



## A Thematic Review of Preservice Teacher Education Research in Turkey and Reflections of Teacher Education Policies \*

Banu Yücel-Toy <sup>1</sup>

### Abstract

Purpose of this study is to examine trends in preservice teacher education research in Turkey in terms of topic, purpose and method through thematic content analysis and to evaluate the trends in terms of teacher education policies. To this end, 479 articles related to preservice teacher education and published in three rooted journals since 1970 were examined. According to the results, nine themes were extracted and the most widely studied topics were identified as: subject and pedagogical knowledge and attitudes of teacher candidates, evaluation of teacher education program or its components, effects of instructional methods/approaches, information and communication technologies in teacher education and teacher education institutions. Quantitative paradigm is still dominant but an increase in qualitative and mixed studies has been observed since 2000. In terms of policies, problems expressed in the studies prior to 1997 were the issues leading to the 1997 restructuring reform. From this point of view, it can be inferred that these studies might have fed the 1997 reform. On the other hand, after 1997, the studies examined the results and effects of the 1997 restructuring and the 2006 revision reforms; for this reason, it is implied that the policies might have given direction to the studies conducted in this period of time.

### Keywords

Preservice teacher education  
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### Introduction

Throughout Turkey's long education history, how, where, by whom, and in what ways teachers of all grades should be educated have been continuously discussed and as a result of these discussions, there have been efforts to transform or restructure teacher education. Especially, it is indicated that competing debates such as subject versus pedagogical knowledge, theory versus practice, standardization versus diversity in teacher education curriculum, and technician teacher versus professionalization have given direction to restructuring of teacher education in Turkey (Yıldırım, 2011). Teacher education is a complex and multidimensional issue because it is shaped by these debates, it is an applied field affected by conditions of teaching practice settings and it affects education system at all stages by teachers who trained in any teacher education program. For these reasons, a number of studies, projects and reports on teacher education problems, discussions, debates, policies, reforms,

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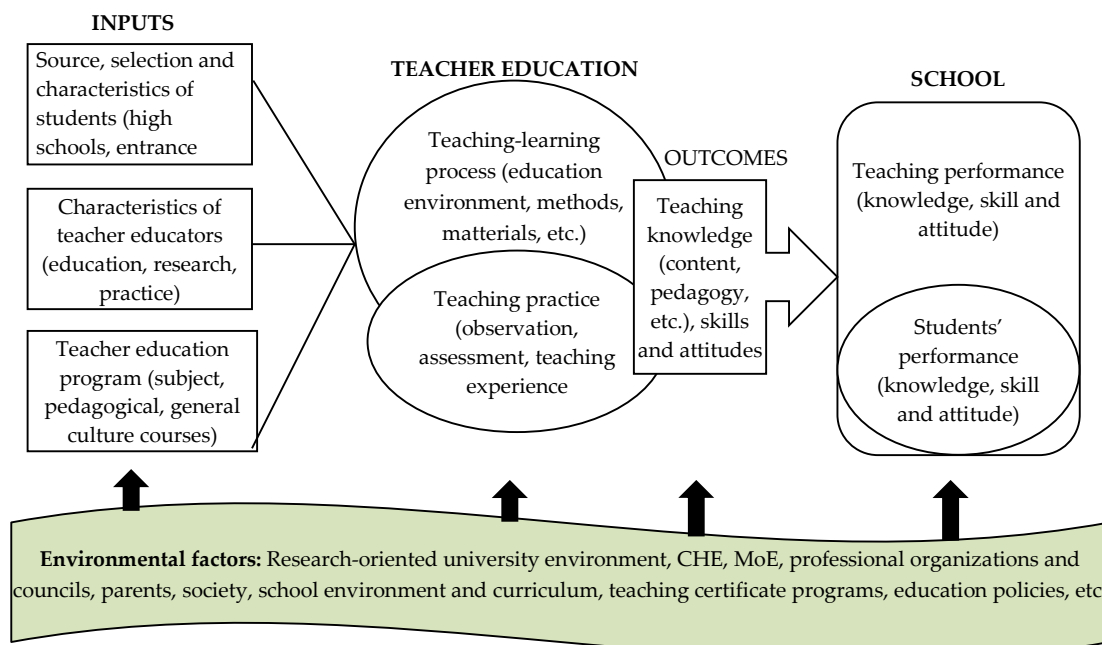
<sup>1</sup> Yıldız Technical University, Faculty of Education, Department of Educational Sciences, Turkey, [byuceltoy@gmail.com](mailto:byuceltoy@gmail.com)

innovations and transformations have been carried out by academicians, educators and politicians for years. In Turkey, these studies are encountered in academic journals on education, in theses and dissertations, and in reports and projects carried out by the support of or collaboration with the Ministry of Education (MoE) and Council of Higher Education (CHE).

In order to make healthy decisions and to determine effective policies in regard to increasing the quality of all aspects of teacher education system, it is important to take these studies into account and to analyze and evaluate them in detail. In world, detailed reviews of research on teacher education have been mostly conducted in US. Cochran-Smith and Fries (2008) investigated empirical studies about teacher education and determined four time periods based on how the problem of teacher education was handled: 1920-1950, teacher education as a curriculum problem; 1960-1980, teacher education as a training problem; 1980-2000 teacher education as a learning problem; and 1990s, teacher education as a policy problem. Zeichner (1999) evaluated teacher education studies in five categories as survey research, case studies of teacher education programs, conceptual and historical research, studies of learning to teach and examinations of the nature and impact of teacher education activities. Moreover, Borke, Liston and Whitcomb (2007) determined four genres of teacher education research as “effects of teacher education” research, interpretive research, practitioner research and design research. In addition to these, there are reviews of studies in teacher education in Europe and in countries like New Zealand (Arreman, 2005; Cameron, & Baker, 2004; Krainer, & Goffree, 1999; Linné, & Tarrou, 2001). In their study about teacher education in Europe, Linné and Tarrou (2001) investigated papers published in 1993 and 1996 both in European Journal of Teacher Education and in the proceedings of conferences arranged by the Association of European Teacher Training in terms of content type, purpose, focus, authors’ perspective and theory. Generally, in these publications, similarities and differences of teacher education programs across European countries, societal and cultural factors, problems caused by theory-practice dilemma and education policies were studied. Moreover, science and mathematics education and pedagogical problems were also frequently investigated. In addition to these, it was found that there were studies about the relation of teacher education institutions with schools, practices and local society and teacher candidates’ individual learning in teacher education and practices in schools. Another reference in European context is the book entitled “*On research in teacher education: From a study of teaching practices to issues in teacher education*” edited by Krainer and Goffree (1999). In this book, studies on mathematics teacher education research in Europe are compiled. In a country base, Arreman (2005) conducted a study related to post-war teacher education research in Sweden. In this study, teacher education research was reviewed briefly and the place of teacher education in higher education and the relation of policies with written documents and research were emphasized. As a result of document analysis and interviews, it was pointed out that there is a need for research-based teacher education but there are resistance to teacher education in higher education and research and obstacles by both teacher educators and higher education institutions. Cameron and Baker (2004) review teacher education research in New Zealand between 1993-2004 years. They categorized studies into six basic themes. These themes are teacher candidates (selection to program, demographic characteristics, prior knowledge and beliefs), teacher educators, impact of innovations and courses, associate teachers and practicum, evaluation of teacher education programs (internal and external evaluation) and beginning teachers.

Considering Turkey, studies have been conducting in relation to research on educational sciences, curriculum and instruction, curriculum development and educational administration (Aypay, et al., 2010; Göktaş, Hasançebi, et al., 2012; Hazır-Bıkmaz, Aksoy, Tatar, & Atak-Altınyüzük, 2013; Karadağ, 2010; Selçuk, Palancı-Kandemir, & Dündar, 2014; Yüksel, 2012), research on subject teaching such as mathematics, biology, chemistry, environment etc. (Baki, Güven, Karataş, Akkan, & Çakıroğlu, 2011; Çiltaş, Güler, & Sözbilir, 2012; Erdoğan, Marcinkowski, & Ok, 2009; Göktaş, Küçük, et al., 2012; Şimşek et al., 2008, Şimşek et al. 2009), research on primary education curricula developed after 2005 (Erdoğan, Kayır, Kaplan, Aşık Ünal, Akbunar, 2015) and research on instructional models such as multiple intelligence (Saban, 2009) or research on adult education (Yıldız, 2004). However, there is a lack of studies about evaluation of teacher education research (Yıldırım, 2011, 2013). In Yıldırım’s (2013)

study in which valuable information and synthesis about research on preservice teacher education in Turkey are shared; trends, problems and priority areas are revealed and studies conducted in last decade are categorized into five groups. The first group covers descriptive studies aiming to determine teacher candidates' attitudes and perspectives toward teaching profession through questionnaires or to reveal changes of their attitudes and perspectives over time. In the second group, there are studies investigating teaching competencies of teacher candidates by means of inventories based on their self-report. Third group consists of studies evaluating teacher candidates', mentor teachers' and teacher educators' perceptions regarding teacher candidates' teaching practices in schools. Forth group contains studies evaluating teacher education program or its components from teacher candidates' and teacher educators' points of view. Finally, in the last group, there are studies investigating effects of processes in teacher education on teacher candidates' knowledge, performance and attitudes through experimental, correlational and qualitative designs. Yıldırım (2013) developing the model of preservice teacher education research (Figure 1) indicates that according to the model, studies are generally focus on students profile and program in the input dimension and school practice and gained knowledge, skills and attitudes in the process dimension, and he offers a number of research topics that are needed in each aspect of the model.



**Figure 1.** Model of Teacher Education Research (Yıldırım, 2013)

In a situation that discussions about teacher education in Turkey do not cease, questioning does not come to an end, and innovations and needs do not run out, there is a need for systematic content analysis studies in order to determine at which dimensions teacher education research were carried out and how this research shows tendency in a time period. In this respect, Yıldırım's (2011) study on teacher education is based on paradigms and debates in teacher education and their reflection to preservice teacher education system and reforms in Turkey. Although there are implications for teacher education research, this study does not include content analysis of teacher education research. His other study in 2013 is related to teacher education research but is based on general problems, trends and priorities in preservice teacher education research rather than a systematic content analysis of the related studies. In this context, it is considered that a systematic and detailed content analysis of research on preservice teacher education would contribute to the field. Moreover, it is also important to understand the mutual relationship between policies and research in this field as transformations and restructuring in teacher education in Turkey have been actualized by policies. In this way, analyzing the pattern appearing in teacher education research would give direction to identifying and

implementing relevant and applicable teacher education policies. However, lack of studies investigating the reflections of preservice teacher education policies on research makes such a study more necessary and essential.

In this context, the purpose of this study is to reveal trends in preservice teacher education research from past to present and to evaluate the reflections of policies on this research by conducting content analysis of studies published in the selected academic journals in Turkey. It is expected that a holistic and systematic analysis of preservice teacher education research in this area would be a reference source for researchers in terms of both topics and methodologies in further studies. Moreover, it is intended that uncovering a mutual relation between policies and research would shed light on policy makers, researcher and implementers in their efforts to restructure priority areas in teacher education.

