World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:1, No:11, 2007

Research on Self-Perceptions of Pre-Service Turkish Language Teachers in Turkey with Regard to Problem Solving Skills

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***Abstract*—**The aim of this research is to determine how pre-service Turkish teachers perceive themselves in terms of problem solving skills. Students attending Department of Turkish Language Teaching of Gazi University Education Faculty in 2005-2006 academic year constitute the study group (n= 270) of this research in which survey model was utilized. Data were obtained by Problem Solving Inventory developed by Heppner & Peterson and Personal Information Form. Within the settings of this research, Cronbach Alpha reliability coefficient of the scale was found as .87. Besides, reliability coefficient obtained by split-half technique which splits odd and even numbered items of the scale was found as r=.81 (Split-Half Reliability). The findings of the research revealed that pre-service Turkish teachers were sufficiently qualified on the subject of problem solving skills and statistical significance was found in favor of male candidates in terms of "gender" variable. According to the "grade" variable, statistical significance was found in favor of 4th graders.

***Keywords*—**Problem Solving, problem solving skills, Pre-service Turkish Language Teachers.

I. Introduction

TODAY, more problems which are more complicated are encountered with the influence of scientific, technological, political, economic and social developments. Individuals have to solve the problems they encounter in a rapid and effective way in order to be successful and happy in their both private and social, and business lives and to live without feeling a need for others. This case emphasizes how important it is to have acquired the problem solving skill and indicates the importance of dealing with this issue seriously in our education system. Individual success depends on persons' analyzing the problems they encounter in their daily lives with a reasonable approach without becoming their slaves and realistically determining and solving the reasons causing the problems [1].

A problem is an important and difficult case, the solution of which requires creative thinking; it is a case that orients an individual by means of one or more questions to inquire the reasons and results of those questions. It is the process of bringing the existing relations to light in view of new happenings and occasions; establishing new relations and obtaining a certain result according to the objective pursued. Basically, it is a state of conflict where the individual encounters a hindrance in reaching his or her objective. In such a case, the problem is to find the best way to overcome such hindrance. And in some cases, the problem is to settle the conflict. It is a way that involves the initial state of the desired output and the processes and activities that will take the individual to the objective [2], [3], [4]. Problem solving, on the other hand, is a process that requires a series of efforts to remove the obstacles encountered to reach a certain objective. It is a behavioral process where some steps with a certain logical succession are taken consciously in order to solve a problem and which requires the selection and use of both subject field knowledge and cognitive strategies suitable for the case. It is to establish new answers, and go beyond the simple adaptations of previously learned rules to achieve a goal [5], [6], [7], [4]. Problem solving skill is a basic life skill and it has a vital importance in understanding technical issues. It is a subset of critical thinking and employs the same strategies with that. Even though the line between those two is ambiguous, generally, the objective of problem solving is to bring accurate solutions to fine structured problems whereas the objective of critical thinking is to set and defend reasonable solutions to poor structured problems [8].

Problem solving, which is both a general and a specific field, has five stages: Defining and presenting a problem and understanding it through the determination of objectives, searching possible solutions to it, sensing the probable consequences of the strategies and practicing a strategy, evaluating the results and learning from the results [4], [8]. Problem solving is a critical process skill that involves virtually all aspects of existence. It is clear that problems of various types exist and that not all problems are technological. Furthermore, problem solving has been identified and promoted by many disciplines including mathematics, psychology, the physical sciences, the arts, and more. In different contexts, and in unique ways, all employ the problem solving process [9]. Consequently, it can be said that problem solving is a complex process that contains cognitive, perceptive and motor activities and that involves the establishment of efficient options, and the selection and application of one of those options.

