

Full Length Research Paper

The investigation of secondary school science and mathematics pre-service teachers' attitudes towards teaching profession

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The purpose of this study was to determine how pedagogical content courses taken during teacher education programs affect the pre-service teachers' attitudes toward teaching profession. 239 secondary school science and Mathematics (Physics, Chemistry, Biology, Mathematics) pre-service teachers participated in the study and "Teaching Professional Attitude Scale" was used to collect data. The data was analyzed by using t-test for binary comparisons; the one-way analysis of variance (ANOVA) and Tukey HSD test for multiple comparisons. The findings revealed that pre-service teachers' attitudes toward teaching profession were positive. However, the attitude scores of the pre-service teachers who are studied to content courses, decreased at the end of the pedagogical content courses.

Key words: Attitude, pre-service teachers, teaching profession.

INTRODUCTION

Attitude is defined as individual mental processes which determine both the actual and potential responses of each person in the social world (Allport, 1966). Baysal (1981) defines the attitude as a cognitive, affective and behavioral response which is organized on the basis of experience and knowledge, to the individual's himself/herself or any object or event around his/her environment. Regarding to these definitions, attitude can be defined as a response which can be positive or negative to any situation, event or object. Individuals' attitudes towards their profession have an effect on their performance (Hussain et al., 2011). It is also acceptable for teaching profession, because the attitudes and perceptions of a profession affects the perceptions of professional competence and achievement, teachers' attitudes towards their profession have a great importance in fulfilling the requirements of the profession (Durmuşoğlu et al., 2009; Terzi and Tezci, 2007). Moreover, attitudes towards professions are one of the

most important factors to be successful in the profession (Çakir, 2005). For this reason, the belief that "someone who does not like the job cannot be successful in the profession" is quite common in society. To be successful in the teaching profession which requires patience, dedication and continuous operation, it is important to like and willingly do this profession (Aşkar and Erden, 1987; Çapa and Çil, 2000). In the teacher training programs, pre-service teachers' perspectives on the profession has an important place.

Also, teacher training programs have a major role to form the pre-service teachers' thinking towards teaching profession. For that reason, to develop positive attitudes towards teaching profession, the content courses and pedagogical content courses taught by science and mathematics educators in the teacher training programs have a significant role. Çeliköz and Çetin (2004) express that if pre-service teachers develop a positive attitude towards their profession, they will develop creative thinking, motivate their students more easily, and adapt their verbal and non verbal messages to their students. For that reason, the teachers' attitudes which are shaped in the teacher training programs towards teaching profession

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should be arranged in order to obtain a positive attitude to teaching profession.

Literature review

In the literature, some researches indicated that the gender, class level, type of program they graduated from and social and economic conditions affect the attitudes towards teaching profession. Oral (2004) found some significant differences among the attitudes of the students who enrolled in the faculty of education while considering the profession of teaching according to gender, the order of the program they attend in the preference list, and the reason for choosing the profession of teaching. Similarly, Bozdoğan et al. (2007) concludes that the pre-service teachers' attitudes towards teaching profession changes according to the gender and type of program they graduated from. Also, Çapri and Çelikkaleli (2008) showed that the gender affects the attitude towards teaching profession, but type of program they graduated from and type of faculty are not effective between the technical education faculty students and education faculty students.

Akkaya (2009) determined that gender factor affects the pre-service teachers' attitude towards teaching profession. In her study, the female pre-service teachers who are in Turkish Education Department are more successful than male pre-service teachers with respect to their attitudes and academic success. In addition, according to type of program they graduated from, she found statistically significant differences between them. Hussain et al. (2011) found that majority of the secondary school teachers in Pakistan do not have positive attitude towards the profession. They, also, found that the female secondary school teachers have more positive attitude towards the profession than male secondary school teachers. They explained the reason of that result as a stereotyping belief, that "teaching is a feminine job". In addition, they obtained that teachers working in the public sector were more committed and satisfied than the teachers working in private sector.

However some researches indicated that gender is not, but type of program they graduated from and class level are effective on the attitude towards the teaching profession. Çapa and Çil (2000) showed that gender is not effective on the pre-service teachers' attitude towards teaching profession, but in the sub dimension of loving profession and respect to profession, females have more positive attitude than males. On the other hand, in the sub dimension of confidence, males are more confident than females. According to the sub dimension of the class level, especially, pre-service teachers who are taking pedagogical content courses have more positive attitude to profession. Similarly, in their research, Hoşgörür et al. (2002) found a positive relation between the class levels and attitude. When the class level increases, pre-service teachers' attitude towards teaching

profession rise, similarly.

