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The Effect of Teaching Practice Conducted by Using Metacognition Strategies on Students' Reading Comprehension Skills

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ABSTRACT

The purpose of this research is to determine the effect of teaching practise conducted by using metacognitive strategies on students' reading comprehension skills at Turkish language course. For this purpose, this study has been carried out with 65 students at 5th grade of secondary education in 2012–2013 academic year. In the research, pre-test post-test control group design of experiment method has been used. While the subjects have been taught to students in experimental group by using metacognitive strategies in addition to teacher's book, the same subjects have been taught to students in control group as they are stated within the curriculum and teacher's book. The study took a total of 6 weeks. As data collection tool, Achievement Test For Measuring Students' Reading Comprehension Skills which was developed by the researcher to determine the effect of metacognitive strategies on students' reading comprehension skills was used. As a result of the reliability and validity studies, the reliability coefficient of the test was found to be 0.91, the average difficulty was found to be 0.64. At the end of the research, at teaching practice in which metacognitive strategies(planning, monitoring and regulation) were used, a significant increase on students' reading comprehension skills was found in favor of the experimental group.

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Keywords: Metacognition Strategies Turkish Teaching, Reading, Reading Comprehension

Introduction

In this information age, one of the most effective ways of learning of individuals is reading activity. At the same time, reading is one of the main activities the teaching-learning process at schools. Learning that occurs in this process increases students' strength in understanding what they read and their permanent learning (Nunan, 1999).

Reading is an active process which increases the capacity of human knowledge, gives form to their thoughts and beliefs, brings them in personality. This process is an intellectual activity in which individual's biological, psychological and physiological characteristics work in an integrity. Reading is a complex and sophisticated process that contains the processes of hearing, interaction, perception, experimentation, thinking, learning, association, influence and configuration (Kent, 2002). The outcomes of reading activities whose purpose is "understanding", are listed as: apply the reading rules, reading comprehension and meaning making, vocabulary development, appropriate reading to types, methods and techniques. In Turkish language curriculum, it is primarily focused on reading rules and then students' reading comprehension and interpretation skills (MEB, 2005).

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Moreover, in order to keep up with daily life individuals need a good reading. It is aimed that individuals who read, should know, recognize and evaluate themselves. The education of metacognitive strategies is one of the methods to bring these aims (Carrell, 1998).

Metacognition Strategies

Flavell (1976) who introduced the concept of metacognition in education, defined metacognition as individual's knowledge about his/her own cognitive processes. In other words, metacognition is defined as individuals' own cognitive activities and having knowledge about their cognitive strategies and at the same time processes that coordinates cognition (Boekaerts, 1997). Winnie & Perrier (2000) defined metacognitive strategies as the student's awareness of his/her strengths and weaknesses academically; Heo (2000) defined metacognitive strategies as self-awareness, his/her knowledge about individuals' learning processes and tendency to control these processes in the course of learning; Eggen & Kauchak (2001) defined metacognitive strategies as students' determining their own study strategies; Schraw (2001) defined metacognitive strategies as necessary information to understand how a task is performed.

Metacognition consists of three strategies. These strategies are planning, monitoring and regulation. (Zimmerman, Martinez & Pons, 1986).

Planning is students' evaluating their own strengths and weaknesses, making a plan related to resolving a problem process or a task completion process by taking into time and other factors, selection of materials and organizing those materials. Planning activities include that students activate the information that is previously learned, interpret new information and at the same time plan all the necessary cognitive strategies (Pintrich, 1999; Winne 2001). In planning strategy, there are the processes of setting the targets, task analyzing, selecting appropriate materials and arrangement of the materials (Zimmerman, 1989).