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II. The Importance of Problem Solving Skills

Having acquired the problem solving skill helps the individual and the group to adapt actively to the environment they live in. It teaches people to face problems bravely, and ensures the prediction of possible problems beforehand. Once it is evident that a problem is to occur, problem solving skill helps the formation of creative thoughts, it ensures success in finding a solution and personal confidence in making decisions. Decision making and problem solving activities keep people vigorous mentally and prepare them to deal with new problems. Willingness to solve problems constitutes a part of liberation. Effective problem solving skills is an important way to cope with the removal of the challenging effect of personal and interpersonal problems and decreasing the effect of emotional stress. Besides, it may provide a greater feeling of supervision on individuals' environs and lives [7], [10], [11]. A person who has the ability to solve problems is innovative; he or she openly expresses his preferences and decisions; has a feeling of responsibility; thinks flexibly; is courageous and adventurous; sets forth different opinions; has self-confidence; is reasonable and behaves objectively; is creative and productive; and is critical. Expert problem solvers have wide fields of interest; they have a conditioned store of knowledge based on a rich explanatory process [12], [4].

III. The Importance of Problem Solving Skill in Teaching

It is natural that problems are encountered at crowded school environments where the education need of the society is met since many problems and students from different backgrounds are awaiting the teacher there. Larabee summarizes this problem:

> *We send teachers into the classroom armed with progressive rhetoric and imbued with the constructivist spirit, but they immediately have to adapt to the realities of teaching in today's schools: a school system characterized by bureaucracy, mandated curricula, and high stakes tests and a student body characterized by radical differences in economic, social and cultural capital* [Cited in 13].

However, for the school to realize its aims in an influential way and for the students to give themselves over to learning pursuits, problems need to be solved in a very short period of time and in an effective manner. For education to be more fruitful and functional, the most important duty and responsibility is incumbent on teachers, who are the managers of the learning process. The teacher needs to be prepared to help the students and their parents in solving problems. One of the basic duties of teachers is to find solutions to problems. Besides, teachers "…should be capable of improving critical thinking, problem solving and communication skills and aesthetical understanding, and use these in an efficient way" [14], [15].

Problem solving is a skill that can be learned and improved. This skill can be improved in the class atmosphere within large blocks of time by means of group projects and various open ended lesson tools and equipment Being the problem solver takes place by teachers' being a role model and students' imitating the teacher's behavior. The teacher has a two-way function: To steer the process; be willing to trust the learner and to set the class atmosphere that will improve problem solving [16].

Although problem solving is accepted as one of the most important educational outputs by many educators, for the purpose of designing education that involves problem solving, there are only a few educational design prescriptions including learners in this teaching process. Besides, at schools, well structured problems are more dwelled upon than ill structured problems [17].

Pre-service teachers usually begin their training process with personal beliefs about teaching, images about good teachers, images about themselves as teachers and personal memories about their days as pupils in class" [Cited in 18]. Kagan [19] treated these prior beliefs as an essential phase in the professional development of pre-service teachers. She proposed a professional development model that follows previous models (such as Berliner; Fuller; Fuller & Bown). Kagan's model emphasised the change in beliefs which resulted from the interaction between the former beliefs and images formed during teaching experience in class during training. These changes open possibilities for the student to acquire new knowledge in academic studies and to attain Professional growth. The model consists of five components:

> *(1)An increase in metacognition through awareness to what they know and believe about pupils and classroom and how their knowledge and beliefs are changing.*
> *(2)The acquisition of knowledge about pupils: idealised and inaccurate images of pupils are reconstructed. New knowledge about pupils is used to modify, adapt and reconstruct the pre-service's image of self as teacher.*
> *(3) Shift of attention from self to the design of instruction to pupil learning.*
> *(4)Development of standard procedures: standardised routines that integrate instruction and management and become increasingly automated.*
> *(5)Growth in problem solving skills: eventually they are able to determine which aspects of problem solving repertoires can be generalised across contexts. [19]*

For problematic cases to be solved through more reasonable ways and in a shorter time in learning environments, pre-service teachers or teacher candidates need to have acquired this skill or competency before taking up the job; since having reached such competency will bring about great conveniences in their professional lives as persons to undertake the responsibility of education in a few years' time. The

educational literature indicates pre-service teacher candidates' using the knowledge and skills they acquired from a diversity of sources and improving the reasoning and problem solving skills within the scope of a disciplinary field [20].

