

Effectiveness of Learning Strategies Taught To Teacher Candidates

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Abstract

The research was carried out with 41 people educated in Ege University, Faculty of Education, Social Studies Teacher Training Department during the fall semester of 2015 - 2016 academic year. Quasi-experimental design was used in the study. Within the scope of the research, prospective teachers were taught learning strategies lasting for ten weeks. The effectiveness of the training was determined through interview forms, *Learning Strategies Training Assessment Questionnaire* prepared by the researchers, and also by *Motivated Strategies for Learning Questionnaire* (Büyüköztürk, Akgün, Demirel and Özkahveci, 2004). As a result of the research, a significant increase is observed in the level of use of rehearsal, metacognitive, elaboration, regulation, peer learning strategies of teacher candidates. There have been seen no differences in the dimensions of time management, critical thinking, help seeking as well as effort management.

Keywords: *Learning strategies, Memory, Permanent learning, Motivation, Awareness.*

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Introduction

The behaviorist approach, having been dominant in the world of education for so long, explained learning by exterior condition levels and through focusing on stimulant-reaction relation, reward, punishment and reinforcer (Senemoğlu, 2011; Hergenhahn and Olson, 2005). The uniqueness of learning for every individual has come into focus following the change in the paradigm. This uniqueness takes its source from the cognitive diagrams, ways used in learning and the level of awareness during the process formed as a consequence of the lives of learners (Senemoğlu, 2011; Açıkgöz,2002).

The issues of what the individuals think about how they learn and try to improve it by realizing their ways of learning is a subject which has always been important until today and the significance of it still keeps and even raising its value. According to Weinstein and Mayer (1983:3), even though we know the necessity that students should acquire how to learn, it is interesting that we are not challenged to teach them how to learn. We think that the skills of students for problem-solving should be improved; yet we rarely teach them how to do that. We ask students to remember what we tell them, yet we do not conduct any study on memory techniques. It is high time that educators bridged this gap. We need teaching programs that enable us to implement and teach students how to learn, solve problems and remember what we teach them. All of these thoughts are still preserving its actuality and prominence.

In the literature, many studies have been carried out regarding the learning strategies defined as behaviors and thoughts (Weinstein and Mayer, 1983) enabling the process to be more effective as individuals select, code, store and edit the information that is taught (Olaussen & Braten, 1999; Ray, Garavalia, & Murdock, 2003; Fortney, Johnson, & Long, 2001, 2001; Akyol, Sungur and Tekkaya, 2010; Roebbers, Krebs, and Roderer, 2014). Yet, it is seen that the learning strategies have been classified differently in various resources.

Öztürk (1995) has suggested a classification for learning strategies in seven categories in his doctorate study. These categories are; “Attention Strategy”, “Rehearsal Strategy”, “Interpretation Strategy”, “Placing in Mind Strategy”, “Remembering Strategy”, “Cognition Management Strategy” and “Affective Strategies”.

Erden and Akman (2006) have also suggested naming the learning strategies in three categories; which are, “Rehearsal Strategy”, “Interpretation Strategy” and “Organization Strategy.”

In the classification offered by Senemoğlu (2011), she classified learning strategies under six main titles. These strategies are; attention strategies, strategies increasing storing in short-term memory, increase in interpretation, increase in restoring, and motivated strategies as well as metacognitive strategies (Senemoğlu, 2011).

While Senemoğlu (2011) defined the attention strategies as ways for students to focus on subjects, she stated that strategies that increase storing in short-term memory are the ways that expand the permanence period of information in long-term memory, and enable active process of information until being transferred into long-term memory. Strategies that increase storing in short-term memory do not allow the connection between the old and the new information and also the deep interpretation among the information. They are primarily used in simple educational activities requiring the use of short-term memory. In other words, they do not help with the coding of information into the long-term memory (Pintrich, Smith, Garcia & McKeachie, 1991).

Strategies that increase interpretation are defined as the ways that help students with associating the prior knowledge following new information (Senemoğlu, 2011). Interpretation strategies require more cognitive effort and critical thinking when compared to strategies that increase storing in short-term memory (Areepattamannil, 2014) Strategies that increase restoring are considered as the means processing the information in long-term memory, in other words, assist the information in long-term memory to be brought to short-term memory (Senemoğlu,2011).

