Research Article

MULTIDIMENSIONAL INVESTIGATION OF TEACHER CANDIDATES' ATTITUDES TOWARDS SCIENTIFIC RESEARCH METHODS

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Received: 12.05.2018 *Accepted: 19.09.2018*

ABSTRACT

The aim of this study is to determine the attitudes of prospective teachers towards the course of scientific study methods, and the situations that cause negative attitudes and to suggest solutions and strategies for elimination of situations that cause negative attitudes. In the study, case study, a qualitative research pattern, was used. The data of the study were obtained from the teacher candidates who studied in Turkish, Mathematics, Social Studies and Classroom Teaching departments of Gaziantep University Nizip Education Faculty. For this purpose, 4 open-ended questions were asked to be analyzed by separating the answers given to these questions by conducting face-to-face interviews with the teacher candidates studying at Nizip Education Faculty. While the questions used in the study were being prepared, opinions of at least 4 experts in the field were taken, the related literature was reviewed and the questions were finalized. The maximum diversity was used in the Study in the selection of the study group. The purposeful sampling technique was also used to the greatest extent possible when choosing the samples. 10 teacher candidates each from Turkish, Mathematics, Social Studies and Classroom Teaching departments who had taken a scientific study course were selected and their data were obtained. According to the results obtained from the study data, some of the teacher candidates in the study group show a positive attitude towards the scientific research course. However, teacher candidates stated that "there was no application in the course," "the course was not student-centered" and "there was lack of equipment for the instructor."

Keywords: Scientific research methods, attitude, teacher candidate.

INTRODUCTION

According to Einstein, "Science is an effort to reconcile all sorts of sensory data (perceptions) with regular logical thinking." According to Russell, "Science is an effort to explore firstly the facts about the world and then the laws that connect these phenomena through reasoning based on observation." (Doğan, Çakıroğlu, Bilican and Çavuş, 2012). According to Karasar (2011), science includes all the systematic information that is accepted as valid. Kiss (1992) defines science as both knowledge and studies that lead us to this knowledge. In another words, science can be defined as a path used to find the truth and a cluster of knowledge formed by the truth acquired through that path (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2012).

The most distinctive feature of science is that it is empirical. Its second most important feature is that it can reach conclusions through an open method and the information obtained can be retested when the same circumstances are provided (Cohen, Manion, and Morrison, 2013; Ünlü, Koçoğlu & Ay, 2015; Koçoğlu, 2017). The primary step in conducting or developing science is the scientific method (Tuncer and Yılmaz, 2016). Scientific research methods refer to the methods researchers use when conducting research (Kothori, 2004). In other words, they are the tools and techniques necessary for conducting research (Walliman, 2011).

Undoubtedly, universities are the places where scientific method is used to produce knowledge. Universities are important contributors to the progress of the society with their functions of education, scientific research, publication and consultancy at various levels (Doğramacı, 2000). Education, on which universities lay special emphasis, has importance in the life of individuals and society. Occupying an important place in the lives of the individual and the society, education is the process through which learning adds quality to people's lives (Onur and Şanal, 2016). According to Akyüz (2015), education is the sum of all methods through which a person's mind, body, emotional and social abilities and behaviors are honed in the most appropriate way or in accordance with the desired outcomes whereby they are taught new skills, behaviors, and knowledge.

According to Fidan (2012), education is the process of "changing the behavioral patterns of individuals" or acquiring the necessary skills to lead a productive life. In a traditional sense, education helps us realize economic, social, political and cultural goals and values of society in the best way possible (Bozogur and Taştan, 2006; Aydemir, Koçoğlu and Karalı, 2016; Kalın, 2017a; Hacat, 2018a). Educational experts state that education is the most important social and economic factor in the progress of a country (Ateş and Başkan, 2014; Yazıcı and Kalın, 2015).

Educational organizations, like other organizations, were established to achieve a specific purpose. Teachers are the most important factor that play a role in the realization of these purposes of educational organizations (Özgan and Bozbayındır, 2011; Hacat, 2018b). It has been determined that the most basic common feature of educational systems which are highly successful in terms of student performance is qualified teachers (Barber and Mourshed, 2007). Qualified teachers are the most essential common feature of the countries with a successful education system.