Monitoring, in fact, is a cognitive process reflecting the state of progress in the direciton of purposes and feedback for future studies that will guide. This process provides students to focus their attention on learning, to distinguish their efficient and inefficient performances, to be able to choose necessary and appropriate strategies (Zimmerman & Poulsen,1995). That the student asks questions by himself/herself and use exam strategy is an example of this situation (Hofer, Yu & Pintrich, 1998). That students monitor their learning within a particular learning process helps them achieve their learning goals (Pintrich, 1999). The students who monitor their own learning and behaviours, have higher self-efficacy, motivation, and success (Zimmerman & Poulsen, 1995).

Regulation, the individuals who have acquired metacognition strategies, should evaluate themselves at the end of the process (Zimmerman 2000). Metacognition regulation skills are related to how a person regulates and arranges his/her learning ways and memory (Brown, 1987). Moreover, monitoring strategy which is used in the process of reading, includes questionizing whether understanding occured or not during the process and at the end of the process (Zwiers, 2010).

That the students re-evaluate their goals, revise and regulate their forecast, consolidate their intellectual achievements are the examples of regulation strategies. If a student asks himself/herself questions to monitor their cognitive level and goes back and re-reads a part of a text that s/he didn't understand, this re-reading process is a regulatory strategy (Zimmerman, 1989).

Teaching Metacognition Strategies

The researchers who studied on the concept of metacognition, have also emphasized on the importance of bringing students metacognition skills (Kapa, 2001). Also, that these strategies are used in the right place and time is effective in increasing students' academic achievement. It is fairly important for success that students should monitor their own learning and determine whether they understand the subjects or not. Moreover, the use of metacognitive strategies to be effective in student success, it is very important that students control their attention, motivation, study environment and program (Eliom & Aharon, 2003). Metacognition is a long-lasting developmental process. Researches show that metacognition increases along with age and its different elements have different developmental time frames (Hanten et al., 2004). Blakey and Spence (1990) proposes the following methods to develop metacognitive strategies:

Describing what I know and what I do not know. At the beginning of the study, students take conscious decision about the information that they have. First, students ask '' What do I know about this subject and What do I want to learn?''. As the students research the subject, they respond to the questions that they asked at the beginning and replace them with more accurate information.

Expressing what I think. Students need vocabulary to be able to express their thoughts because it is so important to express what they think. Thus, students are able to follow the process of thinking that is explicitly shown. Moreover, methods such as modeling, and discussion are important that students can think and need to develop their vocabulary to be able to express what they think.

Keeping a learning diary. One of the important techniques to develop metacognition is to keep a learning diary. Learning diary is a diary in which students reflects their ideas and take necessary notes. In these diaries, students comment on how they get over the difficulties.

Making a plan and self-monitoring. Students are required to make a plan that contains necessary planning rules to complete the necessities for the task and to finish an activity which is given. Students should have the skills of planning, an increased responsibility to regulate their own learning, self-monitoring and self-evaluation. The criterias for evaluation, should be developed along with the students. Thus, students learn how to think and ask questions to themselves during the learning activity.

Examining the thinking process. In the activities which are held at the end of the processes, students are provided to focus on the discussions about the thinking processes to recognize the strategies that students can adopt for further learning situations.

Self-evaluating. Self-evaluation activities can be made with individual conferences and checklists. Students will be free to self-evaluation.

The importance of the research; reading comprehension, as a concept, is that in their minds students give a meaning to what they read. The best person is the student who determines whether he/she understands exactly what he/she reads or not. The behavior expected from the students in the reading process is planning, self-questioning, being aware of the points that they didn't understand and taking precaution for them (Kuhn & Pease, 2010). During and after reading checking comprehension, being aware of his deficiencies and regulation are the actions associated with metacognitive strategies (Zimmerman, Martinez & Pons, 1986).

Using metacognitive strategies is an action which provides more efficient reading as well as more efficient learning by reading. However, the researches show that it is not possible , during reading comprehension, for all the students to automatically fulfill necessary behaviours that metacognitive strategies require (Winne, 2001; Butler & Cartier, 2004; Butler et al., 2011). At this point, the educational practices in the classroom, especially teacher behaviors come forward. With directly or indirectly teaching, teachers should allow students to use metacognitive strategies in reading (Housand & Reis, 2008).