Motivated strategies are defined as the applications which facilitate students to be eager to learn. Lastly, metacognitive strategies serve students to think about their own learning process and guide them into managing this process (Senemoğlu, 2011).

Metacognitive strategies are about the metacognitive process of students, their awareness about the process and the ability to control their own learning (Senemoğlu, 2011; Pintrich et al., 1991). Academic motivation and self-confidence of students practicing metacognitive learning strategies are much higher compared to students who do not use this strategy. Students who exercise metacognitive learning strategies are also able to select more appropriate methods and techniques while solving any problem (OECD, 2003; Ghazali Yusri & Nik Mohd Rahimi, 2010).

“Learning strategies” is a field that can be both taught and learned. For that reason, it is of great importance that teachers conduct studies related to teaching strategies. The term “the individual learning to learn” within the change of program, taking place in 2005 (The Ministry of National Education, 2005) coincides with this idea. Today’s teacher candidates are those who will implement these programs. Therefore, it is highly important that teachers are informed about this subject during their pre-service occupational education.

Literature Review

When the literature is reviewed, it is seen that many studies have been conducted on this subject. The results of these researches show that strategy training improves communication skills, advance cognitive

skills and even psychomotor skills, causing an increase in self-confidence and self-sufficiency (Alley ve Deshler, 1979; Fortney, Johanson ve Long, 2001; Young, 2008; Mandich, Polatajko, Missiuna & Miller, 2001).

Mandich et. al. (2001) studied the use of cognitive strategies of handicapped people in their research. Under the light of the research, 13 out of 14 children aged 7-12, who have had difficulty in motor skills, stated that they could practice 39 skills such as cutting meat, throwing ball and writing, which they priorly used to define as difficult.

Fortney, Johnson & Long (2001) unified a lesson, which aims at improving the communication skills via learning strategies training. Consequently, it is concluded that students who participate in the lesson and supported with learning strategies felt themselves more sufficient compared to students who participate in lessons with traditional methods.

Topuzkanamış (2009) reviewed the level of understanding of candidate teachers while reading. According to the study, the level of the Turkish Teaching students was the highest and the one of the Social Sciences Teaching students was the lowest.

The training of “learning strategies” improves the awareness of individuals regarding their learning process, and positively affect their ability to observe their learning process (Alley and Deshler, 1979; Young, 2008). At the same time, this process, besides being formed of the mental processes of individuals concerning themselves, helps prepare a ground for the increase of performance thanks to feedbacks received by peers and teachers alike (Fortney, et. al., 2001). Students, who make use of learning strategies, can adapt their learning strategies and develop their own learning methods once they encounter different learning aims (Olaussen & Braten, 1999). Moreover; students can reach higher success through the design of learning programs including learning strategies (Olaussen & Braten, 1999; Ray, Garavalia& Murdock 2003).

The Aim and the Importance of the Research:

As mentioned before, while the learning strategies can be acquired by individuals by themselves, it can also be taught by experts facultatively. According to Özer (2002:160), the information and skills that students need to acquire about learning strategies are; learning strategies and their features, the ways of using learning strategies and the places to use them. Teachers are of paramount role for the students to acquire this information and skills related to learning strategies. Eroğlu (2012) offered a suggestion for the university students in their first year supporting this idea; that is to write education programs in order to determine their learning strategies and develop them and focus on the importance of giving seminars to instructors about learning and teaching strategies.

As a result, it is a necessity of the age that teachers, and thereby teacher candidates, shall be informed about the training of learning strategies since learning about the learning strategies is effective on the students' perception of self-sufficiency and self-confidence (Alley ve Deshler, 1979; Fortney, Johanson and Long ,2001; Young, 2008) besides being highly influential on their academic success (Akyol et al. 2010; Roebbers, Krebs, and Roderer, 2014). As Baykara (2011) and Zhang (2016) also state, making good use of learning strategies, specifically having comprehensive knowledge on metacognitive strategies, helps teachers to have a high perception of their occupational sufficiency. In this research, by providing the training of learning strategies, it is aimed to promote the knowledge and skills of teacher candidates regarding the subject and bring attention to the vitality of this subject.