In this framework, research questions giving direction to this study are:

1. What is the trend of preservice teacher education research in the selected journals?
  - a. On which themes have the studies on preservice teacher education been carried out?
  - b. What were the aims of the studies carried on the identified themes?
  - c. Which research methods were used?
2. How have the preservice teacher education policies reflected on the trend of teacher education research?

#### ***Teacher Education Policies in Turkey***

In order to evaluate the reflection between teacher education research and policies, the history of teacher education policies in Turkey is given in this section briefly. From past to present, there has been a number of restructuring efforts in teacher education and socio-economic, cultural, and political situation of that period have appeared to be influential on these efforts. In Turkey, there are three important reform efforts in terms of teacher education policies: 1982, the transfer of teacher education to universities and CHE; 1997, restructuring teacher education programs/curricula; and 2006, revision of programs/curricula.

Prior to 1982, there were diversity and a number of restructuring in teacher education for primary, middle and high schools. Considering *teacher education for primary school* in post-war period in Turkey, people were living mostly in villages, literacy level was too low, and schools prioritized only teaching reading and writing; thereupon, in order to rise quality of these schools and restructure Turkish Education System, teachers of primary schools were educated in "Primary Teacher Training School (PTTS)" and "Village Teacher Training School (VTTS)" in accordance with 1926 Law for Education Organization (Karlı, & Güven, 2011; Üstüner, 2004; Yüksel, 2010). On the other hand, in 1933, VTTS were closed but problem of training teachers for villages was not ended and thus, in 1940, Village Institutes were constructed. Village Institutes that had an essential impact on Turkish education history became a subject of political debates during the transition to multiparty system and having closed in 1954, they were converted to PTTSs (Yüksel, 2010). In accordance with 1973 Basic Law for National Education, the duration of compulsory basic education was increased from five to eight years and teachers for basic education were required to be trained at the university level. Upon this, some of PTTSs were converted to two-year Teacher Training Institutes (TTI) but those that were not suitable for becoming Institute were converted to Teacher Training High Schools (TTHS). Subsequently, new two-year TTIs were opened (Akyüz, 2010; Üstüner, 2004; Yüksel, 2010). Concerning *training teacher for middle schools*, in 1926 two-year Gazi Education Institute was established. While middle schools became widespread in country, new two and three-year Education Institutes were opened in various cities until 1977. In 1978-1979 period, name of three-year Education Institutes was changed to Higher Teacher Training Schools (HTTS). Their programs were restructured so as to train teachers for high schools and the length of education was increased to five years (Akyüz, 2010; Duman, 2011; Yüksel, 2010). For the purpose of *training teachers for general high schools*, *Darülmüallimin-i Aliye* that was established in Ottoman period as being affiliated with *Darülfünun* was named as HTTS and placed under MOE in 1924 with a connection with *Darülfünun*. Subject courses were given in *Darülfünun*, pedagogical courses in

HTTS (Akyüz, 2010). By the time, these HTTSs sourcing students from high-achiever graduates of PTTS lost its source since these schools were converted to TTHSs. Additionally, pedagogical courses given at the night in HTTSs were not managed effectively, teaching certificate programs were started to be given in universities as well and there were ideological discussions between students in universities and those in HTTSs. On account of these reasons, HTTS were closed in 1978. After that, teachers for high schools were trained in the abovementioned HTTSs that were converted from Education Institutes (Akyüz, 2010; Duman, 2011).

In 1982, critics about accepting students who could not enter university, becoming a castle of particular political groups, and not giving effective training and beliefs that good teacher training could only occur in universities led to the placement of the abovementioned teacher training institutions under the umbrella of university system (Okçabol, 2005; Üstüner, 2004; Yüksel, 2010). Education Institutes training teachers for primary schools were transformed to two-year Higher Education Schools and after 1989, the length of education increased to four years and incorporated in Faculty of Education. Institutes training teachers for secondary schools were converted to four-year Faculty of Education. In 1992, some of Higher Education Schools were converted into Faculty of Education; some were placed in Faculty of Education as a Classroom Teaching Program. As a result, all institutions training teachers for all stages became a part of Faculty of Education and all teachers were trained in four-year undergraduate programs (Üstüner, 2004).

When considering teacher training history in Turkey in general, it has been observed that teacher training has been an essential and ongoing problem in education system in Turkey and transformation to Faculty of Education did not solve this problem. Moreover, there was an education system not aiming to train qualified teacher candidates but making them full of theory but far from practice. There were also other problems such as similarities between subject teaching programs in Faculty of Education and programs in Faculty of Arts and Sciences and lack of collaboration between these two faculties, lack of healthy partnership with MoE, training of many redundant teachers with certificate programs, inconsistencies of teacher training programs within, between faculties and with subject content in the corresponding school level, and inadequate number of elective courses in contrast to high number of compulsory courses (YÖK, 1998). In order to solve these deficiencies and problems and render meeting needs of teacher training possible, Faculties of Education were restructured in 1997 in accordance with Decision no. 2761 within the scope of the Preservice Teacher Education Project conducted by the collaboration with CHE/World Bank in 1994. This restructure brought essential changes along such as providing collaboration between Faculty of Education and teaching practice schools, having parallelism between teacher training programs and with programs in schools, emphasizing more on teaching practice, increasing hours for practice, opening master programs without thesis for Secondary School Subject Teaching, closing undergraduate programs in Educational Sciences field, establishing Turkish Teacher Training National Committee, and ensuring standardization of teaching programs among faculties (YÖK, 1998).

Alongside the contributions of the 1997 restructuring reform in teacher education, some difficulties and deficiencies have been experienced overtime in the attainment of principles underlying the 1997 restructure. These problems were the difficulties in the implementation of 3,5 + 1,5 master program without thesis, the need for revision of programs after eight years, breaking off relations between CHE and MoE, nonfunctional Turkish Teacher Training National Committee, inadequate school-university partnership, and half-finished accreditation efforts (Şimşek, 2005). In addition to these, there was a need for revision of programs in Faculties of Education in accordance with the restructure in the primary school curricula and European Union (EU) policies under the adaptation process to the EU. Thereupon, Curriculum Development Workshop was arranged in 2006. One of the important changes occurring as a result of this regulation was that programs consisted of 50-60% subject, 25-30% pedagogical and 15-20% general culture courses. An authority of determining 25-30% courses of the program was given to faculties. In order to have teacher candidates who are more intellectual and enlightened person and equipped with skills of using information technologies and conducting scientific research, corresponding general culture courses were included. Moreover, "Community Service" course was included in the program so as to make teacher candidates aware of actual problems in society, produce project in these issues, and attend scientific activities (YÖK, 2007a, 2007b).

In general, it is remarkable that teacher education system in Turkey has a rooted history but with ongoing problems and steps that have been taken as regards solving these problems brought about another problems besides promoting development; therefore only the direction of debates has changed. Lastly, in 2009, giving pedagogical formation to graduates of programs corresponding to the fields that MoE hires and, even, in 2014, giving a right of getting formation to students in the corresponding programs through open and distance education program beginning from their first year are CHE regulations that brought about new debates in teacher education (YÖK, 2014).

## Method

This study is a thematic content analysis study based on systematically examining articles about preservice teacher education in the selected and rooted journals in Turkey. Thematic content analysis is a critical examination and interpretation of studies on a specified issue according to themes or a specified framework. It provides a holistic and deep insight on the issue. In this way, it is possible to reveal trends of research topics and define priority areas (Çalık, & Sözbilir, 2014).

### *Data Collection*

Since this study focuses on the historical trend of teacher education research in Turkey and the reflection of policies into this research, it is aimed to select peer reviewed academic journals that have been published continually for long years. For this purpose, three oldest refereed journals in the field of education (Ankara University Journal of Faculty of Educational Sciences-AUJFES, Hacettepe University Journal of Education-HUJE, and Education and Science) were identified and within the scope of this study, articles related to preservice teacher education and published in these journals were analyzed. AUJFES, whose publication dates back to 1968, is the oldest academic journal in this field. Subsequently, Education and Science was started to be published in 1976 and HUJE in 1986. Education and Science has been indexed in SSCI since 2006 and HUJE since 2008. Moreover, whenever problems were encountered in online access to articles, printed copies of them were obtained from libraries.

The criterion in selecting articles in these journals was to be related to preservice teacher education. Thus, initially, articles with key words such as "teacher education", "teacher training", "preservice teacher education", and "teacher candidates" were searched. But it was noticed that except for these articles, other related articles were also encountered. Thereupon, all articles in these journals were searched through one by one from the beginning in terms of key words, sampling/participants and data sources and all studies related to preservice teacher training were identified. In this identification stage, literature reviews, book reviews and translations were left out of scope. As a result, 479 articles; 67 from AUJFES, 257 from HUJE and 155 from Education and Science, were determined to

be suitable for this study (Appendix 1). When collecting data, a matrix was formed within the framework of research questions. This matrix contained name of journal, publication date, volume, no, page numbers, title of article, author/s, research topic and purpose, research method, research design and data collection tool/s (Table 1).

**Table 1.** Matrix Sample Used in Data Collection

Pub. info	Title	Author/s	Main Topic (Theme)	Subtopic (Category)	Purpose (Code)	Method	Design	Data Coll. Tool
HUJE, 2005,29,229-236	Effectiveness of problem-based learning approach on development of problem solving and self-efficacy beliefs levels in science education	S. Yaman, & N. Yalçın	Teacher education curriculum and instruction	Instruction of pedagogical courses	Implementation of a specified/new approach/method/technique/content in pedagogical courses and determination of its effects	Quantitative	Pretest-post test control grouped design	Self-efficacy beliefs scale, problem solving skills scale

### Data Analysis

In the above mentioned matrix, in order to determine research topic and purpose, 479 articles' summary and full text were analyzed repeatedly by content analysis and themes were extracted from studies' purpose and research questions through coding process. First of all, codes were identified by taking the related literature into consideration, then these codes were developed or changed as analysis proceed. Codes were grouped into categories and then themes. This coding process was ended after careful and repeated scanning and screening. As a result, nine themes and variety of categories and a number of codes were extracted. A sample of coding is presented in Table 2. Concerning reliability of the codes, an academician from the field of Curriculum and Instruction also coded the given articles. In the first run, there was 72% consistency. As a result of negotiation between researcher and academician, coder agreement ratio increased to 88%. When presenting findings, both research questions and the matrix were taken into consideration. In order to show the distribution of articles according to years and topics, frequency and percentage distribution were utilized.

