Haşlaman	Hacettepe Üniversitesi	2005	MS thesis
139	Gonca Kızılkaya	Hacettepe Üniversitesi	2005	MS thesis
140	Şahin Gökçearslan	Hacettepe Üniversitesi	2005	MS thesis
141	Murat Şeyhoğlu	Hacettepe Üniversitesi	2005	MS thesis
142	Ayşe Kula	Hacettepe Üniversitesi	2005	MS thesis
143	Özkan Mısırlı	Hacettepe Üniversitesi	2007	MS thesis
144	Funda Kurt Vural	Hacettepe Üniversitesi	2007	MS thesis
145	Benlihan Uğur	Hacettepe Üniversitesi	2007	MS thesis
146	Alper Bayazıt	Hacettepe Üniversitesi	2007	MS thesis
147	Selay Arkün	Hacettepe Üniversitesi	2007	MS thesis
148	Ezgi Yağız	Hacettepe Üniversitesi	2007	MS thesis
149	Ayşe Kula	Hacettepe Üniversitesi	2005	MS thesis
150	Oktay Dönmez	Hacettepe Üniversitesi	2005	MS thesis
151	Yasemin Demiraslan	Hacettepe Üniversitesi	2005	MS thesis
152	Cengiz Güngör	Hacettepe Üniversitesi	2004	MS thesis
153	Filiz Kuşkaya Mumcu	Hacettepe Üniversitesi	2004	MS thesis
154	Deniz Gökçe	Hacettepe Üniversitesi	2004	MS thesis
155	Meryem Yılmaz	Hacettepe Üniversitesi	2005	MS thesis
156	Muhammed Berigel	Karadeniz Teknik Üniversitesi	2007	MS thesis
157	Sakine Şensoy	Karadeniz Teknik Üniversitesi	2005	MS thesis
158	Zeynep Haliloğlu (Tatlı)	Karadeniz Teknik Üniversitesi	2005	MS thesis
159	Mustafa Serkan Abdüsselam	Karadeniz Teknik Üniversitesi	2006	MS thesis
160	Zeynep Çelik	Karadeniz Teknik Üniversitesi	2006	MS thesis
161	Sema Nur Demirkan	Karadeniz Teknik Üniversitesi	2006	MS thesis
162	Murat Öztok	Marmara Üniversitesi	2007	MS thesis
163	Hasan Özgür	Marmara Üniversitesi	2005	MS thesis
164	Barış Erdoğan	Marmara Üniversitesi	2005	MS thesis
165	Ceyda İmamoğlu	Marmara Üniversitesi	2007	MS thesis
166	Reha Bıyık	Marmara Üniversitesi	2006	MS thesis
167	Celale Esra Algan	Marmara Üniversitesi	2006	MS thesis
168	Hatice Müge Satar	Marmara Üniversitesi	2006	MS thesis
169	Özkan Aslan	Marmara Üniversitesi	2006	MS thesis
170	Fatma Betül Erdem	Orta Doğu Teknik Üniversitesi	2001	MS thesis
171	Gülfidan Can	Orta Doğu Teknik Üniversitesi	2003	MS thesis
172	Refik Şanlı	Orta Doğu Teknik Üniversitesi	2003	MS thesis
173	Burcu Örentürk	Orta Doğu Teknik Üniversitesi	2003	MS thesis
174	Halil Ersoy	Orta Doğu Teknik Üniversitesi	2003	MS thesis
175	Fatma Kanar	Orta Doğu Teknik Üniversitesi	2003	MS thesis
176	Ercan Top	Orta Doğu Teknik Üniversitesi	2003	MS thesis
177	Erden Oytun	Orta Doğu Teknik Üniversitesi	2003	MS thesis
178	Saniye Tuğba Bulu	Orta Doğu Teknik Üniversitesi	2003	MS thesis
179	Levent Durdu	Orta Doğu Teknik Üniversitesi	2003	MS thesis
180	Yüksel Göktaş	Orta Doğu Teknik Üniversitesi	2003	MS thesis
181	Devrim Özdemir	Orta Doğu Teknik Üniversitesi	2004	MS thesis
182	Göknur Kaplan Akıllı	Orta Doğu Teknik Üniversitesi	2004	MS thesis

LIST of MS THESES and PhD. THESES (Continued)

