

Full Length Research Paper

The impact of self-regulated learning on reading comprehension and attitude towards Turkish course and metacognitive thinking

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The purpose of this study was to examine the impact of self-regulated learning on students' reading comprehension and attitude towards Turkish course and metacognitive thinking skills. For this purpose, the study was carried out with the 5th graders in Zonguldak Province. In this study, one of the classes was designated as the experimental group and the other class as the control group. While self-regulated learning was applied to the experimental group, a traditional method was applied to the control group. The study lasted for 8 weeks totally. In the study, non-equivalent control group's pretest-posttest design was used. The data were obtained with the help of a reading comprehension test, an attitude scale, a metacognitive thinking skills scale and an interview. At the end of the study, depending on the quantitative data, it was found that self-regulated learning significantly increased the reading comprehension and metacognitive thinking skills of the students in the experimental group. By depending on the qualitative data, it was found that students in the experimental group used self-regulated learning skills while studying.

Key words: Self-regulated learning, reading comprehension, metacognitive thinking, attitude, Turkish course.

INTRODUCTION

Self-regulated learning is described as an active participation of the learners metacognitively, motivationally, and behaviourally to their own learning process (Zimmerman, 1986). Self regulated learners decide, conduct, and control their behaviours. When they realize their lack of learning, they take some precautions. Self-regulation is vital for two reasons. The first reason is self-regulation provides the development of life-long learning skills (Zimmerman, 2002). Secondly, the purpose of schools is not only to teach basic knowledge and skills but also

enable them to be independent from external stimulus. At the end of this process, students are expected to be self-regulators.

Zimmerman (1998) proposed a model which consists of three phases: forethought, performance control, self-reflection. It is a cyclical process. According to this model, individuals evaluate their performances, and may turn back to the beginning of the process if they can not reach their goals. This circle continues until accomplishing the goal. In phase of forethought, students set goals and plan

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their own actions (Pintrich and Schunk, 2002). Forethought shapes the period affecting beliefs and learning efforts, and makes the students ready for learning process (Cobb, 2003). During *performance control phase* students use appropriate learning strategies to reach their own goals and self-monitor their progress. These strategies are personal approaches which lead to acquiring knowledge and skill (Nota et al., 2004). The most used strategies are repetition and memorization, detailing, organization and transformation, critical thinking, metacognitive self regulation, help seeking, learning from friends, arranging environment, time and effort regulation, and self-checking. *Self-reflective phase* follows performance control, and it is the phase that student evaluates their own performance. In this phase, the learners compare their performances with their goals, and adjust their learning strategies.

Self-regulated learning and reading comprehension

Reading comprehension is described the process of constructing a meaning in mind by depending on reading text. Self-regulated learning is necessary to develop reading comprehension, because poor readers confront difficulties in choosing and using different strategies. So, these strategies need to be taught to these students (Brown, 2002). Students who can self-regulate their learning participate actively in the process of knowledge acquisition and activities that enable them to adapt strategically to their behaviour, personal process, and environment to make meaning (Hausand and Reis, 2008). During reading period, student is expected to investigate the main idea, and be aware of the parts that he has not understood and take prevention to this. It is usually determined by verbal or written questions about reading material if students who make their reading within self-regulated learning and try to make a meaning or not. In the meta-analysis study conducted by Dignath et al. (2008), it was found that self-regulated learning has a small effect on writing and reading performances ($d=0,44$).

Self-regulated learning and metacognition

According to definition of self-regulated learning, self-regulated learners not only motivationally and behaviourally but also *metacognitively* participate in their own learning process. Metacognition is defined as monitoring and controlling of thought by learners (Martinez, 2006). Self-regulated learners use metacognitive process in learning a material. That is, they plan, set goals, organize, self-monitor, and self-evaluate their performance. By these processes, learners become more self-aware, knowledgeable, and decisive in their approach to learn (Zimmerman, 1990). The effect of self-regulated learning on using cognitive and metacognitive

strategies was observed to be medium $d=0.73$ (Dignath et al., 2008). Cabı and Yalın (2011) and Vandeveldel et al. (2011) have found that self-regulated learning affects metacognitive thinking skills. In this research, it is estimated that the self-regulated learning strategies enhance metacognitive skills.