**Table 2.** A Sample of Coding

Main Topic (Theme)	Subtopic (Category)	Purpose (Codes)
1. Characteristics of teacher candidates	1.1. Subject-specific characteristics	1.1.1. To ascertain the level of subject knowledge and skill
		1.1.2. To ascertain attitudes toward subject field
		1.1.3. To ascertain needs toward subject field
	1.2. Pedagogical/professional characteristics	1.2.1. To ascertain pedagogical knowledge, skills, competency
		1.2.2. To ascertain attitudes toward teaching
	1.2.3. To determine their approach to a specific instructional approach/methods	
	1.2.4. To determine their self - efficacy for teaching	
	1.2.5. To identify their perceptions about teaching profession and related topics (characteristics of effective teachers, effective instruction, learning environment, multicultural education, professional development, life-long learning)	

In short, the content analysis process was performed in the following steps:

1. Selection of the related journals
2. Selection of articles related to preservice teacher education in these journals

3. Scanning all articles in the journals again and rescreening the related ones
4. Forming matrix that would be used in data collection
5. Determining articles' publication information, title, author/s, research topic, purpose, method, design and data collection tool/s according to the matrix
6. Examining purpose and research questions of articles, identifying initial codes based on related literature and developing codes by scrutinizing articles repeatedly
7. Reviewing the codes again, classifying related codes into broader sub-categories and grouping related sub-categories under themes.
8. Reliability analysis of codes and themes
9. Final forms of matrix, codes, categories and themes after reviewing

#### *Limitation of the Study*

The study is limited to research articles related to preservice teacher education in the selected three journals. Reviews were not covered. Instead of more detailed thematic content analysis of one research topic in the field of preservice teacher education (such as teacher candidates' pedagogical and professional knowledge), analysis of all topics was prioritized because there is not any study holistically analyzing teacher education research in Turkey. Yet, in this case, because of high number of articles, analyses were limited to research topic, purpose and methodology. Findings, conclusions, implications, and recommendations of these articles were not analyzed. Lastly, the generalizability of findings is limited to the analyzed articles and journals.



## Findings and Discussion

As a result of content analysis, research topics of the studies on teacher education were analyzed and grouped under nine themes: characteristics of teacher candidates, teacher educators/instructors, teacher education curriculum and instruction, information and communication technologies (ICT) in teacher education, teaching practice, teacher training institutions, policies/restructures, comparative education, and measurement tools in teacher education. Rank order of these themes according to the number of articles is given in Table 3 and this order would be followed in this section. Taking first research question into consideration, findings of thematic content analysis of studies in terms of research purpose and methods would be given under each theme. Then, as a respond to the second research question, trends of research topics and purpose over years would be evaluated in terms of teacher education policies.

**Table 3.** Frequency and Percentage Distribution of Research Themes Revealed by Content Analysis

Research Themes	Number (n)	Percentage(%)
1 Characteristics of teacher candidates	213	44.5
2 Teacher education curriculum and instruction	107	22.3
3 ICT in teacher education	62	12.9
4 Teacher education institutions	27	5.6
5 Teaching practice	21	4.4
6 Measurement tools in teacher education	21	4.4
7 Comparative education	12	2.5
8 Policies/reforms/restructures	11	2.3
9 Teacher educators/instructors	5	1.0
Total	479	100.0

### *Studies about Characteristics of Teacher Candidates*

213 studies related to teacher candidates' cognitive, affective, psychological, professional and subject specific characteristics are classified under this theme. This theme is the mostly searched one (44%) in teacher education and, especially, it has shown gradual increase in recent years.

When studies under this theme were examined, the mostly studied topics were *the subject specific characteristics of teacher candidates* with 60 articles and *their professional (pedagogical) characteristics* with 59 articles. Actually, this finding can be interpreted as a result of the impressiveness of debates on subject matter versus pedagogy in teacher education and vice versa (Yıldırım, 2011). Namely, researchers studying teacher education come from different disciplines and each discipline has its own research approach therefore it is expectable that researchers would be affected by these approaches while doing their own study (Lee, & Yarger, 1996). Hence, it is possible that a researcher who advocates one side of the abovementioned debate area due to his/her discipline would reflect this to his/her studies by focusing on either subject specific characteristics of teacher candidates or their professional characteristics. From this point of view, almost equal number of studies point out the reflection of competency between these two competing areas.

In studies related to *teacher candidates' subject-specific characteristics*, their subject matter knowledge and skills have been generally determined in disciplines such as mathematics, science, and foreign language. Within this group of study, the number of studies aiming to understand misconceptions peculiar to one discipline area is remarkable, especially after 2000. Studies on misconceptions in science discipline such as chemical equilibrium, general biology, chemical bounding, heat and temperature, solution, dissolution and diffusion come forward but there are also studies on misconceptions peculiar to mathematics like complex number, circle and disk (e.g., Erdemir, Geban, & Uzuntiryaki, 2000; Keçeli, & Turanlı, 2013; Tekkaya, Çapa, & Yıldız, 2000; Yılmaz, & Morgil, 2001). In the determination of concept knowledge and misconceptions, achievement tests and questionnaires

have been preferred. In a distinctive manner, Ünlü, İngeç and Taşar (2006) used concept mapping in order to figure out the cognitive structures of teacher candidates in regard to momentum and impulse concepts.

Knowledge of subject matter, which is accounted as one of the important characteristics that teachers should have is seen as an important but not sufficient attribute for effective teaching (Cruikshank, Bainer, & Metcalf, 1995; McDiarmid, & Clevenger-Brigth, 2008). At the present time that individual differences come into prominence obviously in education, a deep and flexible knowledge of subject matter is required to such an extent that teachers would be able to introduce content to students at different readiness levels, to evaluate what and how their students learned, and to adapt instruction according to different teaching approaches. Thus, the importance of knowledge of subject area teaching connecting subject matter knowledge with pedagogical knowledge has been emphasized for effective teaching (Darling-Hammond, 2000; Hill, Rowan, & Ball, 2005). In this context, as well as studies related to teacher candidates' knowledge of subject matter and concepts, there is a need for studies about their skills of teaching subject knowledge; but the number of such studies encountered in this content analysis is limited (e.g., Elmas, Demirdöğen, & Geban, 2011; Tanışlı, 2013; Tekkaya, & Kılıç, 2012; Yetkin-Özdemir, 2008). Moreover, concerning misconceptions, it is indicated that teachers should have both subject matter and pedagogy so as to be able to recognize their students' misconceptions and design instruction accordingly (Cruikshank, Bainer, & Metcalf, 1995). However, in this study, the related articles are limited to only searching and understanding teacher candidates' misconceptions. How teacher candidates can identify their students' misconceptions and how to handle these have not been searched yet.

*Professional (pedagogical) knowledge, skills and competencies of teacher candidates* is another most frequently studied topic and actually, this topic has been investigated every time and everywhere in teacher education. It is asserted that even though subject matter knowledge is effective in teaching performance, pedagogical knowledge such as learning, teaching methods, curriculum has much more related to effective teaching (Darling-Hammond, 2000). Considering studies about teacher candidates' pedagogical skills in the selected journals, there are two types of studies: ones searching teaching skills in general and ones focusing on a specific teaching skill such as measurement and assessment, questioning and posing questions, lifelong learning and instructional materials usage (e.g., Çıldır, & Sezen, 2011; Seferoğlu, 2004; Tanışlı, 2013; Yaman, & Karamustafaoğlu, 2011; Yetkin-Özdemir, 2008). Within the scope of studies on teacher candidates' pedagogical knowledge, their classroom management approaches and views, their views and knowledge regarding teaching and effective learning environment, and their concept knowledge have been examined (e.g., Çakmak, Kayabaşı, & Ercan, 2008; Tekkaya, & Kılıç, 2012). Actually, these studies on the attainment of pedagogical knowledge and skills by teacher candidates during their teacher education present also information about to what degree objectives of teacher education have been attained. From this point of view, instead of the abovementioned descriptive studies based on scales and questionnaires, studies uncovering the attained skills and knowledge through practice would provide more satisfying results. Yıldırım (2013) criticizes studies measuring teacher candidates' competencies because of being descriptive, giving general information and being insufficient in disclosing real teaching performances in classroom. In this respect, Tanışlı's (2013) qualitative study was one of the few comprehensive studies; in order to reveal the questioning skills of teacher candidates, they had been asked to prepare clinical interview tasks and questions in the selected mathematics topic and to administer clinical interview with real elementary school students and these interviews had been observed, recorded, and analyzed. In another study related to problem posing skill in physics, teacher candidates had been given different activities and asked to pose problems about these activities and after that, they have been interviewed in order to get more detailed information about the process (Çıldır, & Sezen, 2011). As for Yetkin-Özdemir (2008), she has requested teacher candidates to develop and use instructional materials in math by practicing in their own classes in the faculty instead of real classroom setting. As a different data collection tool, Elmas, Demirdöğen and Geban (2011) have used a tool by which teacher candidates in chemistry teaching program have been asked to draw their future classroom environment while they are teaching science in order to reveal their image and belief about science teaching and learning and anticipate how they would be a teacher in the future.

Besides teacher candidates' subject matter and pedagogical knowledge and skills, there are studies about their *attitudes towards subject area and teaching profession*. It is observed that the purpose of studying the attitudes is twofold. Firstly, attitude is accepted as a factor affecting learning and academic achievement of teacher candidates; secondly, there is a belief that as a teacher of future, their performance would be affected by their attitudes towards the subject matter and teaching. In the identified studies, in addition to describing teacher candidates' attitudes, differences according to variables such as demographic characteristics, grade, department, and program and relations with variables such as achievement, professional anxiety and life satisfaction are examined (e.g., Çapa, & Çil, 2000; Saracaloğlu, 2000; Serin, Serin, & Kesercioğlu, 2005).

Another topic studied under this theme is the *teacher candidates' cognitive characteristics* including thinking and learning skills. Studies searching *teacher candidates' thinking skills* generally focus on three thinking skills: critical thinking skill/disposition, reflective thinking skills and problem solving skills. Mostly available scales have been used. But Çalışkan, Sezgin and Erol (2006), in their study, interviewed with teacher candidates and asked about their general problem solving approaches. Then, physics problems were given and they were asked to solve the problems and write what they thought while solving. After they solved, they were also asked to express orally how they solved. In a different manner, Şahin (2009) investigated teacher candidates' journals that they wrote during their teaching experience course in order to define their reflective thinking skills.

Studies about *teacher candidates' learning characteristics* can be categorized into two groups in general: studies examining their learning approaches, study and learning strategies and studies on their learning styles (e.g., Bahar, Özen, & Gülaçtı, 2009; Erdamar, 2010; Senemoğlu, 2011). Rather than describing existing situations of teacher candidates, these studies were also based on comparing situations according to variables such as their demographic characteristics, grades, and departments and correlating with academic achievement. Undoubtedly, the main reason of these studies was to identify how learning styles and strategies differ according to individuals' characteristics and which were effective on academic achievement so as to be able to provide opportunities for teacher candidates to gain these strategies accordingly. These studies about teacher candidates' learning characteristics liken to studies considering "teacher education as a learning problem" according to Cochran-Smith and Fries's (2008) classification of research on teacher education. Although such studies have been encountered in US in the 1980-2000 time periods, these studies have been conducted in Turkey after 2000. Cochran-Smith and Fries indicate that in this period, "learning to teach" concept was started to be uttered in teacher education instead of "teacher training"; in other words, how teacher candidates learn to teach has been emphasized in teacher education. For this reason, it is stated that studies in this period focused on teacher candidates' knowledge, attitude, and belief at the beginning and how these changed and how they learned subject matter and pedagogical knowledge during teacher education program. Nevertheless, among the articles that was examined within the scope of this study and conducted in Turkey, any longitudinal study investigating change of teacher candidates' cognitive characteristics during their education and disclosing the impact of teacher education in this respect has not been encountered.