This conclusion shows that the content courses and pedagogical content courses are effective for getting a positive attitude to profession. Moreover, Bulut and Doğar (2006) showed that the gender factor is not effective on the attitude, but types of program and class level are effective. Bulut (2009) found that the types of department affect the attitudes, but university and gender factors are not effective. Can (2010) revealed that pre-service teachers who are in the non-thesis graduation program have positive attitude towards teaching profession. In addition, their attitude does not change except for type of program. Unlike the aforementioned studies, Osunde and Izevbigie (2006) who examined the 400 Nigerian post primary school teachers' attitude toward teaching profession, obtained that because of inadequate financial remuneration and delay in payment of salaries, teachers have low attitude towards the teaching profession.

Moreover, they found that poor conditions of service, wider negative influence and teachers' negative personal and professional behavior are the other factors of the teachers' low attitudes towards teaching profession. In addition, participating teachers stated that they had chosen the profession because of their interest in children, but later they turned to feel as if they had done so "accidentally" and the circumstances had directed them into this profession. This can be interpreted as follows, that the profession of teaching has lost its respect in the Nigerian society.

These researches showed that teacher education programs have an effect in forming pre-service teachers' attitudes towards teaching profession. In the literature some researches emphasized the importance of pedagogical content courses for forming the attitudes towards teaching profession. But, there are no researches done directly to find out the effects of only pedagogical content courses taught in teacher education program. In that context, our research differs from the literature. This study is aimed to examine how pedagogical content courses taken during education programs, affect the pre-service teachers' attitudes toward teaching profession.

METHODS

This study was carried out with the survey method to collect pre-service-teachers' attitudes towards the profession. Because, the survey method studies are carried out in order to determine current situations and they prepare the required background for the case studies (Çepni, 2010).

Participant and procedures

The participants comprised of 119 fourth-year pre-service students and 120 senior pre-service teachers. Pre-service teachers who were enrolled in the Non-thesis Graduate Degree in Secondary School Science and Mathematics Education Program in Turkey. The participants, who were the 119 fourth-year pre-service teachers, had completed the scale on February 2008. Their average is 22.3

years old. The participants who were 120 senior pre-service teachers had completed the scale on June 2008. Their average is 24.6 years old.

Context

In Turkey, secondary school science and mathematics teachers' education program is a ten semesters (five years) program. Each year, pre-service teachers have to complete two semesters (13 weeks each). In the study, at the end of the seventh semester, pre-service teachers represent as fourth-year pre-service teachers and at the end of the tenth semester, they represent as senior. The first seven semester pre-service teachers, have to take only content courses such as Physics, Chemistry and Algebra, etc. and the last three semester pre-service teachers have to take only pedagogical content courses such as special teaching methods, instructional technology and material design, etc. The course and semesters in teacher education program are in Appendix 1.

Data collection

The data of this research had been collected by the "Teaching Professional Attitude Scale" towards teaching profession. It was developed by Özgür (1994) who concluded that this scale can measure the attitude towards the teaching profession. Also, this scale was used at several studies to determine attitudes toward the teaching profession (Şimşek, 2005; Aslan and Köksal Akyol, 2006; Aysu, 2007; Çetinkaya, 2007, Derman and et al., 2008). The scale which was prepared as a five-point Likert-type, consists of 33 items for a total of 13 negative and 20 positive. These negative and positive items are arranged as mixed. Giving the points to the negative items has been inverted. The scale was applied to eight classes (four classes as seventh semester and four classes as tenth semester) in 2008-2009 academic year. Each term included Likert scale was arranged in five choices. The identification levels of the terms were graded as 1: Strongly Disagree, 2: Disagree, 3: Uncertain, 4: Agree, 5: Strongly Agree. The reliability coefficient (Cronbach alpha) of the scale was determined to be 0.93.

Data analysis

SPSS17 package program was used to analyze the data. The t-test for binary comparisons, the one-way analysis of variance (ANOVA) and Tukey HSD test were used for multiple comparisons calculations statistically. In addition, descriptive statistics were calculated to determine the mean, standard deviation and standard error of the variables in attitude scale scores of pre-service students.

