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The Effects of Learning Strategies Instruction on Metacognitive Knowledge, Using Metacognitive Skills and Academic Achievement (Primary Education Sixth Grade Turkish Course Sample)*

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Abstract

This study investigated the effects of learning strategies instruction on metacognitive knowledge, metacognitive skills, and achievement. An experimental pre-test/post-test control group design was used in the research. The study was conducted in the 2008-2009 school year on 6th grade students at Orgeneral Tural and Dikmeli Primary Schools located in the city center of Konya. Forty-two students participated in the study, 21 in the experimental group and 21 in the control group. Groups were equalized on the basis of the Learning Strategies Scale, Turkish Lesson Metacognitive Knowledge Interview Form, and pre-test results of Turkish Lesson Achievement Test. In the experimental group, strategy instruction was given by the researcher himself for 15 weeks, using a direct instruction approach. At the end of the study, it was found that learning strategies instruction increased awareness of strategy and metacognitive knowledge and it was effective in using metacognitive skills. It was also found that using metacognitive skills increased achievement.

Key Words

Learning Strategies, Learning Strategies Instruction, Metacognitive Knowledge, Metacognitive Skills, Direct Instruction.

The ultimate goal of all efforts in education is to increase student success. Therefore, all attention is focused on raising the efficiency of the teaching-learning process. The formation of permanent behavioral change in individuals, in other words, individuals' learning is possible through the effective organization of the teaching-learning process. Change and innovation observed especially in the field of education have come to the foreground in the teaching-learning process (Güven, 2004, p. 20). On the other hand, increasing efficiency in the teaching-learning process is possible above all through understanding how learning takes place in the individual (Öztürk, 1995, p. 46). Learning theories have been developed as a result of studies concentrating on how learning takes place, how the individual receives, processes, and stores knowledge. One of these theories is the "Information Processing Theory", which perceives learning as a mental process. The information processing theory explains the learning process as receiving stimulant, attaching meaning to it, storing it, remembering it to be used, and turning it into behavior. This theory argues that individuals must also become involved in the learning process during learning and make certain efforts. Individuals who become involved in the process during learning and make efforts may enable their own learning. Students who can enable or guide their own learning are called "self-instructed" students. In a learn-

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ing situation, self-instructed students determine their goals in learning the subject, consider what they know about the subject, plan how much time they need to be able to learn the subject, choose the appropriate learning strategy to learn, perform the strategy, check the result and if learning has not taken place, choose a new strategy. This cycle continues until learning takes place. Self-directed students are those who can use metacognitive skills. Metacognition is individuals' being aware of their own cognitive structure and learning characteristics (Senemoğlu, 2007). Metacognitive skills, on the other hand, involves the processes of individuals' deciding what strategy to use in what situations as result of the metacognitive experiences they have lived, using the strategy, monitoring learning, changing the strategy if learning has not taken place and trying a new strategy.

Meatcognitive skills facilitate learning. Therefore, teachers should organize teaching in such a way that students can develop and use these skills. However, students need to know learning strategies in order to be able to decide what strategy they can use in what learning situation. Described as a combination of cognitive skills, learning strategies are learners' behaviors and ideas that they have during learning and affect the encoding process (Weinstein & Mayer, 1986). In its simplest definition, learning strategy is one of the techniques that enable individuals' learning on their own (Özer, 2002).Learning strategies are required for being successful in formal education process and lifelong learning by individuals (Çakmak, Akgün, Karadeniz, & Demirel, 2007). Studies in the relevant literature emphasize that teaching of learning strategies assist in students' learning on their own and permanence of learning and point out the fact this is ignored in institutions of education (Bayındır, 2006; Belet, 2005; Demirci, 2003; Gümüş, 1997; Özer, 2002; Öztürk, 1995; Sünbül, 1998; Tay, 2002; Yangın & Yıldızlar, 1999; Yorulmaz, 2001).

The general purpose of this study is to reveal the effects of learning strategy teaching on students' metacognitive knowledge, their use of metacognitive skills, and their success. The following hypotheses were developed to realize this general purpose.

1. Teaching of learning strategies increases awareness of learning strategies.

2. Teaching of learning strategies increases metacognitive knowledge.

3. Teaching of learning strategies enables the use of metacognitive skills.

4. The use of metacognitive skills increases success.

Method

This study, which aims at determining the effects of teaching learning strategies on metacognitive knowledge, the use of metacognitive skills, and success, was designed and conducted according to the pretest-posttest control group model. Since the third hypothesis of the study aims at whether detailed and integrated investigation of the teaching of learning strategies is effective on students' using their metacognitive skills, an interview technique, which is frequently preferred as a data collection tool in qualitative studies was used.

