

CORRELATION BETWEEN LEARNING AND STUDYING STRATEGIES, PROBLEM SOLVING ABILITIES AND LOCUS OF CONTROL LEVELS OF CANDIDATES OF PRIMARY SCHOOL TEACHERS'¹

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ABSTRACT

In this research, the correlation among learning and studying strategies, problem solving skills and locus of control levels of candidates of primary school teachers' was investigated. In this study, correlational survey method which is one of the quantitative research methods was used. The study population formed by 6983 students who studied at the last grade of Department of Primary Education in Turkey seven faculties of education from seven different geographic regions were cluster sampling method selected as a sample. The sample was formed by totally (n=632) students from different universities, 430 of whom (68 percent) were female, 202 of whom (32 percent) were male. Learning and Study Strategies Inventory (LASSI), Problem Solving Inventory (PSI), Locus of Control Scale (LOCS) were used for data collection. The statistical techniques correlations and multiple regression test were used to analyze the data. According to the results, there is a good relation between studying strategies and problem solving ability, there is a middle level, significant relation between the impetuous approach to problem-solving skills subscales, thinking approach, avoiding approach, evaluating approach, self-confident approach, planned approach scores and learning and studying strategies. Also, it was seen that there is a middle level, significant relation between studying and learning strategies and anxiety, information processing, selecting main ideas, study aids, subscales of test strategies, problem solving abilities. Between locus of control and problem solving skills there is a low-level significant relation. Between studying and learning strategies and locus of control there is a very low correlation.

Keywords: Learning and study strategies, problem solving, locus of control.

INTRODUCTION

Learning and studying strategies are thoughts and attitudes which are used by students during learning and studying process. In this research learning and studying strategies developed by Weinstein and Palmer are mentioned. Weinstein and Palmer (2002), claim that the elements of strategic learning are skill, willing and self-arrangement and examine learning and studying strategies in ten subscales. These are; attitude, motivation, time management, anxiety, concentration, manipulating information, choosing main ideas, study aids, self-testing and test strategies. These ten subscales bring up the strong and weak points of students and provide feedback about their beliefs, motivations, attitudes, abilities and their knowledge about them.

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Learning strategies aim to teach the information by using the most permanent, the shortest and the most suitable method. Knowing how you learn makes the class activities more meaningful. So, candidates of teachers should be taught about the learning strategies. Students should be informed about the subjects such as the kinds of learning strategies, their definitions, similarities and differences, when, why and how these strategies will be used, in order to use learning strategies in their own learning (Senemoğlu, 2003).

Problem solving is to find the most suitable way in order to reach an aim (Santrock, 2004). Heppner defines problem solving as a synonym of coping with the problems. Personal problem solving is defined as directing cognitive and emotional processes to an aim in order to adapt internal or external wish. In researches considering the personal qualities the people who see themselves good enough on problem solving are more initiating interpersonally, have more positive personality and show more suitable studying methods and situations academically (Şahin, Şahin and Heppner, 1993). As one of the most important objectives of the education is to make the children gain problem solving skills, candidates of teachers are expected to have the sufficient level of problem solving skills to control the problems in education environment. The candidates who will teach the students between 7-11 years which is the most critical time, the candidates of primary school teachers are expected to have the critical thinking, analysing and synthesising the actions and decision making skills. Because of this, research findings determining some personal characteristics which are thought to affect the teacher of candidates' perception about problem solving skills are needed.

Locus of control is a perception of who and what determines the behaviours and destiny of the person (Baker, 2002). Locus of control which is based on social learning theory in 1960s by Rotter, the superiority of internal control to external control is the most studied variables in psychology and other social sciences recently (Rotter, 1990). "Locus of Control" claimed as a subtitle of "expectation" concept of social learning model is one of the main variables of personality studies (Dağ, 2002). Smith and Mihans (2009), define the locus of control as behaviours which can affect the events in

one's life. When internal locus of control is defined as beliefs claiming that people have their own responsibilities in their success and failure in learning, external locus of control is defined as beliefs claiming that people have very less control in their success and failure in learning (McInerney, 2002). If a person thinks the positive and negative result as a result of his own behaviours he has internal control, if he thinks that others affect these results he has external control. In terms of having internal control is a positive quality, candidates of teachers should develop positive personality qualities.