Self-regulated learning and affective outcomes

Forethought phase of self-regulated learning includes task analysis and self-motivation beliefs (self-efficacy, intrinsic interest/value, outcome expectations and learning goal orientations). The higher self-motivational belief means the more motivated students learn by self-regulating (Zimmerman, 2002). If students reach their goals, their self-efficacy, motivation, interests increase. That is, these self-motivational beliefs and self-regulated learning process effect reciprocally. Student who believe they can easily manage hard academic tasks use more cognitive and metacognitive strategies, work harder, persist longer, and persevere in the face of difficulties (Pajares, 2002).

Cabı and Yalın (2011), Vandeveldel et al. (2011) and Orhan (2008) found that self-regulated learning activities had positive effects on motivation and self-efficacy. Arsal (2010) found that self-regulated learning increased students' attitudes towards course. Also, there was a significant correlation between self-regulation and self-efficacy ($r=0,44$) and intrinsic value ($r=0,73$) according to the study conducted by Pintrich and De Groot (1990). In this study, it was estimated that self-regulated learning had effects on students' attitudes towards Turkish course.

The studies in Turkey on self regulated learning largely were descriptive, and conducted using MSLQ on university students. This study was different from others because it was conducted experimentally on elementary students. At the same time, in this study qualitative and quantitative data were gathered together.

The effects of self-regulated learning on reading comprehension, attitude to Turkish course and metacognitive thinking skills were investigated in experimental way in this study.

The purpose of this study was to examine the effects of self-regulated learning upon students' reading comprehension, their attitudes towards Turkish Course and metacognitive thinking skills in 5th grade Turkish course.

METHODS

Design

The non-equivalent control group's pre-test and post-test design which is one of the quasi-experimental designs was used to analyze the effectiveness of the treatment. In this design, the researcher does not assign randomly individuals to groups. Existing groups were designated as an experimental and control group. The

researcher intervened to experimental group not to control group. Same tests are applied pre-test and post-test two groups in this design (Gay and Airasian, 2000). In this study reading comprehension test, attitude scale and metacognition scale were applied to two groups as a pre-test and a post-test.

Participants

The study was conducted on 37 the 5th graders studying in the 2011-2012 fall term in Zonguldak Province. The experimental group consisted of 19 students and the control group consisted of 18 students. The age of participants is approximately 10 or 11 years old. The study was conducted with the consent of the students' parents and school administration. The reading comprehension test, attitude scale towards Turkish Course, a metacognitive thinking skills scale were used to identify whether groups are equal or not before treatment. The students' reading comprehension ($t=2,01$; $p>0,05$), attitude towards the Turkish course ($t=1,87$; $p>0,05$) and metacognitive thinking skills ($t=0,39$; $p>0,05$) means were equal in both groups.

Instruments

Reading comprehension test

The test was prepared by researchers based on objectives in curriculum. Trial test consisting of 43 questions was examined by 4 Turkish course teachers, a doctor of curriculum and instruction, a doctor of Turkish education and three research assistant. This form was applied to 310 fifth graders for pilot study. The final form consisted of 30 questions. Mean of item difficulty index of test items was 0.57; mean of item distinguishing index was 0.54. Also, reliability coefficient of test items was 0.84. It can be interpreted that this test measures reliably and validly reading comprehension level of students.

Scale of metacognitive thinking skills

The scale of metacognitive thinking skills which is sub-scale of MSLQ developed by Pintrich (1991), and translated into Turkish by Büyükoztürk et al. (2004) were used to measure metacognitive thinking skills. The scale consisted of 11 items. Items were rated on a 7-point response scale ranging from 1 (not at all) to 7 (very much). The reliability coefficients of sub-scale were 0.79 in original study; 0,75 in translated study; 0,67 in this study.