Finally, within the scope of *affective characteristics of teacher candidates*, their democratic values, awareness and attitudes towards environment, attitudes toward program and department, motivation levels, views regarding moral and moral education, bad habits and behaviors such as alcohol, cigarettes, cheating have been studied. In last decade, an increase has been observed in the number of studies on teacher candidates' cognitive and affective characteristics. This situation can be deemed as a reflection of the transformation from behaviorist and positivist paradigm to cognitive and interpretive paradigm. Because, together with this transformation, behaviorist approach teaching certain skills to teacher candidates and expecting them to practice these skills in their classrooms gave its place to cognitive approach advocating that teacher candidates as learners are affected by their previous knowledge, experience, and attitudes and they need time for learning and being active cognitively for the enhancement of learning (Cochran-Smith, & Demers, 2008). For this reason, teacher candidates' attitudes, thinking skills, learning processes, beliefs, and values and effects of teacher education on these have been studied ever since (Zeichner, 1999).

Of the studies on teacher candidates' professional, subject-specific, personal, cognitive and affective characteristics, 75% are quantitative and 20% are qualitative studies. The number of mixed studies was too low. Whereas, the use of mixed designs that make possible to get detailed information about teacher candidates' characteristics is much more proposed (Yıldırım, 2013). In terms of methodology, the studies can be subsumed under two purposes. The first is to describe teacher candidates' characteristics, and the second is to reveal correlation pattern by comparing or correlating some variables. Therefore, comparative, correlational and survey designs in quantitative studies and case study design in qualitative studies are encountered. In data collection, scales, inventories, achievement tests, and interviews have been frequently used. In a distinctive manner, tools such as concept mapping (e.g., Ünlü, İnceç, & Taşar, 2006), journal (e.g., Ç. Şahin, 2009; Tanışlı, 2013), cartoons and drawings (e.g., Elmas, Demirdöğen, & Geban, 2011) have been used. In only 10 studies, mixed design was used. Except for these studies, the diversity of data collection tools is encountered in mostly qualitative studies in spite of being not many (Örn., Akcan, 2011; Özgün-Koca, Yaman, & Şen, 2005; Tanışlı, 2013).

#### ***Studies about Teacher Education Curriculum and Instruction***

Of the examined articles, the secondly most studied theme is on teacher education curriculum and instruction with 22%. Studies aiming to evaluate curriculum/courses and to investigate implications and effects of instructional models, approaches, and methods in subject matter or pedagogy courses were grouped under this theme. Rather than pedagogy courses, these studies were conducted widely on subject matter courses or curricula.

In the studies related to *the instruction of subject matter or pedagogy courses*, teaching models, methods, and techniques such as cooperative learning, problem based learning, group works, station technique, reflective thinking based instruction or reflective teaching, peer-micro teaching, creative drama have been implemented. Generally, teacher candidates' perceptions towards these implementation and/or effects of these implementations on academic achievement, retention, and attitudes have been studied (e.g., Bilgin, & Geban, 2004; Erden, 1988; Külahçı, 1994; Önal-Çalışkan, & Üstündağ, 2010; Tok, 2008; Yurdatapan, 2013). Herein, it is noteworthy that Bloom's mastery learning model (Senemoğlu, 1988), Carroll's model of school learning (Egelioğlu, & Demirel, 1992), advanced organizers and synthesizers of Ausubel's meaningful learning theory (Erdem, 1995) have been implemented in old studies most probably because of being popular at those times. But as for the last decade, it has been perceived that cooperative learning, problem based learning, reflective teaching, creative drama and micro teaching have become trendy.

When scrutinizing studies on subject matter courses, it is noticed that the abovementioned teacher candidates' misconception issue has been also studied under this theme but in a different manner. Herein, it was aimed to implement new innovations so as to facilitate concept learning in these courses (e.g., Akgün, & Deryakulu, 2007; Güneş, 2012; Taşlıdere, 2013). Another striking finding is that in two studies in mathematical teaching field, "teaching experiment method", which has not been encountered in the other fields, has been used. Teaching experiment method entails a sequence of teaching episodes and long term interviews with students and researchers become teachers and have close relation with participants in order to understand their concepts and operations in their minds (Steffe, & Thompson, 2000). Sarı-Uzun and Bülbül (2013) utilized this method in overcoming teacher candidates' difficulties in proving, Sağlam and Bülbül (2012) in identifying teaching candidates' visual and analytical strategies about integral and making them use these strategies more effectively.

*Curriculum/course evaluation* studies have a privileged and crucial place in the curriculum and instruction field. Therefore, studies on this topic are of importance for giving direction to the field. Probably, this is why this topic emerged to a great extent among the studies under this theme. On the other hand, it is noted that a third of these studies are based on the evaluation of curricula/programs in general but without being comprehensive enough. A common aspect of studies evaluating both curricula and its components is to have a purpose of revealing existing situations, problems, and suggestions (e.g., Acer, Şen, & Ergül, 2012; Onur, 1982; Varış, & Gürkan, 1992; Yüksel, 2009). In addition to these studies evaluating the existing situations, there have been evaluations based on outcomes (e.g., Aydoğdu, & Erbaş, 1992). In these studies, perceptions, impressions, and views of teacher educators

and teacher candidates were taken into account and data were generally collected by questionnaires and interviews. Even, all of the three mixed designed studies were limited to questionnaires and interviews, as well. Additionally, there were only a few studies in which a diversity of stakeholders and methods has been involved (i.e., Işık, & Soran, 2000; Morgil, & Say, 1996). Whereas, curriculum evaluation entails a variety in sources of information such as use of multiple tools and involvement of different stakeholders in order to evaluate curriculum or its components properly, accurately, reliably, and validly. In this regard, Yıldırım (2013) also criticizes evaluation studies because of being based on the perceptions of teacher candidates and teacher educators in general and underlines the necessity of evaluating these perceptions in connection with information gathered about teacher candidates' knowledge and skills through various tools such as observation or tests.

In terms of methodology, despite the dominance of quantitative studies, of the studies under this theme, 21% are qualitative and 14% are mixed research. In curriculum/course evaluation studies, descriptive designs (survey, case study) intended to reveal the situation has been applied but in studies aiming to investigate effects of a predetermined teaching model, method, strategy, or approach in subject matter or pedagogy courses on teacher candidates, experimental designs were frequently employed. Actually, experimental studies appear to be appealing in teacher education research. Therefore, in studies reviewing and classifying teacher education research, experimental studies are considered as a separate category and a common feature of this research genre is stated as seeking to identify the impact of implementations and experiences in teacher education on teacher candidates (Borko, Whitcomb, & Byrnes, 2008; Kennedy, 1996; Lee, & Yarger, 1996). Even Borko, Whitcomb and Byrnes (2008) give place to such experimental studies in the "effects of teacher education" research category. Most of 53 experimental studies with quantitative methods were the pretest-posttest control grouped and 11 of them were the one-grouped experimental studies. The one grouped experimental designs are weak designs on account of uncontrolled threads to internal and external validity and nonrandom assignment of participants (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2010; Karasar, 2009). Furthermore, whichever design type is employed, experimental studies are criticized because of being short-lasting and not giving information as to whether it lasted or not. Additionally, it is also emphasized that these studies deemed as process-product research do not give adequate and detailed information about the experimental process and changes in the process so as to implement in other curricula/courses and environments (Borko, Whitcomb, & Byrnes, 2008; Kennedy, 1996). While qualitative and mixed studies are proposed as a response to these inadequacies, the number of such studies is low among the examined studies under this theme. In almost all qualitative studies, case study designs and in mixed studies, experimental designs had been employed. In data collection, test, scale, questionnaire, or interview was used solely but in a few studies, multiple tools were utilized. For example, Yürük, Şahin and Bozkurt (2000) in their quantitative study, used multiple choice, short-answered, and essay achievement tests, attitude scale toward chemistry, science process skill test and academic self-concept scale together. Sarı-Uzun and Bülbül (2013) and Sağlam and Bülbül (2012), in their qualitative study in which teaching experiment method was implemented, collected data by students' written works, tape and video recordings of individual interviews, teaching episodes, and observation notes. Yurdatapan (2013) and Yanpar-Yelken (2009) employed mixed design and used a variety of tools involving test, scale, interview, experiment reports, portfolio, and presentations.

#### ***Studies about Information and Communication Technologies (ICT) in Teacher Education***

This theme composed of 62 studies related to ICT usage, applications and software in teacher education, attitudes toward ICT, self-efficacy, information/computer literacy, technopedagogical competency. The first study under this theme was conducted by Alkan (1986) and he had compared six-week traditional instruction in Educational Technology course with six-week instruction via television. After ten years break, it has been observed that television left its place to computers and attitudes and perceptions of teacher candidates toward computers have been studied in 1990s (e.g., Akkoyunlu, 1996; Gürol, 1997). Since 2000, the number of studies under this theme has shown gradual increase every year.

The studies on ICT in teacher education mostly consist of *ICT applications and software in subject matter and pedagogy courses*. Web adventure, software on subject matter, blog, web-based instruction, e-

learning, computer-assisted instruction, and multimedia and online learning environment were implemented in subject matter or pedagogy courses within the framework of experimental design and effects of these applications primarily on academic achievement (e.g., Atıcı, & Gürol, 2002), then attitudes toward computer/internet and subject matter (e.g., Aktümen, & Kaçar, 2008) and thinking skills (e.g., Bayrak, & Koçak-Usluel, 2011) were examined. Even though, there has been remarkable increase in the number of such studies since 2005, it is emphasized that proper ICT applications in teacher education in Turkey are still insufficient. This problem is mainly stemmed from incompetency of teacher educators in ICT usage, inadequacy of their experience in using ICT, low motivation, insufficient knowledge and skill for integrating ICT with instruction, scarcity of in-service training in this respect, shortage of infrastructure and sources (Altun, 2007; Atıcı, 2009; Gökteş, Yıldırım, & Yıldırım, 2009). This situation implies the necessity of further studies investigating these expressed problems. From this point of view, having only two studies evaluating teacher educators' approaches to ICT under this theme points out the emptiness in this field.

Another topic under this theme is *teacher candidates' self-efficacy in computer usage and attitudes toward using computer/internet, ICT, computer-assisted instruction, web-based instruction, etc.* Besides determining teacher candidates' level, these studies also aimed to compare their levels according to various variables (age, gender, grade, graduated high school, academic achievement, previous experience on computer, computer access conditions, frequency of computer usage, usage of computers in courses) (e.g., Akkoyunlu, 1996).