Question Of The Research:

What is the influence of the Learning Strategies Training on the candidates of Social Sciences Teaching?

Sub-Problems

- In the total points of Social Sciences Teaching Candidates Motivated Strategies for Learning Questionnaire, is there a significant differentiation before and after the training?
- Is there a significant differentiation in all sub-dimensions of Social Sciences Teaching Candidates Motivated Strategies for Learning Questionnaire before and after the training?
- According to the Motivated Strategies for Learning Questionnaire, is there a change in the use of levels of Social Sciences Teaching Candidates Learning Strategies before and after the training?
- What are the opinions of Social Sciences Teaching Candidates about learning strategies and training before and after the training?

The Method

This research is designed with pre-test/post-test single group experimental pattern. In the beginning of the research, "Motivated Strategies for Learning Questionnaire" (MSLQ) related to learning strategies and pre-interview questions prepared by researchers are used and during the process, teaching candidates are provided with the training of learning strategies. At the end of the process, which was carried out in the beginning, post interview questions prepared by researchers, as well as "Learning Strategies Training Assessment Questionnaire" (LSEAQ) are applied. The research design is presented in Table 1" (Fraenkel, Wallon and Hyun, 2012).

Table 1: Research Design

Pre-Test	Research Process			Post-Test
MLSQ	Learning	Strategies	Training	MLSQ
Pre-Interview	Process			LSEAQ
				Post-Interview

Study Group

This study is carried out with 41 teacher candidates studying their first year at Social Sciences Teaching Department, Faculty of Education, Ege University in the fall semester of 2015-2016 school year. 9 volunteer teacher candidates out of 41 are interviewed.

Experimental Process Material

Activities of learning strategies used in the research are designed by researchers in five main titles which are attention strategies, strategies that increase storing in short-term memory, strategies that increase interpretation, strategies that increase re-storing and monitoring strategies (Senemoğlu, 2011). The array and the order of the activities, carried out weekly, are given in Table 2.

Table 2: The array and the order of the activities

Week	Activity	Time (Min.)	Period of the Activity in the Course
Week 1	Introduction to the Learning Strategies Training – Attention Strategies	30	Beginning the Course
Week 2	Short Term Memory Strategies - Attention Strategies	30	During the Course
Week 3	Elaboration Strategies	20	During the Course
Week 4	Rehearsal Strategies	20	During the Course
Week 5	Making Matrix	60	Beginning the Course (Theoretical) End of the Course (Practice)
Week 6	SQ4R Strategies	60	Beginning the Course (Theoretical) During the Course (Practice)
Week 7	Concept Map	20	Beginning the Course (Theoretical) During the Course (Practice)
Week 8	Schema Strategies	40	Beginning the Course (Theoretical) End of the Course (Practice)
Week 9	Mnemonic Devices	60	Beginning the Course (Theoretical) During the Course (Practice)
Week 10	Cognition- Metacognition Strategies	60	Beginning the Course

As can be understood from Table 2, some of the activities are integrated with the subject and some of them are directly presented. Activity durations vary depending on the features of the strategies. Activities are applied in different ways, considering the features of the strategies; in the beginning, in the end or throughout the lesson.

Data Gathering Tools

In the research, four scaling tools are used; MLSQ, pre and post interview questions and TSEAQ (Teaching Strategies Training Assessment Questionnaire). Evaluation instruments are introduced below.

Motivated and Learning Strategies Scale: Motivated Strategies for Learning Questionnaire, developed by Pintrich, Smith, Garcia and McKeachie (1991) is adapted into Turkish by Büyüköztürk, Ş., Akgün, Ö. E., Demirel, F. and Özkahveci, Ö. (2004). The scale is consisted of two parts; Motivation Strategies and Learning Strategies. As there is no education regarding the motivated strategy within the training of strategy, motivation scale is not used in the research. However, all aspects of Learning Strategies Scale are taken into consideration. Below, Learning Strategies Scale names of sub-dimensions, article numbers in dimensions and reliability co-efficient of dimensions are given in Table 3.