Scale of attitude towards Turkish course

The scale consisted of 20 items which was gathered from curriculum. It was 5 point Likert typed self-report instrument. Reliability coefficient of scale was 0.94 for this study. The scale was applied as a pre-test and post test for both groups.

Interview

Interview form was prepared by researchers to identify whether students employ self-regulated learning strategies during studying or not. Form consisted of basic 3 questions and their sub-questions. Questions were examined by 2 doctors of curriculum and instruction and applied to 4 students selected randomly from experimental group to get their opinions. To increase reliability of qualitative data, the students' statements were coded by two researchers. The ratios of co-codes to all codes were calculated as 87%. According to this

data results obtained from interview adequately were reliable.

Intervention

Before treatment, self-regulated learning strategies had been taught to students in experimental group. Self-regulated learning was performed in experimental group. In experimental group, students set their goals, identified their learning strategies to reach these goals and evaluated their own performance, compared their performance with their goals. They adjusted their strategies if necessary. The researchers did not intervene in control group. The students in control group learned subjects depending on curriculum. The reading comprehension test, the attitude scale and the metacognitive thinking skills scale were applied as a pre-test and post-test to both groups. The researchers interviewed with 4 students from only experimental group.

Analysis

To decide normality of data, skewness and kurtosis values were examined. These values were between +1 and -1. It was accepted that the pre-test and post-test scores of the two groups were distributed normal. So, mean, standard deviation, paired samples t test and MANCOVA were conducted to analyse data. Also, the effect size was calculated with Cohens'd. The intervals of effect size is 0.2 has no effect; 0.2 – 0.5 have small effect; 0.5 – 0.8 have medium effect; 0.8 and up has large effect (Green and Akey, 2000). The data were interpreted in 95% confidence interval.

The data obtained from the focus group interview were analysed with descriptive analysis. In descriptive analysis, the aim is to serve the findings in an organized and interoperated way. For this reason, firstly data were described in a systematic and clear way, and then those descriptions were explained and interpreted (Yıldırım and Şimşek, 2008). In analyzing qualitative data, the phases of self regulated learning were used as a framework.

FINDINGS

Quantitative findings

Firstly, the experimental and control group students' pre-test and post-test means were compared with paired samples t test. The data obtained are submitted in Table 1. The table depicted the experimental group students' reading comprehension and metacognition post-test scores were significantly higher than pre-test scores. The effect size of difference for reading comprehension was 1.74 (large effect); for metacognition was 0.54 (medium effect). It was interpreted that self-regulated learning had large effect on reading comprehension; medium effect on metacognition. Increase in attitude of experimental group students was a slight but insignificant. The students in experimental group actively participated in the learning process. They used the most appropriate learning strategies effectively for their learning. They were aware of their learning process. These factors might enhance scores of students' reading comprehension, meta-cognition skills and attitudes towards course.

The students' reading comprehension post-test in control group was significantly higher than pre-test; but

Table 1. The comparison of experimental and control group's reading comprehension, attitude and metacognition pre-test and post-test means.

Variables		Experimental group						Control group					
		N	\bar{X}	SD	t	p	η	N	\bar{X}	SD	t	p	η
Reading Comp.	Pre-test	19	16.78	3.89	7.62*	0.000	1.74	18	14.05	4.37	2.61	0.018*	0.61
	Post-test	19	23.68	4.64				18	16.88	5.26			
Attitude	Pre-test	19	3.78	0.59	1.13	0.270	-	18	4.14	0.56	1.31	0.205	
	Post-test	19	3.99	0.82				18	4.28	0.63			
Metacog.	Pre-test	19	4.45	0.98	2.38*	0.028	0.54	18	4.27	1.65	0.42	0.675	-
	Post-test	19	5.18	0.88				18	4.13	0.74			

*p<0.05.

Table 2. MANCOVA results.