When examining the studies related to metacognitive strategies in the literature, researches can be seen such as; determining students' metacognitive strategies (Koriat, 1997; Mokhtari & Reichard, 2002; McMurray & Sanft, 2005; Schunk, 2008; Zwiers, 2010), determining metacognitive strategies relationship with various variables (Schunk & Zimmerman, 1998; Kramarski & Zeicher, 2001; Batha & Corroll, 2007; Mevarech & Fridkin, 2006; Young & Fry,2008; Riany, 2010), using metacognitive strategies in the problem solving process (Yimer & Ellerton, 2006; Desoete, 2009; Karpicke, 2009), reading and reading comprehension (Hall & Bowmann, 1999; Johnson, 2002; Eilers & Pinkley, 2006; Bang & Zhao, 2007; Fotovatian & Shokrpour,2007; Anastasiou & Griva,2009).

In Turkey, the studies on metacognitive strategies are; determining the metacognitive strategies that students use (Ozcan, 2007; Sarac, 2010; Akpunar, 2011), the situations of students' use of metacognitive strategies (Altındag, 2008; Cogenli, 2011), determining its relationship between the different variables (Akin, 2006; Dulger, 2007; Alemdar, 2009; Oluk & Başoncul, 2009; Boyaci, 2010; Polat, 2010; Yildiz, 2010; Dilci & Kaya, 2012; Pehlivan, 2012; Bozkurt, 2013, using metacognitive strategies in the problem solving process (Ektem, 2007; Ozsoy, 2007), reading and listening comprehension (Cakiroglu, 2007; Razi, 2010; Oruc, 2012). However, the studies related to reading activities by using metacognitive strategies are not widely seen in

the literature. Therefore, this study has great importance in Turkey to contribute to other studies on metacognitive strategies.

The purpose of this study is to determine the effects of the teaching practices in which metacognitive strategies are used, on 5th grade secondary school students' reading comprehension skills in Turkish language course. For this purpose, it was tried to find answers for the following sub-problems.

- Is there any significant difference between mean score of pre-test and post-test of the experimental group students' reading comprehensions in favour of post-test?
- Is there any significant difference between mean score of pre-test and post-test of the control group students' reading comprehensions in favour of post-test?
- Is there any significant difference between the experimental and control group students' reading comprehension post-test mean scores in favour of experimental group?

Method

Research Design

This research was carried out according to "pre-test – post-test control group model" . In "pre-test – post-test control group model", there are two groups formed by randomly assignment. Thus, in this study, an experimental and a control group were formed and in both groups, measurements were made pre-test and post-test.

Pre-tests in the model and applied to both groups before the implementation, help to determine the groups' similarity levels before the experiment, on the other hand, post-tests help to interpret the results (Cohen, Manion & Morrison, 2007).

Study Group

The sample group of the study consists a total of 65 secondary level 5th grade students in Sakarya city in the 2012–2013 academic year. This study was carried out for six weeks. The study was conducted after having necessary permissions.

There are 32 students in the experiment group and there are 33 students in the control group Table 1. When determining the experimental and control groups, it is benefited from achievement pre-test scores that students got to measure reading comprehension levels at the Turkish languege course.

Table 1. Demographic structures of study group according to gender

Groups	Female	Male	Total
Experimental group	14	18	32
Control group	16	17	33

It is seen that in this research the experimental group consists of a total 32 students, 14 females and 18 males; the control group consists of a total 33 students, 16 females, and 17 males. Reading comprehension pre-test results which are used to balance the groups taking part in the study are given in Table 2.