Table 3: MSLQ Reliability Coefficient

Questionnaire	Number of Item	Cronbach Alpha
Rehearsal	4	0.62
Metacognitive	4	0.75
Elaboration	4	0.74
Time Management	8	0.61
Critical Thinking	12	0.74
Regulation	6	0.61
Peer Learning	4	0.46
Help Seeking	5	0.49
Effort Management	3	0.41
Learning Strategies	50	

Results

• Findings Related to the Research Question

Learning strategies total point (pre-posttest) paired groups *t* test results are given below in Table 4.

Table 4: Learning strategies total point (pre-posttest) paired groups *t* test results

	N	X	Ss	sd	t	p
Pre-test	41	217.60	41.42	40	-3.346	.002
Post-test	41	235.38	32			

It is found that after receiving the training of strategy, teacher candidates have a significant increase compared to the total point received from the learning strategies scale before the training [$t(40)=-3,346$, $p<.05$]. While the learning strategies total point average of candidate teachers before the training was $X=217,60$, the average raised to $X=235,38$ after the training. This finding has shown that strategy training has caused a positive differentiation in the learning strategies usage levels of teacher candidates.

• **Findings Related to Research Question**

2a) Rehearsal strategies sub dimension (pre-posttest) paired groups *t* test results are given in Table 5.

Table 5: *Rehearsal strategies sub dimension (pre-posttest) paired groups t test results*

	N	X	Ss	sd	t	p
Pre-test	41	17.80	5.02	40	-3.949	.000
Post-test	41	20.82	3.26			

A significant increase is found in teacher candidate's total point after the strategy training compared to the total point received from rehearsal strategies sub dimension [$t(40)=-3,949, p<,05$]. While teacher candidates' rehearsal sub dimension total point average before the training was $X=17,80$, it raised to $X=20,82$ after the training. This finding has shown that strategy training has caused a significant increase in teacher candidates' level of use of rehearsal strategies.

2b) Meta-cognition strategies sub dimension (pre-posttest) paired groups *t* test results are given in Table 6.

Table 6: *Meta-cognition strategies sub dimension (pre-posttest) paired groups t test results*

	N	X	Ss	sd	t	p
Pre-test	41	52.84	12.47	40	-3.489	.001
Post-test	41	58.67	8.23			

A significant increase is found in teacher candidate's total point after the strategy training compared to the total point received from meta-cognition strategies sub dimension [$t(40)=-3,489, p<,05$]. While teacher candidates' meta-cognition sub dimension total point average before the training was $X=52,84$, it raised to $X=58,67$ after the training. This finding has shown that strategy training has caused significant increase in teacher candidates' level of use of the meta-cognition strategies.

2c) Elaboration strategies sub dimension (pre-posttest) paired groups *t* test results are given in Table 7.

Table 7: *Elaboration strategies sub dimension (pre-posttest) paired groups t test results*

	N	X	Ss	sd	t	p
Pre-test	41	27.71	6.84	40	-2.463	.018
Post-test	41	30.78	5.32			

Significant increase is found in teacher candidate's total point after the strategy training compared to the total point received from elaboration strategies sub dimension [$t(40)=-2,463, p<,05$]. While teacher candidates' elaboration sub dimension total point average before the training was $X=27,71$, it raised to $X=30,78$ after the training. This finding has shown that strategy training has caused significant increase in teacher candidates' level of using meta-cognition strategies.

2d) Regulation strategies sub dimension (pre-posttest) paired groups *t* test results are given in Table 8.

Table 8: Regulation strategies sub dimension (pre-posttest) paired groups *t* test results

	N	X	Ss	Sd	t	p
Pre-test	41	18.66	4.70	40	-2.392	.022
Post-test	41	20.25	3.97			

Differentiation is found in teacher candidate's total point after the strategy training compared to the total point received from regulation strategies sub dimension [$t(40)=-2,392$, $p<,05$]. While teacher candidates' regulation strategies sub dimension total point average before the training was $X=18,66$, it raised to $X=20,25$ after the training. This finding has shown that strategy training has caused significant increase in teacher candidates' level of the regulation strategies use.