Teacher training is an area which cannot be overlooked and there has to be an agreement on the best way to train teachers (Alipaşa, 2009). Countries' getting efficient results from the education system (Erişen and Çeliköz, 2003) and the quality of the students depends on the quality of the teachers (Semerci, 2003; Koçoğlu, 2017). Qualified teachers are the most important factor for a successful education system (Barber and Mourshed 2007). Research has therefore an important place in improving the quality of teacher training (Moon, 2007). While education faculties have an important place in universities as a higher education organization in the training of teachers, and improvement in the quality of education (Arabacı, 2010; Koçoğlu, 2015).

Purpose of the school one of the most important things to realize is the teachers (Çetin, Özgan, and Bozbayındır, 2013; Kalın, 2017b). The teaching profession requires expertise, and those who choose the teaching profession in this respect must possess certain qualities in order to be able to completely fulfill the requirements of the profession (Şişman, 2007). According to Bulger, Mohr and Walls (2002), the effectiveness of a teacher is based on the link between pedagogical knowledge and knowledge of the subject. Claycomb and Hawley (2000) also point out that there are at least three teacher qualities that affect student achievement. These are; 1-Teachers' knowledge and level of preparation, 2-General verbal skills, 3-Experience. There are significant differences between teachers even at the same school, in terms of the success of their students, due to differences in the 3 qualities mentioned above and other qualities that affect the success of the teacher (Rivkin, Hanushek and Kain, 2005). Although there are differences among teacher achievements, in general, a qualified teacher should be aware of the appropriate teaching strategies, methods and techniques with adequate field knowledge and adjust these according to the individual differences and competencies of the students, use objective measurement techniques as much as possible by being aware of the nature and limitations of student performance measurement, have awareness of the nature of science, base his/her teaching strategies around student-centered classroom management and provide appropriate guidance at each stage of the educational process (Dillon and Muguire, 1998).

Education faculties that wish to train qualified teachers should view teacher training from a wider perspective, looking at it as a process that goes beyond merely preparing teachers for their future careers during their 4-year bachelor training to enable them to use life-long learning strategies until retirement (Gürşimşek, 1998; Haçat and Tekkol, 2017) and accordingly, their focus should be on equipping teachers with the necessary skills to do research on their own, solve problems and draw results by learning how to learn (Coşkun, 2009).

Today, teachers are also expected to be researchers (Elliot, 1991). Accordingly, the Council of Higher Education has made the 'Scientific Research Methods' course a compulsory course for undergraduate programs as of the first semester of the academic year 2006-2007 (Tosun, 2014). According to Karasar (1974), the aim in doing so is to give students a certain level of research culture and competence, and teach them problem-solving skills besides training research scientists. According to Ünal and Ada (2007), teachers should be the first to acquire the competency to produce scientific knowledge and share that knowledge with the students by transferring

scientific research to the education environment in an effective way. However, according to Özdemir (1997) teacher candidates' attitudes towards scientific research methods should be open to discussion. According to Çetin and Dikici (2014), the reason for this is because teacher candidates are skeptical about whether the skills they learn from this course will have a direct impact on classroom success. At the same time, the fact that the scientific study course is delivered in a manner that does not reflect student-centered teaching increases the indifference of teacher candidates towards this course. Such situations lead to teacher candidates developing negative attitudes toward scientific research courses.

In its simplest form, attitude is defined as the sum of reactions, learned tendencies so to say, against people, objects and situations (Demirel, 2001) or "Behavior displayed by individual against people, events and inanimate objects" (TDK, 2017). Positive attitudes towards the profession are needed in order for individuals to take up the teaching profession to fulfill the requirements of this profession effectively (Üstüner, 2006). According to Yenilmez and Özabacı (2003), the attitude towards the course is "positive attitudes of learners towards learning and the courses increase academic success." (Sarıer, 2016). According to Özçelik (1998) “Developing a positive attitude towards a course includes willingness to participate in the lesson, readiness to respond to the teacher, and accepting its value.” Sankaran, Sankaran and Bui (2000) argue that there is a positive relationship between a student's attitude towards the course format and his/her learning performance (Pan, Sivo and Brophy, 2003). Kpolovie, Joe and Okoto (2014) on the other hand state that there is a positive relationship between the students’ interest in learning and their academic achievement.