Table 2. The comparison of the reading comprehension skills scores pre-test results of experimental and control groups

Groups	$\bar{X}$	SD	t	p
Experimental group	13.64	4.24	.28	.48
Control group	12.84	4.42		

$p<.05$

When Table 2 is analyzed, the experimental group students' reading comprehension pre-test mean score before the implementation is determined as ($\bar{X}$=13.64, SD= 4.24) and the control group students' reading comprehension pre-test mean score is determined as ($\bar{X}$=12.84, SD= 4.42). It is seen that there is/isn't a significant difference between pre-test scores and comprehension skills scores. In this case, it can be said that the experimental group students and control group students are in similar characteristics in terms of reading comprehension skills at the beginning.

Data Collecting Tools

Achievement test to measure the level of reading comprehension. This test is prepared to determine the effects of teaching practices in which metacognitive strategies are used on the level of reading comprehension. In the development of test, 5th grade curriculum outcomes accepted by Ministry of Education Board of Education and course books were used. Thirty questions were prepared taking into account the lower level reading outcomes in Learning Reading Field and appropriate to types, methods and techniques the application of reading rules, reading comprehension, meaning making, vocabulary development. In the process of preparing the text and questions, it was benefited from the views of field experts and 5th grade Turkish course teachers and necessary arrangements were made in accordance with their recommendations.

To determine the reliability of the test, achievement test was applied to a total of 184 5th grade students who are similar to research group. By analyzing the obtained data in the program of ITEMAN (Item and Test Analysis Program), reliability study was conducted. As a result of the item analysis, 11(0,12), 12(0,8), 14(0,18), 16(0,21), 29(0,16) items were removed from the test as their item distinguishing scores were lower than 30 and as a result of this process, a final test consisting of 25 questions was formed. Final test statistics are given in Table 3.

Table 3. The statistical results of the test is belong to the unit of "The Individual and The Society"

The number of the student	The number of the questions	$\bar{X}$	SD	KR–20	Item Difficulty Index
184	25	20.92	7.18	0.91	0.64

When Table 3 is examined, it is seen that the mean of the test which is belong to the unit "The Individual and The Society" is ($\bar{X}$= 20.92), the standard deviation of the test is (SD= 7.18), KR-20 reliability coefficient is 0.91 and the average hardness is 0.64. So it is told that the success test has an adequate reliability (Cohen, Manion & Morrison, 2007).

Examining the data obtained, it shows that questions are of medium difficulty level that is questions are neither difficult nor easy for students. Generally, it is desired that the mean of the degree of the material hardness is about 0.50 at tests that measure the achievement (Bayrakceken, 2007). Also, the specified value can be considered appropriate for the group of students who were applied.

The Procedures

A six-week work plan in which metacognitive strategies would be applied to students, was prepared. The planning of the implementation part in study plan was prepared taking into consideration the metacognitive strategies such as planning, monitoring and regulation (Zimmerman, Martinez & Pons, 1986).

The development of reading comprehension skills form which experimental group students would use, was prepared. This form was prepared by benefiting from self-regulated learning skills monitoring forms in order that students become active in teaching environment, make personal plans, choose appropriate strategies to achieve learning objectives, compare their own performance with targets, control their emotions and regulate them (Zimmerman, Bonner & Kovach, 1996; Blakey & Spence,1990). This form consists of questions in order to comprehend the text and books which were read, to distinguish what is important and what is not, to find the degree of relevance between the event and the main idea. In this form, there are self-

oriented questions for students. In the form, not only is there information about the book which was read, but there is also subtitles about the content (Eker, 2012).

This study was planned to cover a six-weeks period beginning on 6 March 2013. According to the plan prepared, during the first week, achievement test as a pre-test was applied to students to evaluate their reading comprehension skills. In the second week, the information about metacognitive strategies and reading comprehension follow-up forms was given to the experimental group. In the 2nd, 3rd, 4th and 5th weeks, in accordance with daily course plans prepared to bring the outcomes such as the implementation of reading rules, reading comprehension, meaning making, vocabulary development, appropriate reading for types, methods and techniques, course teaching implementation was carried out. In the 6th week, the implementation of the final tests was made to experiment and control groups.