Purpose and Importance of Research

The general aim of this study is to determine the correlation among the learning and studying strategies, problem solving skills and locus of control level of candidates of primary school teachers. In our country some studies have been done on locus of control, problem solving, learning and studying strategies. But no study has been met which has these three variables all together. This increases the importance of the study. In the direction of this aim answer is inquired for sub problems below;

- a) Is there any meaningful relation among learning and studying strategies, problem solving skills and the locus of control levels of the candidates of primary school teachers?
- b) Do locus of control and problem solving skills predict learning and studying strategies?
- c) Do the subscales of problem solving skills predict learning and studying strategies?
- d) Do the subscales of learning and studying strategies and locus of control predict problem solving skills?
- e) Do the subscales of learning and studying strategies predict problem solving skills?
- f) Do the learning and studying strategies and problem solving skills predict the locus of control?
- g) Do the subscales of learning and studying strategies predict the locus of control?
- h) Do the subscales of problem solving skills predict the locus of control?

METHOD

Model of Research

The distribution of the sample is given in Table 1 according to the universities. Accordingly, the sample constitutes 21% of the Pamukkale University, 15% of the Mehmet Akif Ersoy University, 15% of the Trakya University, 13% of the Giresun University, 13% of the Gazi University, 9 % of the Dicle University.

In this study, correlational survey method which is one of the quantitative research methods was used.

Population and Sample

The study population formed by 6983 students who studied at the last grade of Department of Primary Education in Turkey, in 2009-2010, seven faculties of education from seven different geographic regions were cluster sampling method selected as a sample. The sample was formed by totally (n=632) students from different universities, 430 of whom (68 percent) were female, 202 of whom (32 percent) were male.

Tablo 1. The Distribution of the Sample According to the Universities

	f	%
Atatürk University	90	14
Gazi University	82	13
Dicle University	57	9
Giresun University	83	13
Trakya University	93	15
Mehmet Akif Ersoy University	94	15
Pamukkale University	133	21
Total	632	% 100

Data Collection Instruments

Learning and Study Strategies Inventory (LASSI), Probem Solving Inventory (PSI), Locus of Control (LOCS) were used for data collection.

FINDINGS AND COMMENTS

In this part of the study there are the correlations among the learning and studying strategies, problem solving skills and the locus of control level of candidates of primary school teachers and statistical findings about this.

Table 2. The Correlations of LASSI, PSI and LOCS Scores of the Candidates of Primary School Teachers

		LASSI	PSI	LOCS
LASSI	Pearson Correlation	1	-0,700**	-0,191**
	Sig. (2-tailed)		0,000	0,000
	N	632	632	632
PSI	Pearson Correlation	-0,700**	1	0,218**
	Sig. (2-tailed)	0,000		0,000
	N	632	632	632
LOCS	Pearson Correlation	-0,191**	0,218**	1
	Sig. (2-tailed)	,000	0,000	
	N	632	632	632

In Table 2 the correlations of LASSI, PSI and LOCS scores of the candidates of primary school teachers are seen. According to this there is 0,70 level correlation between learning and studying strategies and problem solving. The more learning and studying strategies scores increase the more the problem solving scores of the candidates of primary school teachers increase. There is a correlation at 0,19 level between learning and studying strategies and locus of control. A correlation at 0,22 level between problem solving skills and locus of control has been found. According to this when the scores of learning and studying strategies increase the external locus of control scores of candidates of primary school teachers reduce.

Table 3. Multiple Regression Analyze Result of Learning and Study Strategies Total Scores' Regression by Locus of Control and Problem Solving Skills Total Scores

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	374,224	4,524	-	82,728	0,000	-	-
LOC	-0,328	0,237	-0,040	-1,386	0,166	-0,191	-0,055
PSS	-1,091	,046	-0,691	-23,699	0,000	-0,700	-0,687
R=0,701 R ² =0,491 F=303,441 p=0,000							

As it is seen in Table 3 problem solving skills total scores explain 49,1% of the variation of learning and study strategies total score, the model is regarded as meaningful statistically ($F(2,629)= 303,441$, $p=0,0000$). According to this problem solving skills total scores are meaningful statistically. It is seen that there is good correlation between learning and studying strategies and problem solving skills. So problem solving skills predict learning and studying strategies.