This study intends to determine the attitudes of classroom teacher, social sciences teacher, math teacher and Turkish teacher candidates receiving education at Nizip Education Faculty towards the scientific research methods course, perform some assessments on the basis of the results of the semi-structured interview form and arrive at certain conclusions. Within this framework, the study sought answers to the following questions:

- In what ways do you think the scientific research methods course would affect your career as a teacher?
- In what ways do you think the scientific research methods course would affect your daily life?
- What do you think about the Scientific Research Methods course being compulsory at education faculties?
- What can be done to make the Scientific Research Methods course more effective?

METHODOLOGY

Study Design

This study was conducted to determine the attitudes of teacher candidates towards the scientific study course. The case study method, which is one of the qualitative study methods, was chosen for the purposes of the study. Case studies are used for "a) identifying and seeing details that cause an event to occur, b) developing

possible explanations for an event, and c) evaluating an event." (Büyüköztürk, et al. 2012). On that basis, the content and descriptive analysis techniques were used in the analysis of data obtained from the views of the teacher candidates.

Content analysis is defined as a systematic, renewable technique in which certain words of a text are summarized through smaller content categories with certain rules-based coding (Büyüköztürk, et al., 2012). Descriptive analysis is the transfer of the results to the reader in a concise manner by arranging and interpreting the results (Yıldırım and Şimşek, 2016). In this study, statements in the interview forms were read by the investigators, out of which codes were generated. Afterwards, the codes were merged from which themes were created to decode respondents' answers through descriptive and content analysis techniques.

Study Group

In order to determine the study group of the research, "maximum variation" sampling method among the purposeful sampling methods was used. "The aim here is to create a relatively small study group and to reflect the diversity of the individuals, who can be involved in finding a solution to the problem tackled in the group, to the greatest extent possible. The goal is not to provide diversity to make generalizations; on the contrary, it is to try to find out whether there are common or shared phenomena and differences between the various situations and to lay out different dimensions of the problem depending on the diversity."(Yıldırım and Şimşek, 2016). The teachers involved in the study determined by means of maximum diversity sampling were selected from teacher candidates who took or are taking the scientific research course in the departments of Turkish, Mathematics, Social Studies and Classroom Teaching of Gaziantep University Nizip Education Faculty in the 2017-2018 academic year.

Demographic characteristics of the study group participating in the survey are given in Table 1 below.

Table 1. Demographic Characteristics of Participants in the Study

Characteristics		**N**
Gender	Female	27
	Male	13
Age	19-21	23
	22-25	17
Year	2nd Year	19
	3rd Year	11
	4th Year	10
Department	Turkish Language Teaching	10
	Math Teaching	10
	Social Sciences Teaching	10
	Classroom Teaching	10

A total of 40 teacher candidates were included in the study group, 10 of whom were Turkish teacher candidates (2nd year); 10 were Mathematics Teacher candidates (9 of whom in their 2nd year and 1 in their 4th

year); 10 were social studies teacher candidates (2nd year); and 10 were classroom teacher candidates (9 of whom in their 3rd year and 1 in their 4th year). 17 of the teacher candidates were male, and 23 were female. 23 of the teacher candidates were in the 19-21 age group and 17 were in the 22-25 age group. 19 of the teacher candidates in the study were in their 2nd year, 11 of them were in their 3rd year, and 10 of them were in their 4th year.