As required by its nature, Turkish Language lessons are suitable for students to acquire skills such as making decisions, making interpretations, suggesting solutions to problems, and thinking critically. In literary texts, which are the main tools of the courses, problems and ways of solutions to those problems are indirectly made understood intuitively. In these texts, the teacher may make learners realize the solution way and the consequences of problems and he/she may make them perform activities based on interpretation and criticism by moving forward from the natural context. Thus, he/she may have the students acquire this important skill. Being able to do so requires that the teacher himself/herself is equipped with these skills; in other words, that he/she has undergone such training in his/her years as students. Within this context, the determination of the self-perception levels of pre-service teachers that are students at Turkish Language Teaching Departments with regard to problem solving skills becomes a necessity.

IV. The Objective of the Research

1st and 4th grade students (n=270) of Gazi University Education Faculty Turkish Language Teaching Department in 2005 – 2006 academic year constitute the study group of this research.

The aim of the research is to determine the perception levels of students at the above mentioned department with regard to problem solving skills. Besides, the aim is to see whether there is a significant difference between the 1st and the 4th grade students in terms of their levels of perception with regard to problem solving skill; and to examine the relation between this skill and variables such as "gender" and "type of high school graduated". To this end, answers to the following questions were sought:

1. How are the perceptions of the pre-service Turkish Language teachers about their levels of competency with regard to their problem solving skills?

2. Do the levels of perception of pre-service Turkish Language teachers with regard to their problem solving skills vary according to

a. Gender

b. Grade

c. Type of high school they have graduated from?

V. Methodology

This research, aiming at determining the relation between the levels of perception of pre-service Turkish Language teachers with regard to their problem solving skills and the relation between their levels of perception with regard to their problem solving skills by use of variables related to some of their personal characteristics, employs survey model.

During this research, in obtaining data, "Personal Information Form" where introductory information is found, and "Problem Solving Inventory" (PSI) developed by Heppner & Peterson in 1982 were employed. PSI evaluates self-perception levels of individuals with regard to problem solving skills, it consists of 35 items and is of six-point likert type scale, and it has no time limits. The original name of the inventory is "Problem Solving Inventory, Form-A (PSI-A)". It was developed by taking problem solving stages such as "General Orientation", "Definition of Problem", "Alternative Production", "Deciding" and "Assessment" into consideration. It is carried out on adolescents and adults [21], [22].

The validity and reliability study of this inventory for Turkey was conducted by Taylan in 1990. That it can be used in fields of psychological consultancy, medicine or educational environments were proved with various researches [20].

As a result of the factor analysis performed, the scale was found to have 6 factors being "Impetuous Approach" (Items 13,14,15,17,21,25,26,30 and 32, α= 0.78), "Thinking Approach" (Items 18,20,31,33 and 35, α=0.76), "Avoiding Approach" (Items 1,2,3 and 4, α=0.74), "Evaluating Approach" (Items 6, 7 and 8, α=0.69), "Self-Confident Approach" (Items 5,23,24,27,28 and 34, α=0.64), and "Planned Approach" (Items 10,12,16 and 19, α=0.59) [21].

"Problem solving score" of the candidate is found by adding the numerical values of the replies given to the questions. That the score obtained from the inventory is high means that the problem solving skill is low. In short, problem solving score is indirectly proportional with the problem solving skill [11]. While grading, Items 9, 22 and 29 are excluded. Items 1, 2, 3, 4, 11, 13, 14, 15, 17, 21, 25, 26, 30 and 34 are graded reversely. It is assumed that these articles represent sufficient problem solving skills [21].