183	Hamdi Kavaklı	Orta Doğu Teknik Üniversitesi	2004	MS thesis
184	Tarkan Gürbüz	Orta Doğu Teknik Üniversitesi	2004	Dissertation
185	Ömer Delialioğlu	Orta Doğu Teknik Üniversitesi	2004	Dissertation
186	Neşe Zayim	Orta Doğu Teknik Üniversitesi	2004	Dissertation
187	Serap Öztürk	Orta Doğu Teknik Üniversitesi	2005	MS thesis
188	Bilgin Avenoğlu	Orta Doğu Teknik Üniversitesi	2005	MS thesis
189	Esra Yecan	Orta Doğu Teknik Üniversitesi	2005	MS thesis
190	Erhan Şengel	Orta Doğu Teknik Üniversitesi	2005	Dissertation
191	Müge Nişancı	Orta Doğu Teknik Üniversitesi	2005	Dissertation
192	Serkan Alkan	Orta Doğu Teknik Üniversitesi	2006	MS thesis
193	Yüksel Göktaş	Orta Doğu Teknik Üniversitesi	2006	Dissertation
194	İlknur Deniz Çetin	Orta Doğu Teknik Üniversitesi	2006	MS thesis
195	Bahar Baran	Orta Doğu Teknik Üniversitesi	2007	Dissertation
196	Melek Güler	Orta Doğu Teknik Üniversitesi	2007	MS thesis
197	Erman Yükseltürk	Orta Doğu Teknik Üniversitesi	2007	Dissertation
198	Memet Üçgül	Orta Doğu Teknik Üniversitesi	2006	MS thesis
199	Filiz Köse	Orta Doğu Teknik Üniversitesi	2007	MS thesis
200	Meltem Huri Baturay	Orta Doğu Teknik Üniversitesi	2007	Dissertation
201	Arzu Hancı	Orta Doğu Teknik Üniversitesi	2007	MS thesis
202	Ali Yılmaz	Orta Doğu Teknik Üniversitesi	2007	MS thesis
203	Muhammed Turşak	Orta Doğu Teknik Üniversitesi	2007	MS thesis
204	Murat Saran	Orta Doğu Teknik Üniversitesi	2003	MS thesis
205	Umut Türkarslan	Orta Doğu Teknik Üniversitesi	2002	MS thesis
206	Fethi Ahmet İnan	Orta Doğu Teknik Üniversitesi	2003	MS thesis
207	Ali Çınar	Orta Doğu Teknik Üniversitesi	2002	MS thesis
208	Selçuk Özdemir	Orta Doğu Teknik Üniversitesi	2001	MS thesis
209	Erol Özçelik	Orta Doğu Teknik Üniversitesi	2002	MS thesis
210	Birikim Özgür	Orta Doğu Teknik Üniversitesi	2002	MS thesis
211	Ayça Çelik	Orta Doğu Teknik Üniversitesi	2002	MS thesis
212	Serdar Engin Koç	Orta Doğu Teknik Üniversitesi	2002	MS thesis
213	Levent Bayram	Orta Doğu Teknik Üniversitesi	2002	MS thesis
214	Ebru Selvikavak	Orta Doğu Teknik Üniversitesi	2002	MS thesis
215	Ziya Karakaya	Orta Doğu Teknik Üniversitesi	2001	MS thesis
216	Yasemin Yiğit	Orta Doğu Teknik Üniversitesi	1999	MS thesis
217	Tarkan Gürbüz	Orta Doğu Teknik Üniversitesi	1999	MS thesis
218	Nergiz Erçil Çağıltay	Orta Doğu Teknik Üniversitesi	2003	Dissertation
219	Hamide Yıldırım	Orta Doğu Teknik Üniversitesi	2002	MS thesis
220	Zahide Yıldırım	Orta Doğu Teknik Üniversitesi	1999	Dissertation
221	Yasemin Gülbahar	Orta Doğu Teknik Üniversitesi	2002	Dissertation
222	Selin Baykal	Orta Doğu Teknik Üniversitesi	2003	MS thesis
223	Can Kültür	Orta Doğu Teknik Üniversitesi	2001	MS thesis
224	Ebru Özkan	Orta Doğu Teknik Üniversitesi	2001	MS thesis
225	Pınar Onay	Orta Doğu Teknik Üniversitesi	2003	MS thesis
226	Erman Yükseltürk	Orta Doğu Teknik Üniversitesi	2003	MS thesis
227	Fatma Cemile Hoşver	Orta Doğu Teknik Üniversitesi	2002	MS thesis
228	Gamze Özoğul	Orta Doğu Teknik Üniversitesi	2002	MS thesis
229	Mithat Takunyacı	Sakarya Üniversitesi	2007	MS thesis
230	Aynur Balkanlı	Sakarya Üniversitesi	2003	MS thesis
231	Mehmet Barış Horzum	Sakarya Üniversitesi	2003	MS thesis