FINDINGS

Teaching professional attitude scale, which was developed by Özgür (1994), was applied to the fourth and fifth class pre-service teachers who are in the secondary science and mathematics teacher education program. The fourth class pre-service teachers have taken the content courses from first semester to the end of seventh semester, and the fifth class pre-service teachers had taken pedagogical content courses in the last three semesters. The average scores which are taken from the scale by the students according to in their programs and

classes are shown in Table 1.

As shown in Table 1, it can be seen that the means of the scale are so close according to the type of programs regardless of class level, and it can also be seen that the minimum attitude score is 3.72 and the maximum attitude score is 3.96. But, some differences can be seen when comparing the fourth and fifth levels of classes for each program. The independent t-test was applied in order to compare attitude scores between the fourth and fifth classes. The t-test results are presented in Table 2. As can be seen from Table 2, a significant difference between attitude scores was found according to the level of classes. The one way ANOVA was applied in order to compare attitude scores of teacher candidates for each class among their programs. The result of the one-way ANOVA test is shown in Table 3. As shown in Table 3, there was no statistically significant difference found about pre-service teachers' attitudes among the programs regardless of the level of their classes. Also, there was no significant difference found among scores of the fourth class pre-service teachers' attitudes according to their programs.

Therefore, it can be said that pre-service teachers who completed content courses, own same attitudes regardless of their programs. However, a significant difference was found among scores of the fifth class pre-service teachers' attitudes according to their programs. This difference is caused by the program which can be seen from the results of Tukey HSD test in Table 4. As can be seen from Table 4, a significant difference was found between Physics and Biology, and also between Chemistry and Biology. However, a significant difference was not found between Mathematics and other programs, and also between Physics and Chemistry (Biology = Mathematics > Physics = Chemistry).

DISCUSSION AND CONCLUSION

The pre-service teachers, who studied in different departments of secondary school science and Mathematics education, generally have positive attitude towards the teaching profession (Table 1). The student's attitude can be graded using the formula range with = (Sequence range) / (Number of groups to be established) (Tekin, 1996) and, for the five-point Likert scale, the point ranges have been determined as $4/5 = 0.80$. Therefore, it can be said that pre-service teachers like teaching profession highly (ranging from 3.40 to 4.19 in the five-point Likert scale). However, another result from this study, the attitude scores of the pre-service teachers who were taking content courses, decreased at the end of the pedagogical content courses (Table 2).

Biology and Mathematics pre-service teachers' attitudes did not change at the end of the pedagogical content courses (Table 4). Hence, it was concluded that pedagogical content courses which were taken during the

Table 1. Descriptive statistics of attitudes towards teaching profession according to programs and classes.

Classes	Program	N	Mean	Std. Deviation	Std. Error
4	Physics	24	4.100	0.405	0.082
	Chemistry	33	3.908	0.549	0.095
	Biology	31	3.966	0.463	0.083
	Mathematics	31	3.786	0.569	0.102
	Total	119	3.930	0.512	0.046
5	Physics	26	3.458	0.663	0.130
	Chemistry	25	3.488	0.709	0.141
	Biology	34	3.968	0.434	0.074
	Mathematics	35	3.794	0.573	0.096
	Total	120	3.707	0.620	0.056
Total	Physics	50	3.766	0.637	0.090
	Chemistry	50	3.727	0.652	0.085
	Biology	65	3.967	0.444	0.055
	Mathematics	66	3.790	0.567	0.069
	Total	239	3.818	0.579	0.037

Table 2. Result of t-test of attitude scores according to classes.

	Classes	N	Mean	Std. Deviation	df	t	p
Attitude	4	119	3.930	0.512	237	3.028	0.003*
	5	120	3.707	0.620			

*P<0.05

last three semesters, was not effective for Biology and Mathematics pre-service teachers (Appendix 1). Also, it can be seen that Physics and Chemistry pre-service teachers' attitudes decreased at the end of the pedagogical content courses (Table 4).

However, there are some findings which are related to teaching profession attitudes which will be improved by the pedagogical content courses, in the literature (Hoşgörür et al., 2002; Çapa and Çil, 2000). Hoşgörür et al. (2002) carried out a study on pre-service-teachers' attitude of the primary school education program towards teaching profession, and they concluded that their attitudes have been improved according to their level of classes, and the pedagogical content plays an important role in this result. So, it can be said that the pedagogical content courses may be a factor that creates detractive effect on students' attitudes.