There was no intervention to the control group by the researcher during the research process. The teacher gave the lesson in a way that students can understand, also, where necessary, organized different activities. At home and in class studies, students didn't do anything apart from the activities in student workbooks.

Analysis of Data

In this study, the obtained data were collected in two stages. Pre-test and post-test were administered to the experimental and control groups. In the analysis of data, mean ($\bar{X}$), standard deviation (SD), frequency (f), percentage (%) t-test were used. In addition, for each relationship, to explain power of relation effect size (Cohens' d) values were calculated.

Effect size (Cohen's d) is a statistical value which is obtained from the sample, showing the level of results deviation from the expectations, calculated according to group mean difference (Cohen, 1994). However, statistical meaningfulness tests evaluate the possibility of obtaining the results from the sample by chance, effect size is an indication of the practical meaningfulness. While statistical meaningfulness is affected by the number of samples, effect size value helps to decide more accurately about obtained results by eliminating the consequences of the number of samples (Nickerson, 2000). The meanings which were given to effect size point values, can be seen in Table 4.

Table 4. Cohen's *d*, the score intervals for the size of the effect

The degree of the size of effect	
Alternative	**The limits of the intervals**
Uneffective	0,0 - 0,2
Partially effect	0,2 – 0,5
Medium effect	0,5 – 0,8
Big effect	0,8 +

The level which is .05 and trust interval which is 95% are used for commenting data.

Results of the Study

In this section, experimental and control group students' pre-test-post-test and persistence test findings are given.

Is There Any Significant Differences Between Mean Score Of Pre-Test And Post-Test Of The Experiment Group Students?

The findings about the scores of achievement test which was carried out to measure experiment group students' reading comprehension levels before and after experimental procedure, are given in Table 5.

Table 5. Comparison of the experimental group's students' mean score of pre-test and post-test about their reading comprehensions

Tests	The experimental group					The size of the effect (Cohen's *d)*
	N	$\overline{X}$	SD	t	*p*	
Pre-test	32	13.64	4.24	4.64	.03	0.94
Post-test	32	22. 56	3.86			

p<.05

When Table 5 is examined, it is seen that experimental group students' mean score of pre-test of reading comprehensions is ($\bar{X}$=13.64) and its standard deviation is (SD=4.24), mean score of post-test is ($\bar{X}$=22.56) and its standard deviation is (SD=3.86). The difference between pre-test and post-test is 8.92 in favor of the post-test. Whether the difference between the scores of pre-test and post-test is meaningful or not, was interpreted with 't test', and also a meaningful difference was found at the value (t=4.14) and the level (p<0.05) in favor of the experiment group. The effect size of the difference between reading comprehension pre-test and post-test scores of the experimental group was calculated as 0.94. It is seen that the experimental process has a major effect on reading comprehension levels of experimental group students. There is a meaningful difference between experiment group students' reading comprehension mean score of pre-test and post-test in favor of the post-test. This increase between mean scores can be said to be the cause of students' learning of metacognitive strategies.

Is There Any Significant Difference Between Control Group Students' Reading Comprehension Levels Mean Score Of Pre-Test And Post-Test In Favor Of The Post-Test?

The findings of the achievement test which was carried out to measure experimental group students' reading comprehension levels before and after experimental procedure, are given in Table 6.

Table 6. Comparison of reading comprehension pretest-posttest means score of the control group students

Tests	Control group					The size of the effect (Cohen's *d)*
	N	$\overline{X}$	SD	t	*p*	
Pre-test	33	12.84	4.42	3.21	0.01	0.52
Post-test	33	16. 86	3.94			

p<0. 05

When Table 6 is examined, it is seen that control group students' mean score of pre-test of reading comprehension is ($\bar{X}$=12.84) and its standard deviation is (SD=4.42), mean score of post-test is ($\bar{X}$=16.86) and its standard deviation is (SD=3.86). The difference between pre-test and post-test is 8.92 in favor of the post-test. Whether the difference between the scores of pre-test and post-test is meaningful or not, was interpreted with 't test', and also a meaningful difference was found at the value (t=3.21) and the level (p<.05) in favor of the experimental group. The effect size of the difference between reading comprehension pre-test and post-test scores of the experimental group was calculated as 0,52. As a result, it can be said that courses processed as indicated in the program, have reasonable effects on the control group students' reading comprehension levels.