Research Group

Sixth grade students attending Orgeneral Tural Primary Education School and Dikmeli Primary Education School in Konya in 2008-2009 participated in this study. Each of these schools has one branch in their sixth grade. All of the students in Class 6 / A in Dikmeli Primary Education School and 21 students in Class 6/A in Orgeneral Tural Primary Education School were included in the study. Thus, the experimental group and the control group consisted of 21 students. Orgeneral Tural Primary Education School was chosen to be the experimental group due to considerations such as that implementation process could be better performed there, its physical conditions were adequate, and the school administration and the teachers took an interest in the study.

The reason why the study was conducted on the sixth grade level was that when the periods of strategy use were considered the students at this level were in an appropriate period in terms of strategy teaching and using strategies on their own, that students in lower grades could not learn and use some strategies effectively. Mayer (1987) divided developmental stage of learning strategies into three, namely early period, transition period and final period. The final period covers, depending on the strategy to be used, the second level of the primary education, secondary education and adulthood (Mayer, 1987). Children at this age can understand strategies, organize strategies in accordance with their learning objectives and use the appropriate strategy on their own (Mayer, 1987, p. 81; Özer, 2001; Senemoğlu, 2007, p. 337). They do not need to be reminded by someone outside the strategy that was taught in order to be able to use strategies.

According to the results of studies, students in grades lower than the sixth can use repetition strat-

egies independently (Weinstein & Mayer, 1986). Since interpretation and organization strategies are more complex, they cannot be acquired at early ages like repetition strategies (Talu, 1997). However, though small children can learn repetition strategies and use them independently, they experience difficulties in practice and cannot use them effectively. For example, students below the sixth grade experience difficulty in finding the important sections of the text in activities such as note-taking and underlining (Erden, 1993; Senemoğlu, 2007, p. 561; Weinstein & Mayer, 1986). Likewise, it is suggested that students can use mental images that their teachers recommend in the early years of primary education, but they cannot form their own mental images whereas students in upper grades can form their own mental images and use them (Levin, 1986; Weinstein & Mayer, 1986).

Determining the effects of strategy teaching on metacognitive knowledge and the use of metacognitive skills is among the objectives of this study. Therefore, the levels of students who will participate in the study should be suitable for learning strategies and using the strategies that they learned independently. Students who can learn metacognitive skills must be able to choose and use the most appropriate strategy for themselves in a learning strategy on the basis of metacognitive knowledge. This can be implemented by students at the level of sixth grade and above. This situation is also supported by the relevant literature. For example, Flavell (1985) states that older children use metacognitive control and strategies more effectively than smaller children do. Studies reveal that students at younger ages do not have sufficient information about their own cognition and cognitive processes (Flavell, 1979). On the basis of the above explanations and the research findings, it was deemed appropriate to conduct the experiment on the sixth graders.

Measures

Four types of data were collected in order to realize the purpose of the study:

1. Students' awareness of learning strategies
2. Students' metacognitive knowledge
3. Students' ability to use metacognitive skills
4. Students' achievement in the Turkish course.

The Learning Strategies Identification Scale was used to collect the data in the first item. The Turkish Course Metacognitive Knowledge Interview Form was used to collect the data in the second item. The Metacognitive Skills Standardized Open-Ended Interview Form was used to collect the data in the third item and the Turkish Course Achievement Test was used to collect the data in the fourth item.

The Learning Strategies Identification Scale developed by Güven (2008) and for which validity and reliability tests were conducted was used to determine students' learning strategies. The scale was administered to 424 students in three primary education schools in order to re-determine the reliability of the Learning Strategies Identification Scale. At the end of the application, the reliability of the interpretation strategies sub-scale was calculated to be .75, while it was found to be .67 for the organization strategies sub-scale and .74 for the repetition strategies.

The data obtained from theoretical explanations reached as a result of a survey conducted on metacognitive knowledge in the relevant literature (Akın, Abacı & Çetin, 2007; Büyüköztürk, Akgün, Özkahveci & Demirel, 2004; Camahalan, 2006; Ektem & Sünbül, 2007; Flavell, 1979; King, 1991; Mokhtari & Reichard, 2002; Namlu, 2004; Pintrich, 2002; Schraw & Dennison, 1994; Senemoğlu, 2007) and expert views were taken as a basis in composing the Turkish Course Metacognitive Knowledge Interview Form. The interview form was administered to 150 students in three primary education schools. Cronbach's alpha reliability coefficient of the interview form was found to be .87 as a result of the data obtained from the administration.

The Metacognitive Skills Standardized Open-Ended Interview Form was used to investigate students' state of using metacognitive skills. Theoretical explanations obtained as a result of a survey of relevant literature and expert views on metacognitive skills were used in the preparation of the form. A 28-item multiple choice achievement test was prepared in accordance with the acquisitions of the program in order to be able to collect data about students' achievement in the Turkish course. KR-20 value was calculated for the reliability of the achievement test. The KR-20 value of the test was.81, its average difficulty was .51 and its average distinctiveness was .41.