In addition to these studies, those related to the *technopedagogical knowledge, skill and competency* that has been recently appeared as an emerging field in the literature on ICT in education have been also encountered in the selected journals after 2010 even if just a few (e.g., Kabakçı-Yurdakul, 2011). Technological Pedagogical Content Knowledge (TPCK) Framework has been used since 2006. This framework emphasizes that the effectiveness of technology-based teaching depends on understanding the mutual relationships among subject matter-pedagogy-technology and in order to develop context specific strategies, teacher candidates should be equipped with this knowledge (Koehler, Mishra, & Yahya, 2007; Mishra, & Koehler, 2006). There are a number of studies carried out in the world (e.g., Martinovic, & Zhang, 2012; Niess, 2005; Polly, Mims, Shepherd, & İnan, 2010).

In terms of methodology, 75% of studies under this theme were quantitative research with experimental designs. Likewise, this finding is consistent with the results of content analysis of theses on educational technology conducted by Şimşek and et al. (2009). Although experimental designs are considered important in studies on ICT applications, it is also asserted that there is a need of increasing the number of qualitative or mixed designed studies that ensure the understanding of whole from details. However, the number of qualitative studies did not exceed ten and in only five studies, mixed designs were employed. Except for experimental designs, in studies related to self-efficacy, attitude, technopedagogical competency, information/computer literacy, etc. it was aimed to determine and compare teacher candidates' level according to various variables; thus, descriptive and causal-comparative designs were employed. Among descriptive studies, there were quantitative studies based on generally survey designs. Yet, there were also qualitative studies examining teacher candidates' development and change in the ICT-used environment in detail, identifying problem solving strategies of teacher candidates during the ICT application process and revealing how they use internet (e.g., Sağlam, Altun, & Aşkar, 2009).

In quantitative studies except for the experimental ones, data were collected through only scales and questionnaires. Actually, it is also revealed that questionnaires, tests and scales have been also preferred in theses and articles on educational technology as well (e.g., Bozkaya, Erdem-Aydın, & Genç-Kumtepe, 2012; Şimşek et al., 2009). On the other hand, in experimental and qualitative designs, the use of a combination of multiple data collection tools such as scales, questionnaires, achievement tests, interview, and observation was noted. This is the case encountered in the content analysis of dissertations on educational technology field by Şimşek and et al. (2008). Apart from these tools, there were a few studies in which different data sources have been used. As an illustration, in the qualitative

study of Gülbahar and Köse's (2006), e-portfolio had been used as an assessment tool in "Design, Development and Evaluation of Educational Software" course and as data sources, end-of-term reports about the use of e-portfolio, written answers to open-ended questions and responses given during presentations had been analyzed. Additionally, in order to determine the ICT usage of elementary school teachers and teacher candidates, Umay (2004) asked teacher candidates to prepare lesson plans, gathered elementary school teachers' lesson plan, and then analyzed these plans in terms of the use of ICT. Nevertheless, it is noteworthy that while these studies are related to ICT, only a few of them have used e-data such as messages, files, pictures, questions-responses, online environment discussions and forum records as data sources (e.g., Pala, & Erdem, 2011).

#### ***Studies about Teacher Education Institutions***

There are 27 studies on teacher education institutions and these can be categorized into five groups. The first and majority group contains studies *historically displaying features of the institutions* such as Higher Teacher Training Schools, Primary Teacher Training Schools, Educational Sciences Departments/Faculties and teacher training institutions for Turkish Language and Literature (e.g., Akyüz, 1970; Kavcar, 1986; Sağlam, 2012). Therefore, most of these studies were historical research. Akyüz's (1970) study, the oldest article in the selected journals, took place under this theme. In his study, a letter dated 28<sup>th</sup> of December, 1908 and a brochure entitled "Teacher Community in Our Country (Memleketimizde Muallim Cemiyetleri)" have been examined in order to shed light on early teacher education institutions and problems of that period. Topics such as organizational problems, organization/faculty culture, cost, physical equipments and service quality were considered to be related to *administration in teacher education institutions* and studies on these topics are classified as the second group (e.g., Bolat, 1996; A. Şahin, 2009). Studies classified as the third group were related to *psychological counseling and guidance services in the institutions* such as orientation programs, psychological counseling in group, and training for effective and speed reading and for efficient study habits and in these studies, how these applications affected teacher candidates' personal and academic characteristics were sought (Sevim, & Yalçın, 2006). The fourth group includes studies in relation to *the selection and acceptance of teacher candidates to teacher education institutions*. Within the scope of this group, Ok (1992) and Akhun (1992) aimed to determine criteria that should be looked for in the acceptance of teacher candidates to Faculties of Education. Moreover, Zırhlıoğlu and Atlı (2011) and Atar (2012) searched the reliability and validity of the special ability exam used in the selection of teacher candidates to some programs. The last group of studies is related to *Anatolian Teacher Training High Schools* and regulations, characteristics of students and teachers and advantages and disadvantages of these schools were evaluated (e.g., Pehlivan, 1993). Methodologically, the majority of studies under this theme is quantitative and based on survey design. Qualitative studies are generally historical research.

### *Studies about Teaching Practice*

Teaching practice is a requirement that each teacher candidate should experience during his/her teacher education. Even its duration, process, approach, and procedure differs, teaching practice takes place in every teacher education programs in the world. Therefore, this theme has been studied for years around the world.

When considering articles analyzed within the scope of this study, only 21 of them were related to this theme. Previously, Hakan (1982) evaluated teaching practices of teacher candidates in the schools within the scope of the teaching certificate programs in order to determine their readiness to teaching and inadequacies. Yet, it was noticed that after that, any empirical research on this theme has not been published till 2000 in the selected journals. The studies conducted after 2000 were generally aimed to *evaluate "Teaching Practice" course in general or activities/implementations in this course*. In these studies, data had been frequently collected from teacher candidates but despite being a few, there were studies involving different stakeholders such as principals, mentor teachers and instructors (e.g., Gökçe, & Demirhan, 2005). Moreover, it was seen that qualitative studies exceeded the quantitative ones for the first time in this theme. Among these qualitative studies, Eraslan (2008) asked teacher candidates to evaluate Teaching Practice course in detail by one question. Koç and Yıldız (2012) utilized weekly journals of teacher candidates in this course.

In spite of being a few, another topic is *the integration of trainings of the specified approach or strategy with the course*. In one of the three studies in this topic, Orhan (2008) integrated self-regulation strategies with the course and design the course so as to make teacher candidates use these strategies in their practices. Moreover, Köksal and Demirel (2008) applied reflective thinking education program to a group of teacher candidates and investigated the differences between participants who attended this program and who not in terms of their skills in designing, implementing and evaluating instruction by using qualitative methods. Similarly, Ünver and Demirel (2004), in their study, student-centered education was given to a group of teacher candidates and whether there was a differences between groups who participated in the education and who did not was searched in terms of the development in planning skills of student-centered instruction through experimental design.

*Reflections of teacher candidates' theoretical knowledge, approach and skills* on their teaching practice were also examined in two studies. Yılmaz-Tüzün and Özgelen (2012) investigated to what extent teacher candidates in Science Teaching Program reflect their science process skills on their lesson plans, practices in schools and micro teachings in their own class. In the other study, Üstünel (2008) firstly collected the perceptions of teacher candidates about classroom discipline and discipline problems and then to what extent they implemented their views in their own practices in classroom environment was observed.

Lastly, there were two studies about *mentor teachers and supervisor instructors*. In these studies, how an effective supervision should be between teacher candidates and mentor teacher/supervisor instructor was emphasized. Thus, İlin, İnözü and Yıldırım (2007) transcribed conversations between teacher candidates and supervisors in the meetings after their practicum and interviewed with teacher candidates to get their views on this supervision process in order to define successful supervision. Gürsoy, Bulunuz, Baltacı-Göktalay, Bulunuz and Kesner (2013) proposed Clinical Supervision Model as a response to problems encountered in teaching practice since 1997, gave training to teachers and instructors about this model and examined the effects of this training on trainees by true experimental design.



### ***Studies about Measurement Tools in Teacher Education***

This theme comprises studies on *the scale development or Turkish adaptation of scales for measuring pedagogical and academic characteristics of teacher candidates* and *studies about State Employees Selection Exam (KPSS)*. In *scale adaptation* studies, Tschannen-Moran and Hoy's Teacher Sense of Efficacy Scale, KOLB Learning Style Inventory, Hanson Silver Learning Preference Inventory and Marsh's Student Evaluations of Educational Quality Scale were adapted to Turkish (e.g., Aşkar, & Akkoyunlu, 1993). But, only the study of Çapa, Çakiroğlu and Sarıkaya (2005) on the adaptation of the Teacher Sense of Efficacy Scale is related to teacher candidates directly; the others are only administered to teacher candidates. In *scale development* studies, scales for measuring teacher candidates' attitudes toward research, subject matter, teaching, or any course have been developed. In addition to these attitude scales, there were attempts to develop scales and tests such as critical thinking scale, metacognitive skill scale, and occupational anxiety scale for teacher candidates and concept test for misconception (e.g., Altındağ, & Senemoğlu, 2013).

KPSS is an important condition in the teacher recruitment in Turkey so each teacher candidate who wants to be recruited as a teacher in a school must enter this exam. However, there has been an ongoing discussion about the validity and adequacy of this exam in terms of measuring teacher candidates' performance accurately (Yüksel, 2013). Furthermore, it is emphasized that this exam have affected teacher education curriculum and given direction to courses' content and teaching-learning process (Yıldırım, 2011). Before KPSS, there were exams for the teacher recruitment. One of these exams was the two-staged Compulsory Exam for Competency and Competition (CECC). About this exam, Engeç (1991) investigated the correlation between teacher candidates' scores on this exam and their grade point average and between the first and second stage results and determined split-half reliability and internal consistency coefficients. Concerning KPSS, teacher candidates' perceptions toward this exam have been examined (e.g., Gökçe, 2013) and KPSS scores has been correlated with academic achievement and university entrance exam scores (e.g., Yüksel, 2013). Furthermore, Yüksel (2013) identified the most and least successful universities according to the correlations between teacher candidates' 2010, 2011 and 2012 university entrance exam scores and KPSS scores and evaluated KPSS results in terms of accountability in teacher education. To what extent KPSS measures the required teaching competencies, to what extent it affects and gives direction to teacher education and to what extent it is valid, reliable and adequate in selecting qualified teachers are questions that have been emphasized by Yıldırım (2013). Unfortunately, it was understood that these questions have not been searched in any study under this theme and so these questions were still left unanswered.

### ***Studies about Comparative Education in Teacher Education***

12 studies comparing practices, programs/curricula, and systems in Turkey with those in other countries take place under this theme. In terms of methodology, causal-comparative design was preferred in quantitative studies; holistic multiple-case design was employed in qualitative ones. In four of these studies, *teacher education system and programs in Turkey* has been compared with those in various countries. For instance, Turkish teacher education program for primary school was compared with that of England; Turkish teacher education program for secondary school with that in USA, Germany, England, Japan, Austria, Romania, and France; English teacher training system with that in Japan, mathematical teacher education program with that in Finland, Japan, and Singapore (e.g., Senemoğlu, 1992; Sunay, 1996). Differently, Korkmaz (2013) compared science *teacher educators* in Turkey with those in USA in terms of demographic characteristics, work load, teaching responsibilities and standards and academic attributes by searching their curriculum vitae on their web pages and their articles published in the indexed journals. In addition to these, *attitudes toward teaching profession and environment* were other topics that have been compared.