However, some studies concluded that the attitudes towards the teaching profession are not directly proportional to their grades (Akpınar et al., 2006; Bulut

and Doğar, 2006). It can be associated with the fear of appointment (Gürses et al., 2005; Bulut and Doğar, 2006). One reason for such different results in the literature, may be the change of the pre-service-teachers' needs in time. These different results especially can be seen more clearly on recent studies. In recent years, the teacher candidates who graduated from the Secondary Science and Mathematics Education Program, face a problem such as difficulty of appointment in Turkey. Çapa and Çil (2000) carried out a study on Physics, Chemistry, Biology and Mathematics teacher education programs. Although they determined that the teaching profession's attitudes have been improved by the courses which are concentrated with the pedagogical content, it was determined that the reduction of Physics and Chemistry pre-service teachers' attitudes, and not the change of Mathematics and Biology pre-service teachers' attitudes in this study (Tables 3 and 4). So, this disparity can result from different needs or expectations of pre-service teachers. Pehlivan (1994) expressed that the level of

Table 3. Variance analysis of attitude scores of the pre-service teachers related with enrolled program and class variable.

Classes	Source of variance	Sum of squares	df	Mean squares	F	P
4	Between Groups	1.394	3	0.465	1.804	0.150
	Within Groups	29.613	115	0.258		
	Total	31.007	118			
5	Between Groups	5.391	3	1.797	5.152	0.002*
	Within Groups	40.459	16	0.349		
	Total	45.849	19			
Total	Between Groups	2.116	3	0.705	2.133	0.097
	Within Groups	77.714	235	0.331		
	Total	79.830	238			

* P<0.05

Table 4. Tukey HSD test of attitude scores who completed the pedagogical content courses according to programs.

Groups	Mean difference	Std. Error	P
Physics-Chemistry	-0.02934	0.16543	0.998
Physics -Biology	-0.50964*	0.15386	0.007
Physics -Mathematics	-0.33565	0.15290	0.131
Chemistry - Biology	-0.48031*	0.15559	0.013
Chemistry - Mathematics	-0.30631	0.15465	0.201
Biology - Mathematics	0.17399	0.14221	0.613

* P<0.05

teacher candidates' professional and future expectations on the teacher education programs can be significant on their attitudes.

In addition during the training, the different learning environments, instruction methods and strategies which are encountered by the pre-service-teachers may be another reason of this difference on their attitude towards the teaching profession. For this reason, there are several studies in the literature which present the impact on the students' attitude towards lessons and their learning through the learning environment, and used methods and techniques by the teacher (McKeachie, 1994; Mordi, 1991; Schibeci and Riley, 1986). These needs, learning environments and teaching methods may change with each passing year. For this reason, there is a necessity to often carry out such studies in different departments and programs, and different grade levels.

SUGGESTIONS

The professional success of the pre-service-teachers in the future is associated with their attitudes towards the

teaching profession. Therefore, according to these results, the following recommendations can be offered. Secondary science and mathematics education department may be re-arranged as pre-service teachers take content courses and pedagogical content courses together to improve their teaching professional attitudes. The factors which affect their attitudes towards the teaching profession should be identified and eliminated, and the studies should be done to improve their attitudes. It is recommended to the researchers to carry out case studies on a little sample after the survey studies which are conducted on a large sample such as this study for putting forward the reasons of shortcomings clearly.

REFERENCES

- Akkaya N (2009). Teachers' Attitudes Towards Teaching Profession An Investigation of Some Variables. Dokuz Eylul University, Buca Faculty of Educ. J., 25: 35-42.
- Akpinar E, Yildiz E, Ergin Ö (2006). Science Teachers' Attitudes Towards Teaching Profession. Buca Faculty of Educ. J., 19: 56-62.
- Allport GW (1966). Attitudes in the History of Social Psychology, in Jahoda, M and Warren, N (eds.) Attitudes: Selected Readings England: Penguin Books Limited.