LIST of MS THESES and PhD. THESES (Continued)

232	Osman Yılmaz	Sakarya Üniversitesi	2004	MS thesis
233	Ergün Ece	Sakarya Üniversitesi	2004	MS thesis
234	Metin Yılmaz	Sakarya Üniversitesi	2004	MS thesis
235	Zekeriya Karadağ	Sakarya Üniversitesi	2004	MS thesis
236	Mübin Kıyıcı	Sakarya Üniversitesi	2003	MS thesis
237	Orhan Kocaman	Sakarya Üniversitesi	2005	MS thesis
238	İlknur Ayhan	Sakarya Üniversitesi	2005	MS thesis
239	Kerem Tolga Saatcioğlu	Sakarya Üniversitesi	2005	MS thesis
240	Suat Kol	Sakarya Üniversitesi	2006	MS thesis
241	Cem Çerkezoğlu	Sakarya Üniversitesi	2006	MS thesis
242	Özlem Akça	Sakarya Üniversitesi	2006	MS thesis
243	Murat Büyükbayraktar	Sakarya Üniversitesi	2006	MS thesis
244	M. Levent Hücüptan	Sakarya Üniversitesi	2006	MS thesis
245	Hakan Sarı	Sakarya Üniversitesi	2006	MS thesis
246	Evrim Teke Bodur	Sakarya Üniversitesi	2006	MS thesis
247	Rüstem Ertürk	Sakarya Üniversitesi	2007	MS thesis

APPENDIX B

CODE BOOK

This code book prepared to guide the content analysis study about the dissertations and thesis. There are seven main parts in this code book and each of them designed to gather information about the features of the documents. The operational definitions of the categories provided in this code book and while coding the documents use these definitions.

1) Demographic features of the thesis and dissertations

a. Name of the author
b. Name of the university
c. Publication year
d. Advisor name

2) Thesis Type (code the number of the item to specify thesis type)

0. MS
1. Dissertation

3) Research Type (code the number of the item to specify research type)

0. Qualitative
1. Quantitative
2. Mixed methods
3. Literature Review
4. Other

4) Research Method

Table.1 Research Methods and Operational Definitions

Method	Operational Definition
0. Experimental	One or more variables or treatment are manipulated and the effect of dependent variable/s is/are measured.
1. Quasi-experimental	Attempts to determine causes, consequences, or differences that already exist in groups of individuals. There is no random assignment to participate the group.
2. Correlational	Attempts to determine the extent and the direction of the relationship between two or more variables.
3. Case Study	Typically consists of a description of an entity(individual, groups, organization, or events) and the entity' s actions. Explanations of why the entity acts as it does is often disclosed.
4. Content Analysis	The systematic examinations of documents to investigate specific topics or themes.

Table 1. Continued

5. Evaluation Studies	Attempts to assess the extent of implementation and impact of a specific program or project. Usually emphasize needs assessment and/or formative evaluation methods designed to provide ongoing feedback to program or project managers. Tends to focus on specific contents of particular grants or projects with no attempt to generalize beyond the cases at hand.
6. Action Research	"A study conducted by one or more individuals or groups for the purpose of solving a problem or obtaining information in order to inform local practice." (Fraenkel & Wallen, 2005, p. 567).
7. Surveys	A study investigating the incidence of distribution of to a questionnaire or exploring relations among variables.
8. Ethnographic	A form of qualitative research that aims for a holistic picture of a cultural group; it uses in-depth interviewing and prolonged participant observation.
9. Naturalistic observation	A form of observational research in which the observer records information about naturally occurring behavior while attempting not to intervene or affect the behavior in any way.
10. Meta- analysis	A secondary analysis of results related to a specific topic (Sarantakos, 2005, p.296).
11. Focus Interview	Semi – structured interviews conducted to explore a specific object or certain point of the research topic in depth (Sarantakos, 2005, p.427)
12. other	

5) Research Sample

a) Sample size

0. 0-10 people
1. 11-30 people
2. 31-100 people
3. 101-300 people
4. 301-1000 people
5. More then 1000
6. Other

b) Sample type

0. Simple random sampling
1. Stratified random sampling
2. Cluster random sampling
3. Two-stage random sampling
4. Systematic sampling
5. Convenience sampling
6. Purposive sampling
7. All of the population
8. other