Source	Dependent variable	Sum of square	df	Mean square	F	p
Group	Reading comprehension	161.619	1	161.619	9.331*	0.005
	Attitude	0.002	1	0.002	0.005	0.946
	Metacognition	8.744	1	8.744	13.722*	0.001

p<0.05.

there was not significant difference between pre-test and post-test in the scales of attitude and metacognition. It can be said that traditional method increased students' reading comprehension but did not increase attitude and metacognition.

Data of both groups were analysed with MANCOVA. The pre-tests were assigned as a covariate, post-test scores of experimental group students and control group students was compared. Results were presented in Table 2.

Table 2 depicted that when controlling for pre-tests, experimental group students' mean of reading comprehension post-test results and metacognitive thinking post test results were significantly higher than control group. Self-regulated learning increased experimental group students' reading comprehension and metacognition scores when controlling effects of pre-tests. Consequently, it could be said that self-regulated learning was effective on primary school students' reading comprehension and metacognitive thinking compared to traditional methods.

Qualitative findings

At the same time, opinions of students in experimental group about using self-regulated learning were examined in this study. At the end of the interviews, the answers given by students were analysed appropriately according to self-regulated learning phases which have been

defined by Zimmerman (1998). The data obtained from interview were presented below.

Forethought

Forethought is a necessary phase prior to commencement of the study. This phase basically includes goal setting, and strategical plans are necessary to reach this goal. Students' statements obtained from interview were presented below;

"Firstly, I didn't use to define the target, and I was studying lesson aimlessly. But now, I set a goal. For instance "I will get a highmarks from my exams (goal setting)" (student 1, girl)".

"I didn't use to determine my aim but I do now. For example; when I have an exam, I think I will get the highest mark and everybody will celebrate me." I determined my aim (goal setting) (student 2, girl)".

"I learnerd setting a goal. I mean I promise my mum I will get a mark higher than 85 point (goal setting)" (student 4, girl)." For example, if the subject is proportion, I myself inefficient. Now I plan how to study on my own, take my pen and paper, study with effective strategies. If I can't learn subject, I ask my mother to help me (strategic planning/help seeking) (student 4, girl)".

Students' responses indicated that students set their

goals, plan how to study and identify their strategies to reach these goals before studying.

Performance control

The performance control is the phase that students use appropriate learning strategies to reach their goals, and monitor their progress. This phase is realized during studying. Students' responses are presented below.

"For maths I close my room door, tell my mother not to disturb me, and I take some cookies with me in case I am hungry not to interrupt lesson (arranging study place). After I determine my aim (goal setting), I begin to do my homework. If I have a problem with my homework, I ask for help from my parent (help seeking)" (student 1, girl). After all those come real, I pay attention to silence and my achievements. If my attention is lost by poster etc., I remove them my room (arranging study place, effort regulation). If I am insufficient in social studies, I use an atlas while studying. First, I had pointed the mountains with those pencils with help of my sister, second I wrote their location. And then I closed the notes that I wrote. I made a repetition in my mind (metacognition/help seeking/detailing/repetition and memorization)" (student 4, girl).

"I am insufficient in some subjects in English lesson. In order to compensate this deficiency, firstly I look for their translation to English, later I make sentences with those words and by this way I learn their meanings, too. I keep them in my mind (metacognition /detailing). While I was studying, I use various strategies and tidy my study room. The study room shouldn't be noisy. If there is noisy, I can't understand the words (arranging study place). After that, I read the words and memorize them (repetition and memorization)" (student 2, girl).

"We identified our aim together with the person who teach English to me... for instance; How long does it take to cover this book? After covering the book what can we do? Can we solve problem? Is it necessary to study after semester break? We planned it so (metacognition/timing regulation/organization and transformation)" (student 1, girl).

"I sometimes can't solve the problem in maths lesson. Then I realize that I have deficiency in that subject (metacognition)" (student 2, girl).

"After teacher lectured the subject, first I review it when I go home and solve my test but I don't understand that it is not useful for me because I fail in questions and ask my elder sister and she explains me later (metacognition/help seeking)" (student 4, girl).