- Aslan D, Köksal AA (2006). Pre-School Teachers' Attitudes towards Teaching Profession and the Professional Examination of self-esteem. *Cukurova University, J. of Soc. Sci. Ins.*, 15(2): 51-50.
- Askar P, Erden M (1987). Professional Attitude Scale. *Contemporary Education Review*, 12: 121, 8-11.
- Aysu B (2007). Investigation of Pre-School Teachers' Attitudes Against the Teaching Profession. Unpublished Master's Thesis, Ankara University, Ankara Institute of Science.
- Baysal AC (1981). Attitudes of social and organizational psychology. Yalcin Offset Printing, Istanbul.
- Bulut HO, Dogar (2006). Investigation of Teachers' Attitudes Against the Teaching Profession. *Erzincan Faculty of Educ. J.*, 8: 1 13-27.
- Bulut I (2009). Evaluation of Teachers' Attitudes Regarding Teaching Profession (The Case of the University of the Tigris and Euphrates), *Ziya Gokalp Education Faculty at Dicle University J.*, 14: 13-24
- Bozdogan AE, Aydin D, Yildirim K (2007). Teachers' Attitudes toward Teaching Profession. *Kirsehir J. Educ.*, 8 (2): 83-97.
- Can S (2010). Master of Science Students' Attitudes Towards Teaching Profession. *J. Soc. Sci.*, 24: 13-28.
- Cakir O (2005). Anadolu University, Open University Degree in English Language Teaching (İÖLP) and English Language Teaching Degree Program Students in Faculties of Education and Professional Competence Perceptions, Attitudes towards the profession. *J. Inonu University Faculty of Educ.*, 9 (6): 27-42.
- Capa Y, Cil N (2000). Teachers' Attitudes Towards Teaching Profession An Investigation of the different variables. *Hacettepe University J. Educ.*, 18: 69-73.
- Capri B, Celikkaleli Ö (2008). Teachers' Attitudes toward Teaching and Professional Competence Beliefs Gender, the Program and Investigation of Faculties, *Inonu University Faculty of Education J.*, 9(15): 33-53.
- Celikoç N, Cetin F (2004). Anatolian teacher high school students' attitudes about the factors affecting the teaching profession. *National Educ. J.*, (162).
- Cepni S (2010). Introduction to Research and Studies Project. Trabzon: Celepler Printing.
- Cetinkaya R (2007). Turkish Teachers' Perceptions of Competence and Attitudes towards Teaching Profession, unpublished Master's Thesis, Selcuk University, Institute of Social Science, Konya.
- Derman A, Dogu S, Godek-Altuk Y (2008). Classroom teachers' perceptions about science and technology literacy levels. 8th International Educational Technology Conference (IETC 2008) Proceedings of Eskisehir, Turkey, 6-9 May 2008.
- Durmusoglu C, Yanik C, Akkoyunlu B (2009). Turkish and Azeri student teachers' attitudes towards the teaching profession. *Hacettepe University Faculty of Educ. J.*, 36: 76 - 86
- Gurses A, Dogar O, Ozkan E, Acikyildiz M, Bayrak R, Yalcin M (2005). Field evaluation of teacher education is to train graduate thesis. *S.D.Ü. Burdur Education Faculty J.*, 9: 1-10.
- Hosgorur V, Kilic O, Dundar H (2002). Kirikkale University classroom teaching program, students' attitudes towards the teaching profession. *Marmara University Faculty of Educ. Sci. J.* 8(16): 91-100.
- Hussain S, Ali R, Khan MS, Ramzan M, Qadeer MZ (2011). Attitude of Secondary School Teachers Towards Teaching Profession. *Int. J. Acad. Res.*, 3(1): 985-990.
- McKeachie WJ (1994). *Teaching Tips: Strategies, Research, and Theory for College and University Teachers.* (9th eds.) Lexington: Mass: D.C. Heath and Company.
- Mordi C (1991). Factors Associated with Pupil's Attitudes Towards Science in Nigerian Primary Schools. *Res. Sci. Technol. Educ.*, 9(1): 39-41.
- Oral B (2004). Faculty of Education Students' Attitudes to Teaching Profession. *Educ. Res.*, 15: 88-98.
- Osun AU, Izevbogie TI (2006). An Assessment of Teachers' Attitude towards Teaching Profession in Midwestern Nigeria. *Education*, 126(3): 462-467.
- Ozgur FN (1994). Attitudes Towards Teaching Profession. Unpublished PhD Thesis. Marmara University Inst. Soc. Sci., Istanbul.
- Pehlivan H (1994). Education Studies Students' Attitudes towards Learning Sees section. *Hacettepe University J. Educ.*, 10: 49-53.
- Schibeci RA, Riley JP (1986). Influence of Students' Background and Perceptions on Science Attitudes and Achievement. *J. Res. Sci. Teach.*, 23(3): 177-187.
- Simsek H (2005). Secondary School Teacher Education Program Continuing MA Students' Attitudes Towards Teaching Profession. *Yuzuncu Yil University Faculty of Educ. J.*, 2(1): 25-50.
- Tekin H (1996). *Educational measurement and evaluation.* (10th Edition). Ankara: Yargi Publication.
- Terzi AR, Tezci E (2007). Necatibey Faculty of Education Students' Attitudes to Teaching Profession. *Theory & Practice of Educational Administration*, 52: 593-614.