Data Collection Tool

McMillan (2000) describes case studies as "a way in which one or more events, medium, program, a social group or other interrelated systems are examined in depth" (Büyüköztürk, et al., 2012). The data from the study conducted with the case study model were collected by interviewing teacher candidates. In order to determine the attitudes of teacher candidates towards the scientific research course, a semi-structured 4-item interview form with basic questions and alternative questions was prepared by searching the related literature and taking advantage of expert opinions. This interview form was initially applied to a total of 12 teacher candidates, 4 from Turkish, 4 from Mathematics, 4 from Social Studies and 4 from Classroom Teaching Departments. Having yielded useful results, the pilot scheme was also used in the study. The semi-structured interview form consists of two parts. The first part contains questions about personal details and departments of the interviewed teacher candidates and the second part has questions to determine the opinions of teacher candidates about the scientific research course.

The teacher candidates were briefed about the purpose of the study. They were also informed that their answers would be quoted but that their answers would be coded (Turkish: T1, T2, …, T10; Mathematics: M1, M2, …, M10; Social Sciences: SB1, SB2, …, SB10; Classroom Teaching: S1, S2, …, S10) without disclosing personal information. The interviews with the teacher candidates took 15-20 minutes on average. These interviews took place in the classes, library and cafeteria of the Nizip Education Faculty.

Analysis of the Data

The analysis of data in case studies is the same as the general steps followed in qualitative research. Collected documents and field notes are organized, copies are made, coded, summarized and interpreted (Büyüköztürk, et al., 2012). Content analysis was used in the analysis of the interview data in this research which was conducted in order to determine the opinions of the candidate teachers about the scientific research course. For the analysis of the interviews made with the teacher candidates, the interviews were read and coded and themes were created according to the common characteristics of the coded interviews, the suitability of the codes and the themes were reviewed, the necessary adjustments were made and the themes were interpreted.

To ensure validity and reliability; a)the process of preparation, application of the data collection tool and data analysis was explained in detail and the opinions of two researchers who were experts in education and

qualitative research were taken to allow participants approach the research from a more objective point of view, b) The results were compared with the literature and thus, the compliance of the results with the themes in the other studies was examined, c) the results from the interviews were examined by the participants and their validity was confirmed, and d) the data from the interviews and the codes generated for data interpretation are stored by the researchers so that they can be examined by others.

FINDINGS

This stage of the study contained the results obtained by coding and analyzing the data obtained during the interviews with the teacher candidates and the results were coded and then separated into themes. The separated themes were put in charts and offered as sub-problems. Accordingly, each question was given as a sub-problem and the results obtained were interpreted.

Results Related to the First Subproblem

Table 2 contains results from analysis of the answers given to the question: In what ways do you think the scientific research methods course would affect your career as a teacher?

Table 2. The Impacts of the Scientific Research Methods on Your Career as a Teacher

Theme	Sub-theme	Codes	f
In what ways do you think the scientific research methods course would affect your career as a teacher?	Those who say it would have an impact	Research skills	20
		Problem-solving	6
		Helping students find objective knowledge	8

A sub-theme was specified to analyze the answers given to the theme “In what ways do you think the scientific research methods course would affect your career as a teacher?” and the opinions were collated under the sub-theme “Those who say it would have an impact.” The codes corresponding to the views of those who stated that it would have an impact were as follows; research skills (f=20), problem-solving (f=6) and helping students find objective knowledge (f=8).

During interviews with the teacher candidates, the candidates were asked about the effects of the scientific research methods course on their teaching careers and a majority of classroom teachers, social sciences teachers, mathematics teachers and Turkish teachers involved in the study group according to the results from the interviews gave the responses “research skills,” “problem-solving” and “helping students find objective knowledge.” The following are some of the statements given by the teachers:

“Scientific research methods teach teachers how to do research like a scientist. *They were taught how to apply the methods to be used in these survey studies.” (T1).*

"Before, I had no idea how to do research. Thanks to this course, I learnt about more effective ways of doing research." (SB9)

"…thinks about the reasons behind student under-performance and produces solutions through teacher surveys etc…" (M7).

"The course helps us find more logical solutions to the problems we face in our lives and allow them to have a positive impact on our lives" (M1).

"Scientific research is a course that facilitates the approach to problems in human life by establishing a logical relationship between events. I can therefore say with no reservations that it widened my perspective on things." (S6).