Except for general topics such as system, program, and attitude, *specific issues* have been also examined. For instance, in the experimental study of Smith, Gerretson, Olkun and Joutsenlahti (2010) about problem solving skills, teacher candidates in Elementary Education programs in USA, Finland and Turkey were asked to solve three types of verbal mathematical problems (one including minimal verbiage, second including both causal and mathematical content, third in which possible effects and results of the problem can be discernable) and the results were compared. In another study, Kılıç, Soran and Graf (2011), because of having different cultural and religious values, Turkish and German teacher candidates' intentions and attitudes toward teaching evolution in their lessons in the future and their subjective norms and perceived behavior controls were compared and factors affecting their intentions were determined.

#### ***Studies about Policies/Reforms/Restructuring in Teacher Education***

Albeit policies such as *the transfer of teacher education to universities in 1982, restructuring of the faculties in 1997, certification* etc. have been referred in various studies, only 11 research articles related to policies, reforms, or restructure directly were identified. The oldest study, examining teacher education by taking all government periods from 1923 to 1982 into consideration, was conducted by Oğuzkan (1982). Since then, such studies have been few and far between.

Among them, Kavcar (2002), in his study, explained history of branch teacher training in the Republican period in Turkey and examined and discussed the process and problems experienced after the assignment of teacher education to universities, affirmative and negative aspects of the 1997 restructure and important problems. Affirmative and negative situations in the Faculties of Education as a result of the 1997 restructure were also evaluated through questionnaire administered to 42 deans of the Faculties by Baskan (2001).

During teacher education history in Turkey, teachers have been recruited from various sources and *alternative certificate programs* have been administered. One of these acts was the teaching certificate programs given to graduates of Faculty of Arts and Sciences due to the deficit in the teacher supply for secondary schools. In this regard, in order to disclose which of Faculties, Education or Arts and Sciences, were effective in training teachers, Senemoğlu (1989) compared 1987 CECC general culture, subject matter, and pedagogy knowledge scores of graduates of both faculties. Another decision affecting teacher education was that in order to meet the need for English teacher, MoE decided to recruit graduates of English related programs such as English Language and Literature and American Language and Literature in addition to English Language Teaching if they took a few methodology courses (Keskil, 1999). The recruitment of the graduates of these programs has been still in force (MEB, 2014). In order to demonstrate that the graduates of English Language Teaching program were more qualified, Keskil (1999) compared senior students in English Linguistics Department and English Language Teaching Department in terms of their willingness to be a teacher and pedagogical knowledge from preparation to assessment. In terms of the policies enabling teacher candidates' training through different sources, Yıldırım (2013) points out the importance of studies based on the differences between these programs and especially between qualifications of teacher candidates. In this respect, it was noted that the abovementioned two studies were based on the comparison of these programs' outcomes such as subject matter and pedagogy knowledge but teaching performances of teacher candidates in classrooms were ignored. In addition to these studies, there exist studies related to *Erasmus program*, one of the educational mobility programs that have been implemented in conjunction with the adaptation process to the EU. In these studies, teacher candidates' experiences and changes during the program were examined (e.g., Ersoy, 2013).

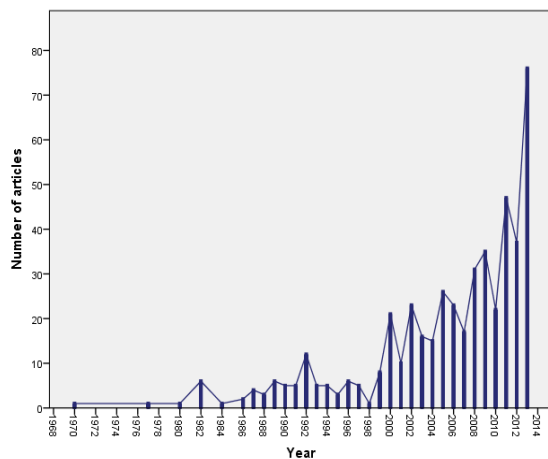
### *Studies about Teacher Educators/Instructors*

The importance of teacher educators for the programs training qualified teachers is emphasized and it is pointed out that effective programs are those preparing teacher educators for teacher education and continuously supporting them in this respect (Zeichner, & Conklin, 2008). Notwithstanding this belief, it is stated that teacher educators do not become prepared for training teachers during their doctoral education (Cochran-Smith, 2003; Zeichner, 2005). In Turkey, who the teacher educators are has been left unanswered, and thus it is emphasized that questions such as what their personal and professional characteristics are, which strategies and approaches they use in their lessons, how teacher candidates take them as a model and are affected by their instruction should be searched (Yıldırım, 2013).

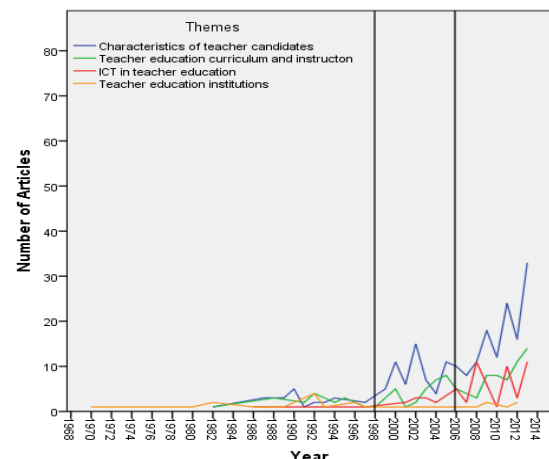
In this context, five studies are encountered. Only one of them is related to the determination of profiles of instructors in Faculties of Education (Erişti, 2013). Moreover, there were two studies based on instructors' behaviors in class; in the former, consistency between behaviors that they should possess and those they show was searched (Gözütok, 1989). In the latter, in terms of emphatic classroom environment, instructors' attitude and behaviors toward students and how these are perceived by students were investigated (Şahin, & Özbay, 1999). Yeşilbursa (2011), in her qualitative study, analyzed reflective dialogs among three instructors who have been conducting collaborative action research in order for effective teaching and professional development and meeting after they observed each other. She aimed to identify reflective typology emerged from these meetings. Lastly, in the study of Akpınar-Wilsing and Paykoç (2004), the needs of research assistants as prospective teacher educators were evaluated in terms of educational planning, evaluation and effective teaching. Classification of a few numbers of studies under this theme points out the deficiency in this field.

**Reflections of Preservice Teacher Education Policies on the Trend of Preservice Teacher Education Research**

When the number of articles was examined historically according to years, prior to 1982, there were so few studies that it can be said that teacher education studies were appeared after 1982 in the selected journals. It was observed that after 1982, four to six studies were conducted per year; in 1992, there was a jump but then drop; but after 1998, the number of studies has shown a consistently increasing trend (Figure 2). Although overlapping of these striking years with those of important teacher education policies seems to be meaningful, having analyzing them, it was realized that the studies conducted in those years were not corresponding to the policy of that time. Thereupon, it was decided to examine the studies by grouping them into three time periods according to the important policy years: before 1997, 1998-2006, and after 2006. In order to disclose the trend within the given time period, the studies conducted in that time period were analyzed within themselves. Therefore, in Table 4, the percentage (column percent) distribution of studies in that time period is presented for each period. As for Figure 3, only the line graphs of the mostly studied four themes were displayed in order not to cause visual confusion.



**Figure 2.** Distribution of Articles According to Years



**Figure 3.** Distribution of The Mostly Studied Themes According to Years

**Table 4.** Percentage Distribution Of Teacher Education Research Themes within A Given Time Period

Research Themes	Column Percent (%)		
	Before 1997	1998-2006	After 2006
Characteristics of teacher candidates	<u>31.0</u>	<u>48.3</u>	<u>46.0</u>
Teacher education curriculum and instruction	<u>25.4</u>	<u>23.8</u>	<u>20.8</u>
ICT in teacher education	4.2	<u>10.5</u>	<u>16.6</u>
Teacher education institutions	<u>22.5</u>	2.8	2.6
Teaching practice	1.4	5.6	4.5
Measurement tools in teacher education	5.6	5.6	3.4
Comparative education	4.2	-	3.4
Policies/ reforms/restructures	4.2	2.1	1.9
Teacher educators/instructors	1.4	1.4	0.8
Total	Percent (%)	100	100
	Number (n)	71	143

**Before 1997.** When studies prior to 1997 were examined, it was noted that the studies focused on three themes: *characteristics of teacher candidates, teacher education curriculum and instruction and teacher*

*training institutions* (Table 4). Striking findings in the studies related to the *characteristics of teacher candidates* were that the preference of teacher candidates for Faculties of Education/teacher education program, the programs that they were placed, and their academic achievement in programs or courses have been examined in these studies generally. As a result, it was understood that teacher candidates' academic achievement and their willingness and consciousness of for being teacher drew more attention in the studies in this time period. The reason might be stemmed from the concern that teacher education programs were preferred in the last ranks and the tendency of Teacher Training High School graduates toward teaching profession was low at that time, as found in Karagözoğlu's (1987) study. In terms of the *teacher education curriculum and instruction* theme, studies related to the evaluation of curriculum or its components such as subject matter or pedagogy courses were intensively conducted. These evaluation studies deal with existing situations, needs and problems of foreign language teaching, chemistry teaching, secondary school science and mathematics teaching programs and Ankara University Faculty of Educational Sciences. In these studies, the changes after 1982 and the policy for training of Faculty of Arts and Science graduates through teaching certificate were referred (e.g., Morgil, & Say, 1996; Varış, & Gürkan, 1992). Related to *teacher training institutions*, Şahinkeser (1982) and Kavcar (1982) explained the history of HTTS and examined the problems leading to their closure. Kavcar (1986), in his another study examining the teacher training system in the field of Turkish Language and Literature since Republican era, also dealt with the transfer of teacher training to universities in 1982, duality problem of teacher training from both Faculty of Education and Arts and Sciences, and the other existing problems. In another study, the establishment and establishment aims of Educational Sciences departments, previous policies in teacher education and changes stemmed from 2457 CHE law were discussed within the scope of Educational Sciences programs (Ataman, 1987). In this context, Mihciöğlu's (1989) study regarding the establishment stages of Ankara University Faculty of Educational Sciences, evaluated the process and problems from the establishment to 1982 and pointed out reflections of the 1982 regulation such as the closure of some programs in the Faculty, restriction of staff, and concern caused by the rumor that teachers would be trained only by MoE.

Although the number of studies about *teacher training policies, reforms and regulations* is low in this time period, because of being related directly, a place is left to these studies in this section. Correspondingly, Cicioğlu (1984), in his study about legal bases of teaching in the Republican era, highlighted that teaching profession has not been considered important and appreciated sufficiently, there has been an ongoing understanding, "if noting else, become teacher", there was a need for training effective teachers and giving them teaching spirit but universities could not have achieved these by certificate programs. Concerning the dilemma between Faculties of Education and Arts and Sciences, Senemoğlu (1989) underlines the necessity of implementing whichever way of teacher training is effective in order to use scarce sources effective and preventing the duality in teacher education. In her study conducted in light of this view, she could not reach a definite conclusion in terms of subject matter knowledge as the difference between graduates of these two faculties varied according to universities and department but in terms of pedagogical knowledge she revealed the significant difference in favor of the graduates of the Faculties of Education. Besides these, it should be indicated that in the reviews/essay articles, not analyzed within the scope of this study, teacher training system before and after 1982 has been discussed critically (e.g., Ataınal, 1992).