2e) Peer learning strategies sub dimension (pre-posttest) paired groups *t* test results are given in Table 9.

Table 9: Peer learning strategies sub dimension (pre-posttest) paired groups *t* test results

	N	X	Ss	Sd	t	p
Pre-test	41	9.73	3.83	40	-2.126	.040
Post-test	41	11.15	4.36			

Differentiation is found in teacher candidate's total point after the strategy training compared to the total point received from peer learning strategies sub dimension [$t(40)=-2,126$, $p<,05$]. While teacher candidates' peer learning strategies sub dimension total point average before the training was $X=9,73$, it raised to $X=11,15$ after the training. This finding has shown that strategy training has caused significant increase in teacher candidates' level of using peer learning strategies.

2f) No significant differentiation is found statistically between the pre-test and post-test points of help seeking, effort management, critical thinking and time management sub-dimensions of the scale.

3) Results of the Learning Strategies Training Assessment Questionnaire are given in Table 10.

Table 10: Results of the Learning Strategies Training Assessment Questionnaire

Learning Strategies	Before the experimental process		After the experimental process		
	I don't use (%)	I use (%)	I don't use (%)	I can use (%)	I use (%)
Underlining Strategies,	15	85	6	6	87
Not-taking Strategies (Side of the text),	23	77	13	13	74
Putting Symbol Strategy,	38	62	6	30	64
Matrix (table) strategies,	94	6	49	34	17
Schematization strategy,	68	32	19	36	45
Rehearsal strategy,	15	85	7	4	89
Organization strategies,	55	45	13	19	68
Note taking strategies,	7	93	2	4	93
Summarizing strategy,	13	87	6	6	87
The strategy of creating the main lines,	38	62	9	23	68

SQ4R strategy,	100	0	53	42	5
Elaboration strategy,	45	55	11	26	64
Mnemonic Devices;	26	74	11	9	81
Metacognition strategies	36	64	15	19	66

When the Table 10 is reviewed, it is seen that there is an increase in the total number of people who circled “I’m thinking of using it after the training” and “I’m using it” which takes place in learning strategies training assessment questionnaire.

- Reviews of Social Sciences Teaching Candidates about learning strategies and training before and after the learning strategies training are given below.

4.1. Interviews before the experiment

4.1.1.) In the interviews conducted before the training, 1 person out of 9 stated that s/he did not use any of the 3 attention strategies, 3 people stated only using 1, 4 people stated that they used 2 attention strategies and 1 person stated using all of them.

K9: One section looks important to me and I think that this section is important. I underline it.

K4: I note important sentences on a notepad or paper and hang it beside my bed.

K8: I take short notes on the free space in my book.

K7: I use Preparing Questions. For example, something is taught in History lesson. I ask myself a question; if I don’t know the answer, that means I didn’t understand the subject well and so I focus on the subject one more time.

4.1.2.) In the interviews conducted before the training, 7 out of 9 people stated that they used 1 interpretation strategy out of 4 and 2 people stated using 2 interpretation strategies.

Organization and forming chart/table/matrix strategies are not used by any teacher candidates.

K6: Later, I write down what I have internalized without memorization.

K6: If it is in the way to prepare the subject titles as a mind map, I do it and hang it where I can clearly see it.

K1: ...I think something has happened because of something but I don’t write it on a paper. I don’t have such habits...

4.1.3) Although mind supporting hints learning strategies are under the main title of interpretation strategies, they are considered as a separate title as activities regarding key word method, regulation with

initial letter and loci method are conducted. Before the training, 3 people stated to have used 1 and 1 person stated to have used 2.

K4: I code in my mind. For example, 1402; it is my room number and in order not to forget my room number when I first came to the dorm, I coded it in my mind with Ankara War... In the lessons, I use the same method; for example, idealism is a Greek word meaning thought and idealism must be something related to thinking.

K1: Yes, codes (strategies of regulating with initials) help. I also do what is taught. I also come up with such absurd things. It is better. It is better when you find it on your own.

K7: I used them in middle school. They worked; it was easy to remember. However, as we cannot code everything, it is not that necessary.

K6: On my notebook, I stuck a small note I prepared on the right corner. During the exam I remember the paper I stuck, associate the colors and remember my notes and I recall the subject.