Table 4. Multiple Regression Analyze Result of Learning and Study Strategies Total Scores' Regression by Subscales of the Problem Solving Skills

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	374,181	4,906		76,273	0,000	-	-
IA*	-1,300	0,174	-0,250	-7,468	0,000	-0,478	-0,286
TA*	-1,142	0,313	-0,162	-3,646	0,000	-0,550	-0,144
AA*	-1,341	0,249	-0,191	-5,391	0,000	-0,519	-0,211
EA*	-1,130	0,391	-0,108	-2,888	0,004	-0,447	-0,115
SCA*	-0,807	0,264	-0,140	-3,057	0,002	-0,559	-0,121
PA*	-0,997	0,407	-0,116	-2,452	0,014	-0,512	-0,098
R=0,703 R ² =0,494 F=101,510 p=0,000							

As seen in Table 4 the subscales of problem solving skills scores explain 49,4% of the variation of learning and studying strategies total scores and it is seen that the model is meaningful statistically ($F(6,625)=101,510$, $p=0,000$). According to this, impetuous approach, thinking approach, avoiding approach, evaluating approach, self-confident approach, planned approach subscales of problem solving skills scores are statistically meaningful. Impetuous approach, thinking approach, avoiding approach, evaluating approach, self-confident approach, planned approach subscales of problem solving skills scores have medium level meaningful correlation. According to this all the subscales of problem solving skills predict learning and studying skills.

Table 5. Multiple Regression Analyze Result of Problem Solving Skills Total Scores' Regression by Learning and Study Strategies and Locus of Control Total Scores

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	203,201	5,542	-	36,665	0,000	-	-
LASS	-0,432	0,018	-0,683	-23,699	0,000	-0,700	-0,687
LOC	0,451	0,148	0,088	3,047	0,002	0,218	0,121
R=0,705		$R^2 = 0,497$		F= 310,653		p=0,000	

As it is seen in Table 5 locus of control and learning and studying strategies total scores explain 50% variation of problem solving skills total scores and the model is meaningful statistically ($F(2,629)=310,653$, $p<0.01$). According to this; locus of control and learning and studying strategies total scores are meaningful statistically. It is seen that there is good correlation between learning and studying strategies and problem solving skills. Between locus of control and problem solving skills there is low-level significant correlation. So it is thought that learning and studying strategies and locus of control predict problem solving skills.

Table 6. Multiple Regression Analyze Result of Problem Solving Skills Total Scores' Regression by Subscales of the Learning and Study Strategies

	B	SH	β	t	p	Correlation	
						Zero order	Partial
Constant	212,366	5,272		40,283	0,000	-	-
AT	-0,152	0,151	-0,038	-1,010	0,313	-0,450	-0,040
MO	-0,128	0,169	-0,030	-0,755	0,451	-0,465	-0,030
TU	-0,319	0,171	-0,073	-1,868	0,062	-0,455	-0,075
ANX*	-0,428	0,177	-0,085	-2,419	0,016	-0,415	-0,097
CO	-0,307	0,158	-0,076	-1,935	0,053	-0,464	-0,077
MI*	-1,104	0,160	-0,278	-6,889	0,000	-0,597	-0,266
CMI*	-1,160	0,252	-,185	-4,605	0,000	-0,559	-0,182
SA*	-0,324	0,164	-0,072	-1,982	0,048	-0,438	-0,079
ST	-0,304	0,173	-0,073	-1,757	0,079	-0,468	-0,070
TS*	-0,402	0,177	-0,102	-2,274	0,023	-0,523	-0,091
R=0,723 R ² =0,523 F=68,114 p=0,000							

As it is seen in Table 6 the subscales of learning and studying strategies scores explain 52,3% of the variation of problem solving skills total scores and the model is meaningful statistically ($F(10,621)= 68,114$, $p=0,000$). According to this, anxiety, manipulating information, choosing main ideas, studying aids, testing strategies subscales of learning and studying strategies are meaningful statistically. It is determined that there is medium level meaningful correlation between anxiety, manipulating information, choosing main ideas, studying aids, testing strategies subscales of learning and studying strategies and problem solving skills. So, anxiety, manipulating information, choosing main ideas, studying aids, testing strategies subscales of learning and studying strategies predicts the problem solving skills.