".....for example the subject is ratio. When I can't learn ratio at school, I go home and I research how to solve problems about this subject. Finally, I try to solve questions on my own (Metacognition/repetition and memorization). The last thing that I do is to ask my

teacher (help seeking)" (student 3, boy).

"First I didn't used to plan and repetition, I just know what I learned in the school (metacognition) and I did my homework. I didn't use to make any revision; I didn't look for help. I just asked while the teacher was checking our homework in the school. But now I look for help, search on the internet, ask my parents. (help seeking)... I couldn't see my weaknesses (metacognition). Generally, my teacher was telling to me my weaknesses. I didn't used to do any preparation but now I tidy up myself. Also, I recognize myself and know what are my weaknesses (metacognition)." student 1, girl)

"When I came home, I would do my homework after changing my clothes, I used to eat something and go to bed soon. Actually, I used to do nothing. Now, after I come home, I eat something, change my clothes, and then tidy my room (arranging study place). After that, if we have learned something important at school, I note them and hang these important knowledge on the wall to remember, I want to hang a new information on the wall as well (detailing)"(student 4, girl).

"I control myself because sometimes I ruminate. I don't even understand what I am doing, while reading, I start thinking other things. I am lost in thoughts. How much did I progress? In order to exceed my progression, I need to concentrate more. I start reading in more silent room. When I do all of these, I believe everything will be better (attention focusing, arranging study place)" (student 1, girl).

"I didn't used to realize my actions while doing homework. I didn't used to check myself. But now, I control myself. After I do an activity, I check myself whether I do it correctly or not (self-monitoring)" (student 2, girl)

"I didn't used to prepare a chart on my study plan before starting to read. Now, I prepare a chart about what I will do (planning) and I start reading. I give a break not to be bored and not to get my eyes tired. I keep following my duties by checking my chart (self-recording)" (student 3, boy)

"Before, there was always a poster of an artist on the wall. But, I removed the poster from the wall and put it somewhere else... So, I really get bored studying when I come home. And then I found a funny way of studying. I tried to find a song of lesson when I studied. For example I tried to make a melody with the initial letter of subject (arranging study place)" (student 4, girl)

"I eat fruit to concentrate on my lesson and to feel good (arranging effort) " (student 3, boy).

"(To enable motivation). I didn't used to do my homework and go inside. But now, I take some fruit or something sweet with me (arranging effort, attention focusing)" (student 2, girl).

The students interviewed stated that they used self-regulated learning strategies when they had difficulty in reading a subject. Mostly used strategies during studying

were being aware of their weaknesses, help seeking, arranging time, effort and study place, repetition and memorizing, detailing strategies.

Self-reflection

The self-reflection phase includes the situations in which students evaluate their performance according to their goals and changes their strategies if necessary. This phase realizes at the end of studying.

"I got a high mark. I felt very happy. When I told the mark to my mother she celebrated me. I enjoy when my parents' appreciating me rather than buying a chocolate for myself... Also, when I got a high mark, I draw a smiling sun. If I don't like my mark, I draw a sulky sun. If I don't get high mark, I draw rainy weather that rain is dropping from cloud (self-satisfaction)"...." finally If I could do something good, I tell this to my family and celebrate this" (student 1, girl).

"I evaluate myself after studying. I feel happy if I don't do mistake (self-evaluation, self-satisfaction)" (student 2, girl)".

"After we passed this study, I understood the subjects better in Turkish course. It was useful for this subject (self-satisfaction) (student 2, girl)".

"I used these strategies in my other courses. I became more successful by using them (adaptive, transformation) (student 3, boy)".

"When I started to studying, I looked if there was a part that I forgot. If not, I feel happy. But, if there is a part that I forgot, I return to the beginning and look again (self-satisfaction, adaptive) (student 4, girl)".