Reliability: Within the scope of this research, in the study conducted on a total of 270 university students, Cronbach Alfa reliability coefficient of the scale was found to be .87. The reliability coefficient of the "Impetuous Approach" sub-dimension of the inventory was found to be .68; the reliability coefficient of the "Thinking Approach" sub-dimension of the inventory was found to be .74; the reliability coefficient of the "Avoiding Approach" sub-dimension of the inventory was found to be .68; the reliability coefficient of the "Planned Approach" sub-dimension of the inventory was found to be .67; the reliability coefficient of the "Evaluating Approach" sub-dimension of the inventory was found to be .59; and the reliability coefficient of the "Self-Confident Approach" sub-dimension of the inventory was found to be .69. The reliability coefficient obtained by the split-half method which splits odd and even numbered items (Split-Half Method) was found to be r= .81.

The data obtained was assessed using SPSS 13.0 package program. In the statistical analysis of the research, "t-test for independent groups" was used for gender and grade independent variables and one-fold variance analysis (Anova) was used for "type of high school graduated" independent

variable. In this study, "State High Schools", "Anatolian High Schools", "High Schools with Foreign Language" and "Anatolian Teacher Training High Schools" were compared.

VI. Findings

In this section, the results of the statistical analysis performed in the direction of the sub-problems of the research are discussed. In the study, the significance value for all the analyses is taken as 0,05. In Table I, self-perception levels of Turkish Language teacher candidates with regard to their problem solving skills are given.

TABLE I
SELF-PERCEPTION LEVELS OF TURKISH LANGUAGE TEACHER CANDIDATES WITH REGARD TO THEIR PROBLEM SOLVING SKILLS

	N	Minimum	Maximum	Average	Standard Deviation
Total	270	40.00	131.00	82.29	18.22

The "expected average" in this scale in terms of problem solving skill is 112. According to Table I, the arithmetical mean of the group is found as 82.29. As a result of the t-test performed, since the problem solving score is indirectly proportional with the problem solving skill, it was observed that the problem solving score of this group is significantly higher than the expected average. t-test comparison of the problem solving scores of Turkish Language teacher candidates according to the "gender" variable is given in Table II.

According to Table II, in terms of the "gender" variable, there is a significant difference in favor of male teacher candidates in the "total", "self-confident approach" and "impetuous approach" sub-dimensions. No significant difference was observed in terms of gender in the "thinking approach", "avoiding approach" and "evaluating approach" sub-dimensions of the inventory.

TABLE II
COMPARISON OF THE PROBLEM SOLVING SCORES OF TURKISH LANGUAGE TEACHER CANDIDATES ACCORDING TO THE "GENDER" VARIABLE

SUB-SCALES	Female (n=109)		Male (n=162)		Sd	t	P
	X	S	X	S			
IMPETUOUS	27.24	5.69	25.17	6.09	268	2.85	.005
THINKING	11.82	4.09	11.61	3.74	269	.421	.674
AVOIDING	9.67	3.62	9.68	3.87	269	-.033	.974
EVALUATING	7.28	2.42	7.01	2.74	269	.838	.403
SELF-CONFIDENT	15.77	4.91	13.99	4.57	269	3.015	.003
PLANNED	9.67	3.26	9.09	3.22	269	1.445	.150
TOTAL	84.30	17.68	79.31	18.68	269	2.27	.027

*p<0,05

T-test comparison of the problem solving scores of Turkish Language teacher candidates according to the "grade" variable is given in Table III. According to Table III, while there is no difference in terms of the "grade" variable in "thinking approach" and "planned approach" sub-dimensions, it is seen that there is a significant difference in favor of the 4th graders in total and the other sub-dimensions.

TABLE III
COMPARISON OF THE PROBLEM SOLVING SCORES OF TURKISH LANGUAGE TEACHER CANDIDATES ACCORDING TO THE "GRADE" VARIABLE

SUB-SCALES	1st Grade (N=139)		4th Grade (N=132)		sd	t	p
	X	S	X	S			
IMPETUOUS	28.41	5.81	24.31	5.32	268	6.023	.000
THINKING	12.06	3.74	11.39	4.14	269	1.40	.163
AVOIDING	10.28	3.91	9.04	3.40	269	2.76	.006
EVALUATING	7.47	2.66	6.86	2.41	269	1.97	.049
SELF-CONFIDENT	15.89	4.58	14.17	4.98	269	2.96	.003
PLANNED	9.72	3.15	9.13	3.34	269	1.49	.136
TOTAL	86.83	17.36	77.51	17.94	269	4.34	.000

*p<0,05

Variance analysis test results of the problem solving scores of Turkish language teacher candidates according to the "type of high school graduated" variable is given in Table IV.