As a result, in this time period, the studies aimed to reveal motivation/consciousness of teacher candidates for being teacher, which can be considered as an affective characteristic. Moreover, especially curriculum/program/course evaluation studies gave place to critics about 1982 regulation in terms of affirmative and negative aspects, lost prestige of teaching profession and problems caused by the dilemma between the Faculties of Education and Arts and Sciences has caused problems. Actually, these problems were expressed in the justification of the 1997 restructure reform; thus, it might be inferred that academic studies prior to the restructuring led to the policies at this time period.

**1998-2006.** Considering studies conducted between 1998-2006 years, the order of the first two themes did not change. Nevertheless, a slight decrease has been observed in the ratio of studies about

the teacher education curriculum and instruction. Meantime, the interest to the topic *teacher training institutions* in the studies has decreased, instead turned to *ICT in teacher education*. In this period, it is seen that among the *characteristics of teacher candidates*, their knowledge, skills and attitudes were more intensively studied; especially their subject matter knowledge. Regarding the *teacher education curriculum and instruction*, studies about the implementations of a specified method/approach in the subject matter courses have gone ahead of the program/curriculum/course evaluation studies. Within the scope of studies related to *ICT in teacher education*, it draws attention that different ICT applications in subject matter courses and their effects, attitudes toward ICT and computer self-efficacy have been mostly investigated (e.g., Akkoyunlu, & Kurbanoglu, 2003; Güngör, & Aşkar, 2004). As it can be noticed, the studies under the first three mostly studied themes were generally related to subject matter knowledge and practices in subject courses. This finding points out that, in this time period, teacher education emphasized more on subject matter knowledge and skills.

When the articles in the 1998-2006 time period were analyzed in terms of the reflection of the 1997 restructure, there were studies evaluating its affirmative and negative results in general (Baskan, 2001; Kavcar, 2002) and also those dealing with a specified aspect of the restructure. For instance, one of the amendments of the restructuring reform was to give more emphasis on teaching practice and subject teaching. In this regard, it is appeared that the importance and necessity of not only pedagogical knowledge and skills but also putting them into practice in teaching subject matter was recognized and, thus, reflected in restructuring the programs. In this context, the professional contributions of the corresponding courses and teaching practices to teacher candidates and the obstacles, how the 1997 reform responded these obstacles were evaluated from mentor teachers' and supervisor instructors' points of view but only in a few studies (e.g., Ok, 2005). Instead, teacher candidates' subject matter knowledge and skills were emphasized. Even, under the teacher education curriculum and instruction theme, having more studies about the impact of a specified and implemented approach/strategy/method in subject courses gives an impression that these studies were also stemmed from the belief that subject matter knowledge and skills were more important. Another amendment of the 1997 reforms was that for the secondary school subject teaching, 3+1,5 and 4+1,5-year programs requiring non-thesis master's degree were executed. There was a study related to the evaluation of this execution by the teacher candidates enrolled in the non-thesis master's degree program (Semerci, & Çerçi, 2005). Concerning studies on ICT in teacher education, the reason for standing out of these studies was not arisen from the 1997 reform but from the acceptance of 2000s as information age, the widespread understanding of its importance in education, the political decisions as a result of the acceleration of studies on ICT in education in 1980s in EU, and the impact of these policies on Turkey as a result of the adaptation process to the EU (Bayrakçı, 2005).

**After 2006.** The order of the mostly studied research themes *characteristics of teacher education*, *teacher education curriculum and instruction* and *ICT in teacher education* do not change but the topics studied under these themes do differ. Although, the studies related to *teacher candidates' subject matter and pedagogy knowledge* and skills are still dominant, there is an increase in the ratio of studies about the cognitive and affective characteristics of teacher candidates, compared to the previous periods. As mentioned before, this is a late reflection of developments in cognitive psychology and research paradigms to studies in Turkey (Cochran-Smith, & Demers, 2008). Concerning the studies about the *teacher education curriculum*, it is noticed that the studies based on the implementations in pedagogical courses have also increased in addition to those in subject matter courses and curriculum/course evaluation studies have lost its importance. Related to *ICT in teacher education*, the number of applications in the courses has shown a striking increase but in contradistinction to the previous period, the ICT applications in subject courses have shifted to pedagogy courses this time. This situation points out that compared to the preceding period in which attainment of subject knowledge seems to be important, the importance of pedagogical knowledge and skills has been understood in this period. In this respect, it can be possible to state that importance of pedagogical knowledge and skills emphasized in the 1997 restructure has started to be felt recently. In the 1997 restructure, teaching practice gained more importance and hours of the related courses increased but this amendment has brought with a

number of problems regarding the partnership with schools and MoE, mentor teachers, supervisor instructors, and sources and these problems have been also studies in spite of being not many. Nowadays, these problems have not solved properly yet. The aforementioned study of Gürsoy, Bulunuz, Baltacı-Göktalay, Bulunuz and Kesner (2013) is the most recent one addressing problems in the Teaching Practice course

Studies on *ICT in teacher education* have maintained their increment in this period. Admittedly, the impact of current era in this respect is undeniable but the impact of the 2006 regulation that has encouraged the Faculties of Education to integrated ICT into the existing courses and involving separate courses for the ICT usage should not be ignored. The 2006 regulation had a belief that teacher candidates should be equipped with not only ICT skills but also intellectual knowledge and skills. Therefore, the number of general culture courses increased; for instance “History of Education” taught prior to 1997 reinvolved in the program, a new course entitled “Community Service” was added. As a result, the studies evaluating content of these courses, teaching-learning process and outcomes, their necessity and experienced problems have been conducted (e.g., Acer, Şen, & Ergül, 2012).

To sum up, the findings of this content analysis of teacher education research in the selected journals are organized briefly according to the restructure periods in Table 5. It is revealed that studies prior to 1997 investigated the teacher candidates’ disposition to teaching profession and dual training of teacher candidates from either Faculties of Education and Arts and Sciences and argued the results in terms of the value and importance of teacher education and dealt with the problems brought along by the 1982 decree about the assignment of teacher education to universities. The problems expressed and revealed in these studies were those leading to the 1997 reform. From this perspective, it can be thought of that research prior to 1997 might have fostered the 1997 restructure. On the other hand, problems leading to the 2006 regulation have not been mentioned in the studies neither in the 1998-2006 periods nor after 2006 neither. After 1997, effects of the 1997 reform, necessities of 2000 information era and amendments, alterations, and problems of the 2006 regulation have been investigated. Thus, it might be possible to conclude that before 1997 research gave direction to policies but after 1997, policies have given direction to research.

**Table 5.** Trend of Teacher Education Research According to the 1997 Restructure and 2006 Revision Periods (Political Context, Research Topic and Methods)

	Period before the 1997 restructure reform	Period between the 1997 restructure and the 2006 revision	Period after the 2006 revision
Political Context	<p>1982 the transfer of teacher training to universities</p> <p><b>Problems leading to the 1997 restructuring in the Faculties,</b></p> <ul style="list-style-type: none"> <li>Teaching certificate programs for the graduates of Faculties of Arts and Sciences,</li> <li>Similarity between subject teaching programs and programs in Faculties of Arts and Science</li> <li>Lack of emphasis on subject teaching in teacher education,</li> <li>lack of healthy partnership with MoE,</li> <li>inconsistencies of teacher training programs in themselves, between faculties and with subject content in the corresponding school level</li> </ul>	<p>Establishment of the university-school partnership, emphasis more on teaching practice, increase in the hours of the related courses and in practices in other pedagogical courses, standardization of teacher education programs, 3,5+1,5 and 4+1,5 non-thesis master degree programs for secondary school teaching, parallelism between teacher education programs and programs in MoE schools, abolishment of Education Sciences departments at undergraduate level, initial efforts in accreditation of Faculties</p> <p><b>Problems and needs leading to the 2006 revision:</b></p> <ul style="list-style-type: none"> <li>Difficulties in the 3,5+1,5 and 4+1,5 non-thesis master degree programs</li> <li>Needs for revision in the programs</li> <li>Rupture of communication and interaction between CHE and MoE</li> <li>Problems in the fulfillment of the university-school partnership</li> <li>Half-finished accreditation efforts</li> <li>Reflection of restructuring reform in primary education</li> <li>Requirement for revising programs on account of being in the "European Higher Education Area" in accordance with EU regulations</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility to change courses in the programs at 25% ratio,</li> <li>Increase in the number of general culture and elective courses in order to have teacher candidates who are more intellectual and enlightened person and equipped with skills of using information technologies and conducting scientific research (History of Science, Scientific Research Methods, Introduction to Philosophy, Effective Communication, Turkish Education History, Community Service are the included courses)</li> </ul>
Research Topics	<ul style="list-style-type: none"> <li>Preference of teacher candidates to be placed in Faculties of Education and teacher education programs and their academic achievement,</li> <li>Evaluation of program/pedagogy/subject matter courses according to the perceptions of teacher candidates and instructors,</li> <li>History and problems of teacher training institutions</li> </ul>	<ul style="list-style-type: none"> <li>Subject matter knowledge of teacher candidates</li> <li>Implementation of specified instructional approaches in subject matter courses and examination of the impact of these approaches</li> <li>ICT applications in subject matter courses and attitudes toward ICT</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the number of studies related to teacher candidates' thinking skills and learning characteristics in addition to their subject matter and pedagogy knowledge</li> <li>Correlation and comparison of teacher candidates' thinking skills and learning characteristics with various variables</li> <li>Implementation of specified instructional approaches in pedagogical courses in addition to subject matter courses and examination of their impact</li> <li>Increase in the number of studies related to ICT applications in subject matter courses, incipient studies about the ICT applications in pedagogical courses, attitudes and self-efficacy toward ICT and technopedagogical knowledge and skills</li> </ul>
Research Methods	<ul style="list-style-type: none"> <li>Survey, correlational and causal-comparative designs in quantitative studies,</li> <li>A few qualitative studies (in historical research about teacher education institutions)</li> </ul>	<ul style="list-style-type: none"> <li>Dominancy of quantitative research (Survey, correlational, causal-comparative designs and experimental designs),</li> <li>Qualitative research with case study designs also begins to be noticeable in spite of being not many</li> <li>Widely use of experimental studies in the implementation of specified instructional approaches and ICT applications in subject matter courses</li> </ul>	<ul style="list-style-type: none"> <li>Dominancy of quantitative research (Correlational, causal-comparative and experimental designs),</li> <li>Ongoing increase in the number of qualitative studies with case study designs</li> <li>Mixed designed studies draw attention (experimental designs with mixed methods)</li> </ul>

### Conclusion and Recommendations



Findings obtained from the analysis of studies in the three selected Turkish journals since 1970 revealed the research themes, research methods and designs and the trend within the restructure periods. The nine themes were identified and among them, the characteristics of teacher candidate (especially, subject matter and pedagogy knowledge and attitudes toward the subject matter and teaching profession), teacher education curriculum and instruction (effects of implementing new approaches in subject matter courses on teacher candidates) and ICT in teacher education (ICT applications in subject courses) are the mostly preferred one. Quantitative research methods are dominant but there have been gradual increase in the number of qualitative and mixed designed studies since 2000s. Survey, experimental, and case study designs have been more preferred. In terms of data collection tools, diversity in the tools has been generally observed in the mixed and experimental designed studies.