APPENDIX

Appendix 1: Semesters and courses in science and Mathematics teacher education program.

Courses / Semesters	Departments				
	Mathematics	Physics	Chemistry	Biology	
First semester	Physics-1, Analysis-1, Fundamental mathematics	Physics-1, Chemistry-1, Linear algebra, Analysis-1	Physics-1, Chemistry-1, Fundamental mathematics-1	General Biology I, General Physics, General Chemistry, General Mathematics	Common courses
Second semester	Physics-2, Analysis-2, Analytic geometry	Physics-2, Analysis-2, Analytic geometry, Chemistry-2	Physics-2, Chemistry-2, Fundamental mathematics-2	General Biology-II, Biometry, Organic Chemistry	
Third semester	Linear algebra Analysis-3 Abstract Mathematics	Heat and Thermodynamics, Mechanics, Differential Equations	Biology, Inorganic Chemistry-1, Analytic Chemistry-1,	Cell Biology, Plant Morphology and Anatomy, Systematics of Invertebrate Animal	
Fourth semester	Linear algebra-2, Analysis-4, Differential equations	Electric and Magnetism, Modern Physics, Mathematical Methods in Physics-1	Inorganic Chemistry-2, Introduction to Organic Chemistry, Analytic Chemistry-2	General Microbiology, Animal Histology, Systematics of Vertebrate Animals	Domain specific courses (content courses)
Fifth semester	Algebra-1, Differential geometry, Complex Analysis	Quantum mechanics-1, Electronics-1, Vibrations and Waves, Electricity	Instrumental Analysis, Organic Chemistry-1, Physical Chemistry-1	Genetics I, Cryptogame Systematics, Animal Physiology, Biochemistry I	
Six semester	Algebra-2, Statistic, Topology	Quantum mechanics-2, Statistics in physics, electromagnetic theory	Organic Chemistry-2, Physical Chemistry-2	Genetics II, Spermatophyta Systematic, Plant Physiology	
Seventh semester	Partial Differential Equations, Real Analysis	Atomic and Molecular Physics, Nuclear Physics, Solid State Physics	Biological chemistry, Industrial chemistry	Molecular biology, Ecology, Human Anatomy and Physiology	
Eighth semester	Special teaching methods-1, Introduction to teaching profession, Development and Learning, Planning and Evaluation in education, School training-1	Special teaching methods-1, Introduction to teaching profession, Development and Learning, Planning and Evaluation in education, School training-1	Special teaching methods-1, Introduction to teaching profession, Development and Learning, Planning and Evaluation in education, School training-1	Special teaching methods-1, Introduction to teaching profession, Development and Learning, Planning and Evaluation in education, School training-1	
Ninth semester	Using Computers in mathematics education, Instructional Technologies and material development, Classroom management, Special teaching methods-2, School training-2	Instructional Technologies and material development, Classroom management, Special teaching methods-2, School training-2	Instructional Technologies and material development, classroom management, Special teaching methods-2, School training-2	Instructional Technologies and material development, Classroom management, Special teaching methods-2, School training-2	Pedagogical content courses
Tenth semester	Textbooks review, Guidance, Teaching practice, research project in subject area.	Textbooks review, Guidance, Teaching practice, research project in subject area.	Textbooks review, Guidance, Teaching practice, research project in subject area.	Textbooks review, Guidance, Teaching practice, research project in subject area.	

Appendix 2

Sample items of "Teaching Professional Attitude Scale"

1. Teaching is one of the most social prestigious professions.
4. Teaching is a loved and appreciated profession.
8. Teaching is an art and it needs a special talent.
13. If the teachers did not exist, our society would be far behind from the present situation.
16. Teaching is a difficult and demanding profession.
20. Teaching is not a loved profession.
23. I do all job except for teaching.
26. Teaching hasn't an attractive feature as a profession.