TABLE IV
VARIANCE ANALYSIS RESULTS OF THE PROBLEM SOLVING SCORES OF TURKISH LANGUAGE TEACHER CANDIDATES ACCORDING TO THE "TYPE OF HIGH SCHOOL GRADUATED" VARIABLE

Sub-Scales	Type of High School	N	X	S	sd	F	P	Significant Difference
Impetuous	Anatolian High School	62	26.03	5.46	268	.662	.576	
	State High School	67	26.97	6.40				
	H.S. with Foreign Language	49	25.59	5.51				---
	Anatolian Teacher Training H.S.	92	26.70	6.16				
Thinking	Anatolian High School	62	11.38	3.58	269	.614	.606	
	State High School	67	11.41	4.19				
	H.S. with Foreign Language	49	11.81	3.92				---
	Anatolian Teacher Training H.S.	92	12.13	4.05				
Avoiding	Anatolian High School	62	9.46	3.62	269	.855	.465	
	State High School	67	9.32	3.58				
	H.S. with Foreign Language	49	10.38	3.93				---
	Anatolian Teacher Training H.S.	92	9.66	3.78				
Evaluating	Anatolian High School	62	6.41	2.46	269	3.74	.012	Anatolian High School
	State High School	67	6.91	2.17				
	H.S. with Foreign Language	49	7.59	2.57				
	Anatolian Teacher Training H.S.	92	7.67	2.76				Anatolian Teacher Training H.S.
Confident	Anatolian High School	62	14.98	4.70	269	3.20	.024	
	State High School	67	13.62	4.35				State High School
	H.S. with Foreign Language	49	15.20	4.74				
	Anatolian Teacher Training H.S.	92	16.00	5.15				Anatolian Teacher Training H.S.
Planned	Anatolian High School	62	8.93	2.98	269	.966	.409	
	State High School	67	9.23	3.51				
	H.S. with Foreign Language	49	9.79	3.23				---
	Anatolian Teacher Training H.S.	92	9.69	3.24				
Total	Anatolian High School	62	79.85	17.02	269	1.18	.317	
	State High School	67	80.37	18.29				
	H.S. with Foreign Language	49	83.26	18.55				---
	Anatolian Teacher Training H.S.	92	84.66	18.75				

According to Table IV, while no significant difference is observed in terms of the "high school graduated" variable in total, there occurs a significant difference depending on the type of high school in "evaluating approach", one of the sub-dimensions of the inventory. In order to be able to find between which types of high schools this difference occurs, "Tukey Multiple Comparison Test" was applied. As a result, it was found out that there is a significant difference in favor of Anatolian High Schools when "Anatolian High Schools" and "Anatolian Teacher Training High Schools" are compared. Similarly, in terms of the "Self-Confident Approach" sub-dimension, where again a significant difference was observed according to the type of high school, as the result of the Tukey multiple comparison test, a significant difference was found in favor of state high schools when state high schools and Anatolian Teacher Training High Schools were compared.

VII. Discussion and Conclusion

According to the findings of the research, the arithmetical mean of the problem solving skills of pre-service Turkish language teachers was found to be 82.29. The expected average in this inventory is 112 (Ranj, 32-192). That the score obtained in the inventory is high means that the problem solving skill is low [11]. At the end of the t test performed, it was found that the problem solving skill level of this group is significantly higher than the expected average. In this case, it can be said that the self-perception of pre-service Turkish language teachers in terms of problem solving skills is good.