- In the interviews conducted before the training, 6 out of 9 people stated to have used rehearsal strategy which takes place within the concept of training.

K4: While I was preparing for the university exam, as there were more than 5 movements in Modern Turkish Literature, I separated them into weeks; for example, one week I study “maviciler”, the other week I study “ikinci yeniciler”. When the weeks are finished, I revise them all over.

- The last learning strategy that takes place in the interviews conducted before the training is the Executive Cognition strategies. 2 out of 9 interviewed people stated to have used executive strategies.

K9: I plan everything and I think I don't do anything without a plan; for example, I write down my lessons and see if I'm okay in that lesson, I need to see it. If it's okay, I pass it, if it is not, there is a question mark and it stays... There are times when I think like “I will study this subject for an hour, I will study this for 3 hours” ...

K7: If anything comes up with the study, I firstly try to understand the cause of the problem. For example, if this problem is not for 3 weeks but for 5, I understand that there is something wrong in my plan. I change the plan. If I have caused the problem, the notes I've taken needs to be spread into a week. If I can't do that, I look for the reasons. I try to take precautions accordingly. I think the most important thing is to find the problem.

- In the interviews conducted before the training, it is seen that teacher candidates' reason of using the learning strategies differ.

K9: I think that using the methods helps me find the thing that will be beneficial in learning.

K3: (Underlining and taking notes) I remember better this way. (Benefit of underlining and rehearsal) As my visual memory is stronger, the places I mark are more colorful and as I focus on them more, I remember these parts directly.

- Teacher candidates stated trying different learning strategies according to the level of difficulty and to remember the subjects.

K4: Underlining doesn't work sometimes because, although I have visual memory, I can confuse the parts I underlined as there are more than one note. For example, when I visualize in my mind, it is sometimes a paragraph with five lines and sometimes three. I try to remember which parts I have underlined and then I have a problem visualizing... (As a solution when it doesn't work) Instead of underlining and remembering as a visual, I think of the sentence in whole with the paragraph and I place the sentence within. If it fits, I say okay.

K7: (Learning strategies I used) changed in time. For example, when I was in middle school, subjects were easy for me. Listening to the lesson in class was enough for me. Then I would only revise before the exam. When they got harder, I began to use other methods. I started taking notes. In high school, the notes I took were enough. I would remember the subjects by looking at my notes before the exam. However, in university, even note-taking is not enough. You need to revise them. My way of studying came to this way by adding up.

- Teacher candidates stated that this study was important as they would learn efficient learning ways and they thought it would contribute to their work life.

K6: Now you tell me about a learning strategy. To be prepared for the lesson next week, I can use this method, which is different than the methods I use. I can say this method could work better for me in the future and try to internalize and adapt it into the subject. In that way, of course, it would be effective.

K7: Learning techniques are important for teachers.

- ***Interviews after the training***

4.2.1) During the interviews conducted after the training, it is seen that all teacher candidates use attention strategies.

K3: I use things like taking notes on the page as you have said... I often use note-taking. It is not like summary but I take note of important things.

K5: (This term while preparing for the posts) I will underline, I have already started... I will take notes on small note papers.

4.2.2) It is seen that 4 strategies approached within the concept of interpretation strategies in the interviews conducted after the training are used by candidate teachers. While none of the candidate teachers stated to have used matrix/table forming strategy in the pre-interviews, 6 of the teacher candidates stated using matrix/table forming strategy in the post interviews.

K2: They told us to use matrix, I started using them. For example, I use it in the lesson of Introduction to Teaching Profession.

K8: Earlier, I didn't use subject titles. I used to create schemas. Now I use them.

K3: I used to only read or take note of some things; now I use learning strategies such as summarizing.

4.2.3) Following the application of mind supporters, the use by candidate teachers increased and it raised to five people.

K3: ...Later I take notes of key words. It is not like memorization but I remember better when I write on colored papers.

4.2.4) 3 candidate teachers stated to have used meta-cognitive learning strategies after the training.