6) Research setting

0. Early childhood education
1. Primary school(1-5)
2. Primary school (6-8)
3. High school
4. Technical vocational school of higher education
5. Higher Education
6. Graduate level
7. In-service training
8. Special groups
9. Training (corporate, etc.)
10. Other

7) Instruments

a) Researcher completes

0. Rating scales

1. Interview schedules

2. Observation forms

3. Tally sheets
4. Flowcharts
5. Performance checklists
6. Anecdotal records
7. Time and motion logs

b) Subject completes

8. Questionnaires
9. Self-checklist
10. Attitude scales
11. Personality or character inventories
12. Achievement/aptitude tests
13. Performance tests
14. Projective devices
15. Sociometric devices
16. other

8) Research Topic clusters

0. Instructional/educational technology as a whole
    a. Research

1. Other fields or disciplines

2. Instructional process variables
    a. Learner control
    b. Interactivity
    c. Program control
    d. Feedback
    e. Other

3. Instructional process elements
    a. Orienting
        - instructional objectives
        - advance organizer
    b. Information retrieval
    c. Other

4. Teaching/learning perspectives
    a. Behaviorist
        - Focuses on changes in observable behavior without speculating on mental occurrences.
    b. Cognitivist
        - Focuses on cognitive changes involving formation of mental schemata
            i. Schema theory
    c. Constructivist
    -focuses on learner construction of meanings based on authentic experiences
    d. Situated cognition
    -regards learning as situated in context in which it is taught
        i. Anchored instruction
    e. Generative learning
    -focuses on strategies for the active integration of new ideas with the learner's existing schemata
    f. ARCS model
    -John Keller's formula for the four major categories of motivational strategies: Attention, Relevance, Confidence, and Satisfaction
    g. Chaos Theory
    -a theory about finding the underlying order in apparently random data, particularly sensitive dependence on initial conditions
    h. Other

5. Instructional methods
    a. Cooperative learning/Collaboration
    -involves two or more learners working together on a task without competing with each other
    b. Metacognitive activity
    c. Individualized instruction
    d. Problem solving
    e. Simulation (role-play)
    f. Other

6. Delivery Systems Media Format
    a. Distance education
        i. Audio graphic
        ii. TV & Audio Feedback
        iii. Two-way TV
        iv. Internet or Web-based
    b. Classroom media
        i. AV Media (films, slides, overhead transparencies, etc.)
        ii. Student Response System
    c. Computer-based instruction
        i. Programmed instruction (drill & practice; read, response, feedback)
        ii. Hypermedia
        iii. Multimedia
        iv. Intelligent tutoring system
    d. Written Material

7. Instructional development (ID)
   - process of analyzing the needs, content to mastered, establishing educational goals, designing materials to reach objectives, trying out and revising the material according to learner achievement.
    a. ID Models
    b. Elements/ID phases
        i. Analysis
        ii. Design
        iii. Development
        iv. Implementation (user acceptance, adoption, perception)
        v. Evaluation

8. Production Variables
    a. Program attributes (stating objectives, introduction, music, etc.)
    b. 3-dimensional
    c. Message design (screen/visual)
       e.g. pattern, color, annoted illustration/callouts, arrangement
    d. Semantic complexity
    e. Cues
    f. Animation
    g. Link density

9. Learner Outcomes
    a. Learner achievement
        i. Fact
        ii. Concept
        iii. Principle
        iv. Procedure
        v. Generic thinking skills
        vi. Attitudes
        vii. Interpersonal skills
        viii. Motor skills
    b. Preferences
    c. Discipline specific (mathematics: science, language, etc.)
    d. Other

10. Learner Variables
    a. Motivation
    b. Age/grade/developmental level
    c. Gender
    d. Prior knowledge
    e. Mental storage & retrieval
    f. Other

11. Learning Environment

12. Evaluation
    a. Usability
    b. Formative evaluation
    c. Summative evaluation
    d. Adaptive Testing
        i. Item response

13. Performance technology (PT) & performance support systems
    a. PT models
    b. Electronic Performance Support System (EPSS)
        i. Job aid
        ii. Meeting system/conferencing

14. Organizational change
    a. Systemic change
    b. School reform/restructuring
    c. Non-school reform/restructuring

15. The Profession
    a. Ethics
    b. Skills/competencies
    c. Certification
    d. Standards
    e. Employment

16. Culture
    a. Organizational
    b. National (ethic)

17. Teacher Variable
    a. Support
    b. Cognitive styles
    c. Attitude
    d. Instructional practice

18. Media comparison research