"More objective information can be communicated to students on the basis of scientific data." (T9).

Results Related to the Second Subproblem

Table 3 contains results from the analysis of the answers given to the question "In what ways do you think the scientific research methods course would affect your daily life?"

Table 3. The Impacts of the Scientific Research Methods on Your Daily Life

Theme	Sub-theme	Codes	f
In what ways do you think the scientific research methods course would affect your daily life?	Those who say it would have an impact	Research skills	18
		Problem-solving	13
	Those who say it does not have an impact	It has no impact on my daily life	5

Two sub-themes were specified to analyze the answers given to the theme "In what ways do you think the scientific research methods course would affect daily life?" and the opinions were collated under the sub-themes "Those who say it would have an impact" and "Those who say it does not have an impact". The codes corresponding to the views of those who stated that it would have an impact were as follows; research skills (f=18), and problem-solving (f=13). While the coding for those who responded it had no impact was (f=5) for no impact on daily life.

During interviews with the teacher candidates, the candidates were asked about the effects of the scientific research methods course on daily life and a majority of classroom teachers, social sciences teachers, mathematics teachers and Turkish teachers involved in the study group according to the results from the interviews gave the responses "research skills," and "problem-solving." The following are some of the statements given by the teachers:

"It helps me take a more organized approach when doing a homework or research. It helps me do to more valid, more academic, more scientific research. " (SB8).

"I now know my way around the intricacies of doing research." (M3).

"I try to analyze any problem that I face in daily life according to the problem-solving steps and draw conclusions accordingly" (S7).

"Science has wide applications in life and I believe the course will help find practical solutions to problems in daily life" (T3).

Some of the teacher candidates in the study group indicated that the Scientific Research Methods course had no effect on their daily lives. Some of the statements are as follows:

"To be frank, I do not think it will be of much help in daily life…" (SB10).

"It has no impact on daily life." (T5).

Results Related to the Third Subproblem

Table 4 contains results from the analysis of the answers given to the question "What do you think about the Scientific Research Methods course being compulsory at education faculties?"

Table 4. Scientific Research Methods Course Being Compulsory at Education Faculties

Theme	Sub-theme	Codes	f
What do you think about the Scientific Research Methods course being compulsory at education faculties?	It must be compulsory	Vital for teachers' self-development	15
		Teaches vital research skills	3
		An important course	10
		Vital for achieving progress in science	4
	It must not be compulsory	Those who wish to pursue an academic career should take it	2
		It should be an elective course	2
		It has no use	2

When the table is examined, it is seen that two sub-themes were determined in the analysis of answers to the question "What do you think about Scientific Research Methods course being compulsory at education faculties?" and the opinions were evaluated under two themes; "it should be compulsory" and "it should not be compulsory." The codes corresponding to the views of those who said it should be compulsory were as follows; "Vital for teachers' self-development" (f=15), "Teaches vital research skills" (f=3), "It is an important course" (f=10) and "Vital for achieving progress in science" (f=4). The codes for those who stated that it should not be compulsory were as follows; those who wish to pursue an academic career should take it (f = 2), it should be an elective course (f = 2) and it has no use (f = 2).

During interviews with the teacher candidates, the candidates were asked their opinions about the Scientific Research Methods course being a compulsory course at education faculties and according to the results from the interviews, some of the classroom teachers, social sciences teachers, mathematics teachers and Turkish teachers involved in the study group gave the responses "Vital for teachers' self-development," "An important course" and "Vital for achieving progress in science." The following are some of the statements given by the teachers:

"It must definitely be compulsory. Because we need to learn how to raise competent students who question things and enjoy doing research. To do that, I first need to take this course to learn about all aspects of research." (S2)

"I find it true that this course being taught at faculties. Because most of the time students do not know how to obtain data. Through this course, students learn how to use certain methods and techniques to obtain any kind of information and how to do research. It also gives one the ability to express the information in your head as one meaningful whole." (T8).

"Teaching this course at education faculties is indeed important. Because teacher candidates must know about scientific activities and research." (S3).