K1: If I can't do it, that means I haven't listened to the lesson properly. Because when I listen, I do all of them. In other words, I must have been interested in other things during the lesson. (Is there any precaution you took to manage this process?) If I sit in the back, I go to front rows and I listen more carefully next time and try not to talk to others.

4.2.5) Teacher candidates presented their views in the post interview about the benefits of the training and the lacks in the training; they suggested their ideas for these lacks and shared their ideas about the effectiveness of this training in their work life.

4.2.5.a) Teacher candidates' views about the benefits of the training

K2: ...I didn't even know about (the learning strategies). Now, I try to use them while I study. Sometimes I forget but still, when I remember I try to use other learning strategies and Matrix...

K6: It is that we implement the (learning strategies) right, after it is told.

K7: I don't know. I think the message, which was aimed to be given, is received. I mean the person who is listening must have understood; I think I understood. If it had been long, it would have been reinforced but I think it was enough.

4.2.5.b) Teacher candidates shared their suggestions regarding the fact that training process should be longer, more visuals should be used and the resources used in the training should be shared with them.

K2: I think it would be better if there were more visuals. And it was a little short. It would be better if the duration was longer... I also think it shouldn't be included in a lesson; it should be studied as a separate lesson... While you tell us about it, some take notes and some don't. That's why it can be forgotten. If you shared your (resources), everyone could have something in their hands.

K8: (The duration of the training) could be longer...

4.2.5.c) Teacher candidates stated that they thought of using it as it helped them learning the learning strategies in their work life and if they use it, their students will also use it.

K3: I'm thinking about (teaching it to my students) because it is really making it easier.

K4: Of course, I'd like to teach them. When I teach them, they can improve themselves in different ways. For example, when I come to the class with my notes as a modal, they would also take notes thinking of their teachers as an idol. When I underline, they will also underline.

K7: I'd definitely like to (give the information about strategies) ... (In smaller age groups) it can work if these strategies are applied in simpler ways but of course they shouldn't learn it in the way we did, it should be simplified.

Discussion Conclusion and Suggestions

In the research, 41 teacher candidates take part studying at Social Sciences Teaching Undergraduate Program, in 2015-2016 academic year, at the fall semester. Teacher candidates are given training about learning strategies for 10 weeks and this training is supported with homework of related lesson. In the beginning of the implementation, teacher candidates are reviewed about the subject and MLSQ is applied. After the training, interview and MLSQ is repeated and also TSEAQ, prepared by the researchers, is applied.

Following the first sub-problem of the research, a positive differentiation is seen in the teacher candidates' level of using the learning strategies. In the third sub-problem of the research, an increase is realized in the total number of people who circled in all articles "I think of using it after the training" and "I am using" in TSEAQ. It can be understood from these results that the strategy training was effective. In the literature, there are studies that support the results. Sezgin, Selçuk and Ün Açıkgöz (2008) determined that

the strategy training for physics teachers was effective on the use of strategy. De Corte, Verschaffel, Van De Ven (2001) found out that strategic reading and understanding skills training is effective on teachers. De La Paz (2010) stated that the strategic writing training for students who have and haven't got difficulty in learning was effective. Guthrie, Anderson, Alao and Rinehart (1999) found out as a result of their research that the group who received training about using the strategy, learning concept and interpreting the text presented high-level skills compared to the group who continued with a traditional education.

Following the second sub-problem of the research, a significant increase is observed in the level of teacher candidates' use of rehearsal, metacognitive, elaboration, regulation, peer learning strategies. No differentiation is found in time management, critical thinking, help seeking and effort management dimensions. Literature, in which there is differentiation in the strategy preferences of candidate teachers, draws attention (Kuzu,Balaman, Canpolat, 2014; Yusri, Rahimi, Shah & Wah, 2013; Kılınçer and Uygun, 2013).

In the concept of fourth sub-problem of the research, statements of teacher candidates in pre-interviews are reviewed. It is found out that none of the teacher candidates, who participated in the interviews, has known exactly about the learning strategies mentioned in the training and there is differentiation in their levels of use. Teacher candidates stated to have used attention strategies more after the training. It is highlighted that there is an increase in the usage of matrix, chart and table (Senemoğlu, 2011) which help re-organizing the information, compare what they have learned and store the information in long-term memory. In metacognitive strategies, the aimed level of development could not be achieved. Before the training, while two people stated to have used meta-cognitive strategies, this number increased to three after the training. This situation supports the literature (The Ministry of National Education, 2005) which states that strategy teaching, mainly the meta-cognitive strategies, should start in early ages. The lack of this training in early ages should clearly be compensated later. Opposite to our research result in literature, it is possible to find examples stating that the use of meta-cognitive strategies is more common in university students.