Is There Any Significant Differences Between Reading Comprehension Post-Test Mean Scores Of The Experimental And Control Group Students?

The findings of achievement test which was carried out to measure students' reading comprehension levels before and after experimental procedure, are given in Table 7.

Table 7. Comparison of the post-test scores made to evaluate the reading comprehension levels of the experimental group students and the control group students

Groups	Post-tests					The size of the effect (Cohen's *d)*
	N	$\overline{X}$	SD	t	*p*	
Experimental	32	22. 56	3.86	2.98	.02	0.82
Control	33	16. 86	3.94			

p<.05

When Table 7 is examined, it is seen that experimental group students' mean score of post-test of reading comprehension is ($\bar{X}$=22.56) and its standard deviation is (SD=3.86), control group students' mean score of post-test of reading comprehension is ($\bar{X}$=16.86) and its standard deviation is (SD=3.94). The difference is 5.7 in favor of the experimental group. Whether the difference between the scores of post-test is meaningful or not, was interpreted with t-Test, and a meaningful difference was found at the value (t=2.98) and the level (p<0.05) in favor of the experimental group. The effect size of the difference between reading comprehension pre-test and post-test scores of the experimental group was calculated as 0,82. There is a meaningful difference in favor of the experimental group between experimental group students' mean score of post-test of reading comprehension and control group students' mean score of post-test of reading comprehension. It can be said that the courses using metacognitive strategies are more effective than the courses which are processed as indicated in Turkish Language Course teacher's book and course books.

Discussion and Conclusion

With this study in which the use of metacognitive strategies' effect on students' reading comprehension skills was examined, the following conclusions have been reached. As a result of the teaching practice of metacognitive strategies on experimental group students, it has been found that there is an increase in reading comprehension skills in Turkish Language course. With this result, it can be said that metacognitive strategies are effective and useful in increasing students' academic achievement. When we think metacognitive strategies as implementations which enable students to organize the reading process or direct the reading process, it is thought that students notice their efficiency, make plan, set targets related to it, and their reading gives rise to such a difference by managing their learning. Using metacognitions strategies is considered to help to achieve the goals about reading (Aarnoutse & Schellings, 2003). Metacognitive strategies enable a student to set the necessary goals for reading comprehension, to understand the main idea of the text, to guess the meaning of the expressions in the text, to understand the relationship between his/her life and the life written in the text. Thus, metacognition is seen as a complementary element for reading comprehension process (Bang & Zhao, 2007).

This result shows consistency with similar studies on metacognitive strategies' effects on reading comprehension skills (Hall & Bowmann, 1999; Sen, 2003; Grift, 2006; Bang & Zhao, 2007; Cakiroglu, 2007; Sarac, 2011). In parallel to the research findings, Hall & Bowmann (1999), in consequence of the study on elementary school students, found that teaching of mtacognition strategies develop students in reading and reading comprehension skills. Moreover, Anastasiou and Griva (2009) stated that students were more successful in achievement of reading comprehension as a consequence of the study on cognitive strategy teaching and teaching time's effect on the achievement of reading comprehension. In conclusion, metacognition strategies which have a positive contribution to students' reading comprehension levels at Turkish Language courses, should be taught and students should be provided to use metacognitive strategies.

Also, it should be provided that students have to set goals in their studies at the end of each reading text in Turkish Language courses, should be aware of their own learning, check their performance continuously and do self-evaluation. Some suggestions propose to educators and researchers about metacognition skills. It should be provided at the end of each reading, that students decide an aim that they are aware of their learning, that they always control their performances and that they evaluate themselves.

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