"It is indispensable for a student who wishes to make academic progress and whose interest lies in that direction. At the same time, the point of view of any teacher who reads scientific research may change." (SB3).

While some of the teacher candidates in the group stated that the Scientific Research Methods course should not be compulsory, saying "Those who wish to pursue an academic career should take it," It should be an elective course." and "It has no use." The following are statements by teachers who think it should not be a compulsory course:

"I think it should be offered to those who wish to make an academic career rather than taught at education faculties" (T2).

"It should not be a compulsory course. People may not wish to bring new perspectives to their lives. And we must respect that. It should therefore be an elective course. Not an elective compulsory course" (M2).

"It is actually a course which should have been taught previously. There is no need for it to be retaught at the faculty." (M4).

Results Related to the Fourth Subproblem

Table 5 contains results from he analysis of the answers given to the question "What can be done to make the Scientific Research Methods course more effective?" asked on the basis of the case study.

Table 5. Suggestions for Making the Scientific Research Methods Course More Effective

Theme	Sub-theme	Codes	f
What can be done to make the Scientific Research Methods course more effective?	Suggestions for the Teacher and the Classroom environment	The teacher should be well equipped	5
		There should be a proper learning environment	5
	Suggestion for Student Participation	The lessons should be practical	26
		The lessons should be student-centered	5

Two sub-themes were specified to analyze the answers given to the theme "What can be done to make the Scientific Research Methods course more effective?" and the opinions were collated under the sub-themes "Suggestions for the teacher and the learning environment" and "Suggestions for student participation." The codes corresponding to the views of those suggesting it for the teacher and the learning environment were as follows; "the teacher should be well equipped" (f=5) and "there should be a proper learning environment" (f=5). The codes for those who made suggestions about student participation were "the lessons should be practical" (f=26) and "the lessons should be student-centered" (f=5).

During interviews with the teacher candidates, the candidates were asked their opinions about making the scientific research methods course more effective and some of the classroom teacher candidates, social sciences teacher candidates, mathematics teacher candidates and Turkish teacher candidates involved in the study group according to the results from the interviews made suggestions about the teachers and the learning environment. And they expressed the views "The teacher should be well equipped" and "There should be a proper learning environment." The following are some of the statements given by the teachers:

"…teachers should improve themselves in that regard and be open to everything. Constructivist teaching methods should be used more frequently." (S1)

"We first need to have academically well-equipped teachers. And the students should be given homework to help improve their research skills." (T7).

*"*This course can be taught in computer labs and *this will give the course a practical aspect to make it more efficient." (M6).*

"Since it is a course related to technology and numbers, more appropriate learning environments need to be provided…" (T4).

While some of the teacher candidates in the study group stated that student participation needed to be high for the Scientific Research Methods Course to be more effective and made the suggestions "The lessons should be student-centered" and "The lessons should be practical." The following are some of the statements given by the teachers:

"A practical teaching of research methods will make the course more effective and the learning outcomes more permanent." (S5).

"To make it more efficient, it should be a practical course where students are made to write academic essays step by step." (SB5).

"The course should be taught not using slides but with the active participation of students, it should be student-centered and not teacher-centered." (S4).

"The students should be given opportunities. A more research-oriented approach should be promoted, with students being encouraged to improve their critical thinking skills." (T6)...

CONCLUSION and DISCUSSION

In the interviews conducted with the teacher candidates, the effects of the scientific research methods on their teaching careers were asked and the teacher candidates in the study group stated that the course would be effective in teaching "research skills," "problem solving skills" and "allowing students to access objective knowledge". According to Karasar (1974), the purpose of the course is to give students a certain level of research culture and competence, and teach them problem-solving skills besides training research scientists.

The teacher candidates in the study group stated that the course would be effective in teaching "research skills," and "problem solving skills" and allowing the students to access "objective knowledge". It can therefore be inferred that teacher candidates acquire some valuable skills and competencies through the scientific research methods course. The skills and knowledge obtained by the teacher candidates during the scientific research course can be helpful in enabling them to develop a more positive approach to the course. According to Özçelik (1998) "Developing a positive attitude towards a course includes willingness to participate in the lesson, readiness to respond to the teacher, and accepting its value." The skills and competencies gained in the scientific research methods course will help them be more effective in the classroom. According to Bulger, Mohr and Walls (2002), the effectiveness of a teacher is based on the link between subject knowledge and pedagogical knowledge of the teacher.