Al-Shaboul, Asassfeh & Alshboul (2010) found out regarding the learning strategies university students use for language learning that following their research, students use the learning strategies above in the average level. Students use the strategies while assessing their own learning in general. In Jordan education system, it is expected that rehearsal strategies are used more as they still use traditional learning methods. However, it is seen that especially in language learning, applications such as flash cards are not preferred in university students but they are used more in early age groups. This research also shows us that the learning strategies preferred by different age groups differ. It is important that teacher candidates are informed about all these strategies and as the needs of the group can differ, they should diversify these strategies and introduce them to their students. Similarly, Areepattamannil (2014) stated that efficiency of

the use of learning strategies can be increased by implementing and developing applications of learning strategies for teachers.

It is also of importance to the career development that teacher candidates are encouraged to use the strategies. In the study, Zhang (2016), in the accuracy level of scoring in the English compositions, aimed at determining the effects of cognition and meta-cognitive strategies are used by the scorers. 13 composition scorers are classified into two groups; those who score according to the accuracy and those who score less accurate. Simultaneous thinking out loud is used to reveal cognitive and meta-cognitive strategies that evaluators used during the assessment. The process of thinking in both groups is compared in qualitative and quantitative aspects. In the research, it is concluded that those who have high awareness about the scoring and who are more experienced are in the classification of accurate scorers.

There have been researches about the relation of age, sex, culture, motivation, learning styles and talent to the use of strategy. Politzer (1983), Ehrman and Oxford (1989) stated that women use the social strategies more than men. Wharton (2000), on the other hand, claimed that in the usage of strategy, pre-learning experiences are more important than the sex. Yusri, Rahimi, Shah & Wah (2013) examined the learning strategies used by the students learning Arabic in Malaysia in terms of their previous life, sexes and both of their interaction. When the students are examined in general, it is seen that they use cognitive and meta cognitive strategies in average level. The strategies which are mostly used by the students are the rehearsal strategies. The reason of this is that the questions in the program are formed by the word structures that take place in the learning program and also due to its relation to remembering. However, it is stated that, for the students to have better information about the language, they should use more complex, high learning strategies. The results of this research are also supported by the results of Kuzu et al. (2014). According to Kuzu et. al., from the most preferred to the least preferred by teacher candidates, the learning strategies are; observing the learning, rehearsal, elaboration and organization strategies. This situation highlights the strategy trainings to be given to teacher candidates with teacher candidates.

There are also presses which defend that cultural features are effective in the use of strategy. For example, while the Asians mostly use the memory strategies, Spanish people state to prefer social strategies more (Politzer,1983). This statement also supports the results of the research.

Above, many variables (age, sex, and learning experiences) that affect the preference of strategies in literature are approached. However, the common point in all researches is that learning strategies have positive and significant effect on learning. Besides that, learning takes place in similar process in all individuals. In other words, learning units and the way that help in learning these units (learning strategies) can be taught, thereby, can be learned. Some criticisms on the program, within the frame of teacher candidate

views related to strategy teaching program used in this research will be shared here and it will be suggested that further researches should be planned considering these criticisms.

Teacher candidates think that the duration of the strategy teaching program used in this research is short (10 weeks). They believe that it is not appropriate to teach this within the course of Introduction to Teaching Profession and suggest that it should be implemented as a separate course. This suggestion can be taken into consideration within teacher training program. It is criticized by the students that the resources of the teaching program are not shared. Following researches can offer the resources for open access. Teacher candidates stated that the training was effective and that they would like to provide such training in their professional life. For this reason, in further researches, it can be designed how the teacher candidates will teach these strategies and the efficiency of these trainings can be done by observing the applications used by teacher candidates in their classes after they are appointed.

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