Procedures

In this study, repetition, interpretation, and organization strategies were taught for 30 hours, two hours a week, for a total of 15 weeks between 22nd September 2008 and 16th January 2009 in

the first term of the 2008-2009 educational year. First of all, related studies (Brown & Day, 1983; Chamot, 1999; Chamot et al., 1990; Kablan, 2004; Özer, 2004; Pokay & Blumenfeld, 1990; Pressley & Harris, 1990) in the literature were analyzed for strategy instruction. All the applications that were conducted during the study were performed by the first researcher.

The teaching approach that was used in this study is direct teaching. Direct teaching was considered to be more appropriate given the objectives of the study. Direct teaching approach is effective in the teaching of what the learning strategies are and how they should be used (Weinstein, Goetz, & Alexander, 1988). Moreover, direct teaching approach is used in many strategy teaching programs (Lenz, 1992).

Teaching in the experimental group was conducted in accordance with the implementation directives and implementation plans. Activities were prepared on the basis of the contents and subjects of the Turkish course. Implementation directives were composed according to the steps of direct teaching and implementation plans were also prepared according to these directives. Students were given information about learning strategies and they were taught how learning strategies should be used by having them practice on previously prepared written materials. The texts used in the teaching materials were chosen from the Turkish textbooks approved by the Ministry of National Education in previous years as well as from the supplementary materials approved by the ministry. The texts were chosen at the level of 4th and 5th grades in accordance with Lenz's (1992) recommendations. According to Lenz (1992), since the purpose in strategy teaching is to reinforce the feeling of success, examples should be given from subjects that are 2 or 3 grades lower than those of the students'.

Students in the experimental group were taught strategies of underlining, taking notes on the margins in the text, mental repetition, grouping, notetaking, summarizing, and conceptual mapping. The control group did not receive any course on strategy teaching. The teacher did not recommend any strategy. There were only a few applications of summarizing and conceptual mapping included in the program. Only pretest and posttests were administered in the control group and apart from this no other applications were performed on the group. An interview was held with the teacher in the control group and it was confirmed that he had not included any activity concerning strategies.

Results

When the mean post-test scores that the groups received from the Learning Strategies Identification Scale were compared, it was found that there were significant differences in favor of the experimental group. Strategy teaching was effective in raising strategy awareness of students in the experimental group. A significant difference was observed in favor of the experimental group between the mean post-test scores that the groups received from the Interview Form for the Turkish Course Metacognitive Knowledge. As a result of the interviews that were held to determine students' level of using metacognitive skills, it was understood that the teaching that was performed was effective in students' selecting and applying a strategy while they were studying at home, and that half of the students checked the result of the strategy that they selected and tried a new strategy. However, it was observed that students did not possess knowledge about what kind of strategies they can use to learn different topics. When the achievement scores that the groups received from the achievement test were compared, a significant difference was observed in favor of the experimental group.

Discussion

As a result of the study, it was found that the strategy teaching that was implemented in the experimental group had a significant effect on students' awareness of learning strategies. Learning strategy education increased students' awareness of learning strategies. This finding of the study is in parallel with the results obtained from the previous studies (Chalmers & Fuller, 2009; Çakır, 1995; Çakıroğlu, 2007; Dikbaş, 2008; Mizumoto & Takeuchi, 2009; Namlu, 2002; Nunan, 1997; Tinnesz, Ahuna, & Kiener, 2006) on strategy teaching indicating that strategies can be taught and that students' knowledge of strategies will increase as a result of the strategy instruction. A significant difference is observed in favor of the experimental group when whether the difference between the mean post-test scores of the students in both groups was significant or not was investigated for the purpose of determining whether the learning strategy teaching implemented in the experimental group increased their metacognitive knowledge according to their own views. The learning strategy teaching performed in the test group increased students' metacognitive knowledge. Other studies (Burchard & Swerdzewski, 2009; Chularut & DeBacker, 2004) that have been conducted also support this finding

of the study. As a result of the analysis of the data obtained subsequent to the interview that was held to determine the effect of strategy education on the state of metacognitive skill use, it was concluded that learning strategy instruction was effective in students' metacognitive skills use. This finding of the study is in parallel to the findings of some other studies (Chularut & DeBacker, 2004; Mizumoto & Takeuchi, 2009). When the groups' achievement test results were compared, a significant difference was found in favor of the experimental group. It was concluded on the basis of this finding that students used metacognitive skills as a result of the strategy teaching conducted in the experimental group and that the use of metacognitive skills increased achievement. This finding of the study is in parallel to the findings of some other studies (Belet, 2005; Bozkurt, 2007; Chularut & DeBacker, 2004; Carns & Carns, 1991; Çiftçi, 1998; Demirci, 2003; Dikbaş, 2008; Görgen, 1997; Gümüş, 1997; Nunn, 1995; Özer, 2002; Özkal & Çetingöz, 2006; Öztürk, 1995; Sünbül, 1998; Talu, 1997; Tay, 2002; Ülger, 2003; Yangın & Yıldızlar, 1999; Yıldız, 2003; Yorulmaz, 2001).

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