In the interviews conducted with teacher candidates, the teachers were asked about what effects the scientific research methods course would have on daily life and some of the students in the study group stated that the course would be helpful in terms of improving "research skills" and "problem-solving skills" while others stated that the course had no impact on daily life. The existence of opposing views on the daily life effect of the scientific research course supports Özdemir's (1997) view that teacher candidates' approach to the scientific research course are open to discussion.

Some of the teacher candidates in the study group stated that the scientific research course had no impact on daily life. According to Çetin and Dikici (2014), such situations lead to teacher candidates developing negative

attitudes toward scientific research courses. There is a positive correlation between academic achievement and attitude. According to Yenilmez and Özabacı (2003), "positive attitudes of learners towards learning and the lessons and increases the academic success." (Sarıer, 2016). Kpolovie, Joe and Okoto (2014) on the other hand state that there is a positive relationship between the interest of students in learning and their academic achievement.

During interviews with the teacher candidates, the candidates were asked their opinions about the Scientific Research Methods course being a compulsory course at education faculties and some of the teacher candidates involved in the study group according to the results from the interviews responded that it had to be a compulsory course and gave the responses “Vital for teachers’ self-development,” “Teacher research skills,” “An important course” and “Vital for achieving progress in science.” While some of the teacher candidates in the group stated that the Scientific Research Methods course should not be compulsory saying “Those who wish to pursue an academic career should take it,” “It should be an elective course,” and “It has no use.” Even though some of the teachers stated that the course should not be compulsory, the Council of Higher Education made the 'Scientific Research Methods' course a mandatory course for undergraduate programs as of the first semester of the academic year 2006-2007. (Tosun, 2014). Because today teachers are also expected to be researchers (Elliot, 1991) and accordingly, the core focus should be on equipping teachers with the necessary skills to do research on their own, solve problems and draw conclusions by learning how to learn (Coşkun, 2009).

During interviews with the teacher candidates, the candidates were asked their opinions about how to make the scientific research methods course more effective and some of the teachers involved in the study group according to the results from the interviews made suggestions about the teachers and the learning environment and gave the responses “The teacher should be well equipped,” “There should be a proper learning environment.” While some of the teacher candidates in the study group stated that student participation needed to be high for the Scientific Research Methods Course to be more effective and made the suggestions “The lessons should be student-centered” and “The lessons should be practical.” The statements of teacher candidates in the study group are concerned with the course format. Sankaran, Sankaran and Bui (2000) argue that there is a positive relationship between a student's attitude towards the course format and his/her learning performance (Pan, Sivo and Brophy, 2003). Çetin and Dikici (2014) argue that the fact that the scientific research course is delivered in a manner not reflecting student-centered teaching increases the indifference of teacher candidates towards this course.

SUGGESTIONS

According to the results obtained from the study data, some of the teacher candidates in the study group show a positive attitude towards the scientific research course and a majority of them defend its necessity. However, it is also seen that most teachers in the study group emphasize negative aspects of the scientific research methods course, such as the course not being student-centered and the inadequacy of the teachers teaching the course. Therefore, in order for teacher candidates to develop positive attitudes towards the scientific research course;

- The scientific research methods course should have a practical aspect.
- For the scientific research methods course, the classroom environment can be tailored according to the course content.
- Teachers teaching the scientific research methods course can do different things to perform better in a classroom environment.
- The purpose of the scientific research methods course can be explained to teacher candidates in detail.
- For the scientific research methods course, some scientific studies can be examined in detail and the lectures can be given accordingly.
- Teacher candidates should be made to drop the idea that the scientific research methods course does not have an impact on daily life and has no use for teachers' careers and should only be meant for graduate students and the importance of the course should always be emphasized by the teacher giving the course.

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