"I check myself if I pronounce that vocabulary correctly or not, and then I also repeat its meaning. After, I look up its meaning in dictionary. If it is correct, I feel happy (self-satisfaction) (student 2, girl)".

The students in experimental group stated that they evaluated their performance according to their goals. If they reached their goals, they appreciated and praised themselves. If they did not reach these goals, they adjusted their learning strategies.

RESULTS AND DISCUSSION

The purpose of this study was to examine the effects of self-regulated learning on students' reading comprehension, their attitudes towards course and metacognitive thinking. The other purpose of this study was to reveal which self-regulated learning strategies were used by students. At the end of the study, the findings showed that students in experimental group outperformed than students in control group in reading comprehension test. In reading a text based on self-regulated learning, the students selected and used effective learning strategies.

The student 3 in experimental group said that *I used these strategies in my other courses. I became more successful by using them.* The students checked whether they understood the text or not, and changed their strategies if necessary. The student 2 in experimental group said that *I check myself if I pronounce that vocabulary correctly or not, and then I also repeat its meaning. After, I look up its meaning in dictionary. If it is correct, I feel happy.*

Also, it was found that self-regulated learning had a large effect on reading comprehension. Contrarily, Dignath et al. (2008) found small effect in meta analysis study. Reading comprehension is a key element in enhancing academic achievement of students in other courses. So, using self-regulated learning while studying may enhance both levels of reading comprehension and academic achievement in other courses.

Self-regulated learning increased metacognitive thinking skills of students in experimental group in this study. That is to say, self-regulated learning had medium effect on metacognitive thinking skills of students in experimental group. Similarly, Dignath et al. (2008) found medium effect on metacognition in meta analysis study. Cabı and Yalın (2011) and Vandeveldel et al. (2011) found self-regulated learning had significant effect on metacognition. The students in the experimental group planned and used learning strategies. Student 4 in experimental group said that *I learnerd setting a goal. I mean I promise my mum I will get a mark higher than 85 point ". For example, if the subject is proportion, I feel myself inefficient. Now I plan how to study on my own, take my pen and paper, study with effective strategies. If I can't learn subject, ask my mother to help me.* While studying lesson, they monitored their progress and evaluated their own performances. The student 3 in experimental group said that *I didn't used to prepare a chart on my study plan before starting to read. Now, I prepare a chart about what I will do and I start reading. I give a break not to be bored and not to get my eyes tired. I keep following my duties by checking my chart.* Using self-regulated learning strategies enable students to be aware of and control their learning process. The student 2 in experimental group said that *I evaluate myself after studying. I feel happy if I don't do mistake.* The strategies mentioned above are the metacognitive strategies at the same time.

Self-regulated learning increased the students' attitudes towards Turkish course. But this increase was not significant. Arsal (2010) found self-regulated learning had significant effect on attitude. The reason may be conducting the study on only one unit. If study lasted more, attitude may be significantly affected from self-regulated learning. Contrary to this study, students in experimental group stated in section of findings that they used self regulated learning skills in every stage of the study. Also students stated that they used self-regulated learning strategies not only in Turkish course but also in different courses (English, math, social studies). They

said that they set learning and performance goals, and decided a suitable strategies to reach these goals before studying. While studying, they used memorization, repetition, help seeking, arranging study environment, time and effort regulation, detailing, self-recording and attention focusing strategies. After studying, they evaluated their own performances and rewarded themselves. Similarly, Çalışkan and Selçuk (2010) and Sağırılı and Azapağası (2009) found that students used self-regulation strategies while studying a lesson. These results showed that students internalized self-regulated learning strategies. And they believed these strategies were important for their own learning.

The limitations of study

The results of this study cannot be generalized to other students because of inadequacy of sample. At the same time, the study was conducted on only a unit. Therefore, different studies must be conducted on larger samples and more units. Different results may be yielded from larger sample and more units. The study was conducted on 5th graders in primary school. Similar studies must be conducted different track level and class level.

Conflict of Interests

The authors have not declared any conflicts of interests.

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