Teacher education is a multidimensional field, which is complex in itself as an applied field and whose applied field schools are complex, as well. The teacher education research model of Yıldırım (2013) also displays these dimensions and complexity. In this respect, Yıldırım (2013) classifies research topics that are ignored but actually would help restructuring efforts in teacher education under 13 headings such as profiles of teacher candidates and teacher educators, teaching-learning process in teacher education, structure of teacher education curriculum, results of alternative teaching certificate programs, effects of subject matter, pedagogy, and general culture courses, impact of KPSS on teacher education curriculum, effects of restructuring reforms on teacher education curriculum, teaching practices in schools, balance of theory and practice in teacher education curriculum, achievement of students who are educated by the graduates. This variety and multidimensionality also entail the complex and diversity in methodology of teacher education research (Borko, Whitcomb, & Byrnes, 2008; Florio-Ruane, 2002; Zeichner, 2005).

It is argued that knowledge presented to teacher candidates in Turkey is far from the Turkish context, based on western literature and does not reflect Turkish reality and dynamics (Çakıroğlu, & Çakıroğlu, 2003). These discussions point out the necessity and importance of teacher education research that would provide knowledge base in Turkish context. In this respect, on behalf of increasing the quality and diversity in teacher education research, priorities and recommendations that would give direction to further studies, practices, and policies in teacher education were developed according to this study results. Especially, the number of studies related to some research themes was limited and inadequate. Thus, it is considered that conducting further studies on these identified themes is of importance in order to fill the gap in these fields. Research topic suggestions for further studies can be explained according to the themes.

1. Teacher education policies: There are a few studies on this topic. It is important to increase the number of studies related to searching teacher education policies and their impact. Such studies would assist policy makers in developing policies and, in this way, would raise the recognition and acknowledgement of these studies in making policies and developing reforms.
2. Teacher educators: Another research topic, that was rarely studied, was about teacher educators. Concerning this topic, teacher educators' characteristics, in-class behaviors and teaching strategies and their impact on teacher candidates' attainment of knowledge and skills can be studies.
3. Teaching practice: Moreover, studies on teaching practices by which teacher candidates have a chance to demonstrate their knowledge and skills in real situation were not encountered frequently among the investigated articles. In this regard, how teaching practices should be, which factors affect their teaching performances, and how their performances influence students in classes are questions that needs to be sought. Especially, to what extent teacher candidates are ready to design instruction peculiar to schools in rural-urban and west-east regions and unified classrooms and to design differentiated instruction for inclusive and

gifted students, what can be done in this respect, and what would be the impact of those implementations are important questions that need to be answered. Because Çakıroğlu and Çakıroğlu (2003) state that teacher candidates in Turkey are not trained and prepared for the realities of schools and rural schools.

4. Characteristics of teacher candidates: On the other hand, even though the studies in relation to teacher candidates' subject matter and pedagogy knowledge and skills have been frequently investigated, it is noted that in these studies, scales and questionnaires based on their own perceptions were widely used. Whereas, for such a purpose, there is a more need for applied research based on practices of those knowledge and skills in real classroom environment. Moreover, there is a lack of examining performances of newly graduated novice teachers in their schools and achievement of their students. It had been stated that in Faculties of Education, teaching methods for subject matter had ignored before the 1997 reform and therefore this reform had aimed to change (YÖK 1998). The required regulations had been made in policies and programs but in terms of research, the studies have still more emphasized on subject matter knowledge. Subject teaching has not drawn attention adequately. In this respect, there is a need for further studies on how teaching-learning process in teaching methods courses should be, what instructors need and how these courses can be designed.
5. Teacher education curriculum and instruction: There has been a wide spread use of experimental design in the teacher education curriculum and instruction related studies in which new teaching approaches/strategies/methods/models have been implemented and their effects have been ascertained. Implementing such instructional approaches in other courses, in different programs, and faculties in different regions and comparing results would make possible to take the impact of these instructions into consideration within socio-cultural and geographic context. Even, more wide spread and longitudinal research can be conducted since the existing ones are short term and there is not any sign for their continuity. In this regard, it is stated that although short-term and local studies yield valuable information, these do not attract policy makers' attention and correspond with political problems (Borko, Liston, & Whitcomb, 2007). In this respect, Wideen, Mayer-Smith and Moon (1998), in their review study about teacher candidates' learning how to teach, found that research based on long term interventions caused more positive and long lasting effects. Thus, long-term (longitudinal) and large scaled studies might affect decision makers dealing with teacher education. Besides these, it was noticed that studies in relation to teacher candidates' interdisciplinary teaching skills have not been encountered. It is asserted that instructional design based on interdisciplinary integration would make teaching and learning effective and meaningful (Yarker, & Park, 2012). In this context, there is a need for studies and efforts improving candidates' interdisciplinary teaching skills within teacher education programs or subject teaching courses.
6. ICT in teacher education: Another noticeable finding of this study was the rising and striking trend in the studies concerning ICT in teacher education in the last decade. Moreover, it is possible to recommend research topics contributing to this trend. To what extent Faculties of Education have teacher candidates equipped with ICT skills, to what extent teacher candidates utilize ICT in teaching practices or microteaching, what contributions and disadvantages of ICT enhanced teacher education programs would be are questions that are open to search.
7. Teacher education institutions: In terms of teacher education institutions, their history and administrative issues have been studied even if just a bit, how environment should be arranged for effective teaching practices, what are required for classroom environment and equipment and how the absence and presence of these arrangements affect can be studied. Educating teacher candidates in the university system and problems emerged as a result of

this regulation have been discussed in either national or international context (Baskan, 2001; Çakıroğlu, & Çakıroğlu, 2003; Darling-Hammond, 2008; Kavcar, 2002; Labaree, 2008; Linné, & Tarrou, 2001; Yüksel, 2008). Weak and insufficient partnership between teacher education institutions and schools and relevance of knowledge and skills that were taught in university with those that are needed in schools are basic problems that have been often uttered. In this respect, development of actions towards increasing the collaboration between schools and universities is of importance. However, there is a need for research base for these discussions. Therefore, studies in which alternative models ensuring collaboration with MoE are developed, implemented and evaluated can be conducted. As a recommendation, the recruitment or positioning of teachers who are retired/experienced and with master degree in Faculties of Education can be considered and investigated as an effective way of ensuring a strong faculty-school partnership.

*In terms of methodology*, it is pleasing that paradigmatic transformation has been reflected on research but there is still inadequate number of qualitative and mixed studies. In such a comprehensive field, it is important to support wide spread use of mixed designs that would yield more satisfying information. Cochran-Smith (2005) highlights the need for using multidisciplinary, pluralistic and mixed methods that would set forth the relationship among four basic dimensions, which are teacher education, teacher candidates' learning, their teaching practices and their students' learning and each of which is complex within itself. Still, it is revealed that widely known statistics are used in quantitative studies or quantitative part of mixed studies. Use of advanced statistical methods should be encouraged in ascertaining the relationship of teacher candidates' pedagogical, subject specific and cognitive characteristics with various variables and in experimental studies. In addition, research methods such as action research, self-study, participatory research and teacher research have been considered as a recent development in the field of teacher education research because of examining context from insiders' points of view in last decade, yet these methods have been barely encountered in the analyzed articles. Therefore, researchers should be oriented to employ these methods. Even, training teacher educators and teachers to have the required knowledge and skills for employing these methods would also contribute to the raising quality of education. Furthermore, teacher candidates should be led to examine and investigate students' learning, their characteristics, learning environment and different outcome (Darling-Hammond, 2000). In this way, while searching students, teacher candidates can realize how they think and experience and while searching environment, they can notice cultural life experiences of that environment, they can also become conscious about the importance of designing learning environment according to these factors. This consciousness can contribute to the increase in the quality of education. From this point of view, the evaluation of the content and effectiveness of Scientific Research Methods course in teacher education program is of importance.

Having analyzed *the trend of studies from historical and political context*, it is inferred that issues, problems, obstacles, and discussions disclosed in the studies prior to 1997 might have been fostered the 1997 reform but how these studies affected was not known. In this context, Yıldırım (2013) expresses that efforts toward restructuring teacher education have been affected by assumptions, observation, evaluation and impressions instead of being based on research; shortly, he states that research and its results have not been taken into account. On the other hand, it is neither possible to indicate that problems and discourses highlighted in the political context have always searched in teacher education research in the selected journals. For these reasons, it is not accurate to claim that there is mutual relationship between policy makers and researchers and between policy and research. It is seen from Table 5 that, even though subject matter teaching and teaching practice had been emphasized and the class hours of the related courses had been increased, it is apparent that teacher candidates' subject matter knowledge drew more attention in the studies than their pedagogical knowledge and teaching skills. The importance of pedagogical knowledge and teaching skills has been reflected in the studies after 2006.

In this regard, it is important and required that researchers and decision makers should have a respectful interaction and dialog. On the one side, teacher education researchers generally do not generally start with the aim of affecting policies while planning their research. Even though there is a widely accepted belief that policy makers do not take researchers into consideration, conducting research that will address policies and so draw their attention can be influential in terms of giving direction to policies. On the other side, it is expected from policy makers and decision makers to have an intimate relationship with teacher education institutions, to ascertain political questions worth studying together, to support teacher education research, and to encourage working collaboratively with a team comprised of experts from different sides in policy-oriented research (Sleeter, 2014).

Ultimately, the findings of this study are limited to the articles analyzed within the scope of this study; therefore, in order to deepen and generalize the presented results and recommendations, it is considered important to analyze teacher education research so as to cover different journals, theses, dissertation, reports and projects. Moreover, since there is not any comprehensive content analysis study in teacher education research on Turkey, this study was aimed to draw a general framework. Thus, this content analysis was not specialized in one of the topics in this field but it is left to the further studies. In this respect, it is intended that the emerging themes, topics and subtopics from this study would help researchers who would endeavor to specialize in one of these.

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**Appendix 1.** Distribution of Number of the Selected Articles according to Journals and Years

Journals	Years					Total	%
	1970 -1979	1980 -1989	1990 -1999	2000 -2009	2010 -2013		
Ankara University Journal of Faculty of Educational Sciences	2	12	8	25	20	67	9.8
Education and Science		4	22	62	67	155	32.4
Hacettepe University Journal of Education		7	25	130	95	257	53.7
<b>Total</b>	<b>2</b>	<b>23</b>	<b>55</b>	<b>217</b>	<b>182</b>	<b>479</b>	<b>100</b>