Table 7. Multiple Regression Analyze Result of Locus of Control Total Scores' Regression by Learning and Study Strategies and Problem Solving Skills Total Scores

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	10,768	2,588		4,161	0,000	-	-
LASS	-0,009	0,007	-0,075	-1,386	0,166	-0,191	-0,055
PSS	0,032	0,011	0,166	3,047	0,002	0,218	0,121
R= 0,225		$R^2 = 0,051$		F=16,763		p=0,000	

As it is seen in Table 7 problem solving skills total scores explain 5,1% of the variation in locus of control total score, the model is statically meaningful ($F(2,629)=16,763$, $p=0,000$). However, as the explained ratio is very low, it can be said that learning and studying strategies and problem solving skills have not got a meaningful effect on locus of control. It is determined that there is very low meaningful relation between learning and studying strategies and locus of control; very low meaningful relation between problem solving skills and locus of control. According to this, problem solving skills predicts the locus of control.

When looked at Table 8 attitude, motivation and concentration learning and studying subscales explain 7,5% of variaton of locus of control total scores and the model is a statistically meaningful ($F(10,621)=5,000$, $p=0.000$). But the ratio is so low that it can be sad that there is no effect of the other variables on locus of control. It can be seen that there is very low meaningful correlation between the attitude, motivation and consantration subscales of learning and studying strategies and locus of control. It can be claimed that attitude, motivation and consantration subscales of learning and studying subscales predicts the locus of control.

**Table 8. Multiple Regression Analyze Result of Locus of Control Total Scores'
Regression by Subscales of the Learning and Study Strategies**

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	18,141	1,429		12,698	0,000	-	-
AT*	-0,100	0,041	-0,128	-2,444	0,015	-0,174	-0,098
MO*	0,132	0,046	0,160	2,882	0,004	-0,062	0,115
TU	-0,070	0,046	-0,083	-1,518	0,129	-0,162	-0,061
ANX	-0,082	0,048	-0,084	-1,720	0,086	-0,151	-0,069
CO*	-0,120	0,043	-0,152	-2,788	0,005	-0,199	-0,111
MI	-0,057	0,043	-0,073	-1,306	0,192	-0,147	-0,052
CMI	0,046	0,068	0,038	0,678	0,498	-0,082	0,027
SA	-0,008	0,044	-0,010	-0,187	0,852	-0,108	-0,008
ST	-0,045	0,047	-0,055	-0,952	0,342	-0,118	-0,038
TS	0,071	0,048	0,092	1,471	0,142	-0,101	0,059
R=0,273 R ² =0,075 F=5,000 p=0,000							

**Table 9. Multiple Regression Analyze Result of Locus of Control Total Scores'
Regression by Subscales of the Problem Solving Skills**

						Correlation	
	B	SH	β	t	p	Zero order	Partial
Constant	6,817	0,824		8,275	0,000	-	-
IA*	0,068	0,029	0,106	2,317	0,021	0,168	0,092
TA	-0,004	0,053	-0,005	-0,076	0,939	0,154	-0,003
AA	0,019	0,042	0,022	0,462	0,644	0,149	0,018
EA	-0,076	0,066	-0,059	-1,161	0,246	0,084	-0,046
SCA*	0,122	0,044	0,171	2,743	0,006	0,212	0,109
PA	0,048	0,068	0,045	0,705	0,481	0,155	0,028
R=0,243 R ² =0,059 F=6,509 p=0,000							

As it is seen in Table 9 the impetuous approach and self-confident approach subscales of problem solving skills explain 6% of the variation in locus of control total scores and the model is statistically meaningful ($F(6,625)=6,509, p=0,000$). But the ratio is so low that it can be thought that there is no effect of the other variables on locus of control. According to this it can be determined that impetuous approach and self-confident approach subscales of problem solving skills predicts locus of control.

RESULT, DISCUSSION AND SUGGESTIONS

According to the study results, correlation between learning and studying strategies and problem solving have been found. Correlation between locus of control and problem solving strategies have been found, too. The research of Derin (2006) which has found a meaningful correlation between the problem solving skills and the level of locus of control supports the results of this study.