When the problem solving skills of Turkish teacher candidates are taken into consideration in terms of the "gender" variable, there is a significant difference in favor of male teacher candidates in "total", "self-confident approach" and "impetuous approach" sub-dimensions.

> *Self-Confident Approach sub-dimension explains a person's self-confidence in problem solving. It assesses whether an individual deems himself/herself competent in solving problems and showing effort. Impetuous Approach sub-dimension shows whether an individual acts in the direction of the first thought that comes to his/her mind without giving it a second thought when he/she encounters a problem* [23].

This result can be interpreted as that about solving a problem, male teacher candidates are more self-confident than female teacher candidates and they deem themselves more competent, and that when they encounter a problem, males can find more reasonable solutions.

When the problem solving skills of Turkish language teacher candidates are examined in terms of "grade" variable, it is observed that there is a significant difference in favor of 4th graders in total and in four sub-dimensions (Impetuous Approach, Avoiding Approach, Evaluating Approach and Self-Confident Approach). This result indicates that 4th grade teacher candidates think to be able to solve a problem when they encounter one, they do not put the first solution that comes to their mind into practice, when they fail in solving a problem, they do not have doubts about whether they will be able to overcome that problem, they consider all possible ways to solve that problem, they have self-confidence in problem solving, they deem themselves competent. In a study she, conducted on university students, Taylan studied the relations between students' problem solving skills and their grades. At the end of this study, it was seen that there was no difference between the 1st and 4th graders in terms of problem solving scores. However, the study group in Taylan's research were not students at an education faculty [11]. That the result in this study is found to be significant in favor of 4th graders may be related with their being education faculty students and thus, their receiving courses such as "Introduction to Educational Sciences", "Educational Psychology", "Teaching Principles and Methods", "Introduction to Teaching Profession", "School Experience", "Improvement and Learning", "Planning and Assessment in Education", "Education Technologies and Material Design", "Class Management", "Special Teaching Methods", "Counseling" and "Teaching Practice" [4] during their four-year education lives. According to Enç, "improvement and maturation level" and "education and training received" are among the factors that influence an individual's learning how to solve problems [24]. Thus, that the result comes in favor of 4th graders in terms of problem solving in this study may be related with both "improvement and maturation level" and the contents of the courses received. In short, Enç's opinions are of quality that support the results of the study. As to the study Katkat and Mızrak [25] performed on university students, it indicates that the higher the grade is, the more the problem solving skill increases; and this is a result that displays similarity to that of this study.

When the problem solving skills of Turkish teacher candidates are examined according to the "high school graduated" variable, it is seen that there is no significant difference in total. This result can be explained by taking into consideration that teacher candidates are educated according to a common education program at the primary and secondary schools they attend before university. However, in the "Evaluating Approach" which is one of the sub-dimensions of the inventory, there is a significant difference in favor of Anatolian high schools when Anatolian high schools and Anatolian teacher training high schools are compared. This result indicates that teacher candidates who have graduated from Anatolian high schools try to consider all the ways they may apply in order to solve a problem when they encounter one and examine their own feelings to understand how they feel when compared to the ones who have graduated from Anatolian teacher training high schools. And in terms of "Self-confident approach" dimension, there is a significant difference in favor of state high schools when state high schools and Anatolian teacher training high schools are compared. This finding can be explained as follows: the students who have graduated from state high schools are more self-confident and deem themselves more competent in

solving problems when compared to graduates of Anatolian teacher training high schools.

Suggestions of the study are following:

1. The data about problem solving skill in this study relate only to Gazi University Education Faculty Turkish Language Teaching Department. Such a study should also be conducted for the Turkish Language Teaching departments of other universities and how the pre-service Turkish teachers deem themselves in terms of problem solving skills should be determined.

2. Such a study can also be conducted in a way that it will also include different pre-service teachers.

3. New arrangements should be made in the programs of the faculties that train teachers and in those programs, courses that aim at the acquisition of problem solving skills should be included since this would bring about great conveniences in teachers' professional lives.

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