Problem solving skills predicts learning and studying strategies and locus of control. However learning and studying strategies and locus of control predicts the problem solving skills, too. Impetuous approach, thinking approach, avoiding approach, evaluating approach, self-confident approach, planned approach score of the subscales problem solving skills are important regressions of learning and studying strategies. At the same time anxiety, manipulating information, choosing main ideas, studying aids, testing strategies subscales of learning and studying strategies are important regressions of problem solving skills. As they are related with the personal characteristics, the attitude, motivation and concentration subscales of learning and studying strategies are also important regressions of locus of control. So this can cause to make the definition of locus of control which is a dimension of personality researches more detailed. Agar and Knopfmacher (1995) have mentioned that the motivation subscale of learning and studying strategies affects the internal locus of control and causes deep learning and increases academic level of success. Ames and Archer (1988) in the research on learning strategies and motivation process the students having their performance goal mentioning about the cause of their failure is their insufficient performance. This is a sign that they may have internal control because they look for the reasons for failure in themselves. Because of this correlation between learning strategies and locus of control

can be thought. In Serin and Şahin's research (2009) anxiety, manipulating information, studying aids subscales of learning and studying strategies are important regressions of locus of control. They mentioned 'testing strategies, time using, self testing, motivation, concentration and choosing main ideas' subscales do not have a meaningful effect on locus of control. As there is not a meaningful correlation between anxiety subscale and locus of control in this study may show that anxiety is independent from locus of control. But in Serin, Serin and Şahin's (2009) researches it is inferred that anxiety subscale is one of the important regressions of locus of control.

Regression of impetuous approach and self-confident approach subscales on locus of control is an expected result. The closeness of the people who shows impetuous approach to the external locus of control may be investigated in other studies. It is expected that internal controlled people show self-confident approach about problem solving in the means of personal characteristics. Because of this the correlation between the level of locus of control who show impetuous and avoiding approach in this study and attitude, motivation and concentration subscales of learning and studying strategies and locus of control is suggested to be investigated in other studies.

As teaching of learning and studying strategies will affect the problem solving skills of students and being internal controlled strategy teaching should be a separate course in the course programmes of primary school teachers departments.

References

- Agar, L. D., Knopfmacher, N. (1995). The Learning and Study Strategies Inventory: A South African Application. **Higher Education**. Volume 30, Number 1, 115-126, DOI: 10.1007/BF01384056
- Ames, C., Archer, J. (1988). Achievement Goals in the Classroom: Students' Learning Strategies and Motivation Processes. **Journal of Educational Psychology**, Vol,80, No.3, 260-267
- Barker, L. (2002). **Psychology**. New Jersey: Prentice Hall.
- Dağ, İ. (2002). Kontrol Odağı Ölçeği (KOÖ): Ölçek Geliştirme, Güvenirlilik ve Geçerlik Çalışması. **Türk Psikoloji Dergisi**. 17(49),77-90

- Derin, R. (2006). İlköğretim 8. sınıf Öğrencilerinin Problem Çözme Becerileri ve Denetim Odağı Düzeyleri ile Akademik Başarıları Arasındaki İlişki. Yayımlanmamış Yüksek Lisans Tezi, Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü, İzmir.
- Kavak, Y., Aydın, A., Altun, A. S. (2007). **Öğretmen Yetiştirme ve Eğitim Fakülteleri (1982-2007)**. Ankara-Temmuz 2007. Yükseköğretim Kurulu Yayını 2007-5
- ÖSYM (2006). Öğrenci Kontenjanları <http://www.osym.gov.tr/dosya/1-28182/h/bolum31.pdf>
- McInerney, M.D., McInerney, V. (2002). **Educational Psychology**. Constructing Learning. Prentice Hall.
- Rotter, B. J. (1990). Internal Versus External Control of Reinforcement A Case History of a Variable. **American Psychological Association**. Vol.45, No. 4, 489-493
- Serin, O., Serin, N., Şahin, S. F. (2009). Factors Affecting The Learning And Studying Strategies, And Locus Of Control Of The Trainee Teachers. **Procedia Social and Behavioral Sciences** 1, 1127-1136
- Smith, A. C., Mihans, J. R. (2009). Raising Issues Of Studentlocus Of Control: Beginning Alongitudinal Study. **Research in Education**. No.81, 63-65
- Senemoğlu, N. (2003). **Gelişim Öğrenme ve Öğretim**. Ankara: Gazi Kitabevi
- Şahin, N., Şahin, N. H., ve Heppner, P. P. (1993) The Psychometric Properties of the Problem Solving Inventory. **Cognitive Therapy And Research**, 17, 379-396.
- Santrock, W. J. (2004). **Educational Psychology**. Second Edition. Mc. Graw Hill.
- Weinstein, E. C., Palmer, R. D. (2002). LASSI User's Manual For Those Administering The Learning And Study Strategies Inventory. Second Edition. H&H Publishing Company, Inc.