Full Length Research Paper

Geography teaching and metacognition

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The concept of metacognition has been considered in recent years in the field of education and as a concept that is worked on. Metacognition is the awareness one has about his/her thinking process and how he/she is able to control these processes. Metacognition strategies are the sequential processes individuals use to learn how to control themselves and to reach a goal. They significantly help the arrangements and control of the individual learning. In all educational processes, supportive teaching for metacognitive skills should be done to achieve the goals set in the teaching of geography. Students can gain metacognitive skills with lessons in geography based on the constructivist approach. In this study, the relationship between geography teaching and the concept of metacognition, which is one of the basic approaches that directs the activities of thinking in the teaching of geography, is discussed.

Key words: Metacognition, education, geography education, geography teaching.

INTRODUCTION

Today, one of the main goals of education is to make the students gain the thinking skills and strategies which they will use throughout their lives, rather than storing information. A good education should be able to show the students how to learn, how to remember, how to motivate themselves and how to control their own learning, so that they can teach how to learn. For all these reasons, to investigate the process of the metacognitive skills of students is quite important. Metacognition concept was put forward for the first time in 1976 by John Flavell and developed by many researchers until today. Some descriptions related to the concepts of metacognition made by different researchers are as follows: Flavell (1976) sees metacognition as ''the cognitive processes or outcomes of individuals or the knowledge of anything about them.'' According to Brown (1980) metacognition includes the capabilities such as the estimation of one's own mental activities, planning, monitoring and evaluation. However, Welton and Mallan (1999) see metacognition as controlling and redirecting their own thinking processes consciously to think independently.

The concept of metacognition is expressed by Weinert (1987) as "thoughts about thoughts", by Woolfolk (1980) and Blakey and Spence (1990) as "high level thinking", by Wellman (1985) as "thinking brought about by thinking," by Shanahan (1992) as "understanding and

controlling cognitive activity", by Gage and Berliner (1984) as "information about an individual's cognitive system", by Senemoğlu (1997) as "the awareness of something about how you learn", by Doğanay (1997) as "being aware of their own thinking", by McCormick and others as "an outcome of conscious thinking" and by Taylor (1999) as "evaluation of the knowledge of an individual". As a result, the short result definition of meta-cognition is the awareness one has about his thinking processes and how he can control these processes. Metacognition is classified into different forms in the literature. However, a clear model has been reached by the researches carried out in time. It has been seen that metacognition is composed into two main headings:

Metacognitive knowledge

In this case, it indicates individuals' knowledge and beliefs in their own mental resources and their being aware of what they can do. When it comes to the teaching of geography, it indicates that they are proficient in using geographical skills and have the beliefs about the nature and geography. Metacognitive knowledge also requires that the opinion or knowledge of the individual is fully or accurately defined.

Metacognitive control

Metacognitive control consists of the processes that lead to mental processes and can be explained as the ability to use metacognitive knowledge strategically to reach cognitive goals. Metacognition requires the capabilities such as awareness of the learning process, planning and selecting strategies, monitoring the learning process and correcting errors, to be able to control the strategies used. If this works, there will be need to change the learning methods and strategies (Özsoy, 2007, 2008; Doğanay, 1997; Çakiroğlu, 2007).

METACOGNITIVE SKILLS

Students should be able to apply a number of steps to win metacognitive skills, and as such, they must do the following activities (NCREL, 1995; Candan, 2005; Ektem, 2007):

Developing activity plan

Ask yourself these questions while developing your activity plan:

1. What is my preliminary information about the topic that will help me to solve this problem?
2. How do I redirect my thoughts?
3. What should I do first?
4. How long does it take for me to solve a problem?
5. Why should I study the chapters I have chosen?
6. How long does that work last?

Maintaining or monitoring the plan

Ask yourself these questions in the process of maintaining / monitoring your plan:

1. How am I doing?
2. Am I on the right track?
3. How do I need to continue?
4. What is the important information that will help me to solve the problem?
5. Should I try a different way for solution?
6. Do I need to re-examine my strategy or change it depending on this difference?
7. Should I arrange my working-speed according to the difficulty of subject?
8. What should I do if I do not understand?

Plan evaluation

Ask these questions to yourself while evaluating your plan

1. How did I do?
2. Has my expectation happened?
3. How could I work things out differently?
4. How do I implement this process into other problems?
5. Are there any places that I can go back to and stop over again if I do not understand?

TEACHING METACOGNITION

Learning is a process of thinking composed in the mind of individuals and can reflect their behaviours. Therefore, the more the students share their thinking skills in learning, the more persistent learning will be to them. A metacognitive skill lies on the basis of thinking, which affects learning that much. These skills are the issues of drawing attention, being motivated, attitude development, planning work step by step, evaluating every step of this plan's success and a matter of correction and editing skills. That is, an individual with metacognitive skills is primarily motivated by the subject that will be learnt, focus on its attention and develops attitude. This cognitive awareness provides more information about him and controls his own idea. Then the students evaluate what they know and what they should know. They see where they are and thus plan what to do. They evaluate the plan, arrange and try again. After then, they are aware of how much and how well they have learnt, and also, they are aware of the ways of thinking they have followed. They develop it and make these skills a lifestyle (Gelen, 2003). The simple metacognitive strategies are these ones given by Blakey and Spence (1990):

1. Define what you know and what you do not know: Students determine their levels by asking themselves 'What is my relevant information about the subject?' What do I know? What do I want to learn? What do I not know?
2. Talk about what you are thinking: This includes the loud thinking in the process of making plan or problem solving. This study can be performed in peer groups or in small groups, that one student assumes the role of a teacher. These students talk and ask questions by telling and making explanations and abstraction.
3. Keeping a diary of thinking: Another way of developing awareness of cognitive thinking is to keep a diary. Students can write difficulties and their interpretations about problems in that notebook. They also note the process and methods used to solve the problem. Thus, students have the idea about experience and methods of thinking.
4. Planning and self-control: It is students' plan to control the process that is relevant to the subject that is going to be learnt. However, students must have earned some characteristics in advance such as adjusting time, identifying and using materials.
5. Thinking process briefing: This strategy covers, develops

and uses the metacognitive and thinking skills that the students acquired. It involves a three-step method. Primarily, the teacher needs to guide the students about how they gained information by thinking in class and how they took part in activities. In the next stage, students need to group ideas and define which thinking strategies they used, and in the final stage, students should evaluate their own achievements and make assessments about their election in relation to future strategies.

6. Self-assessment: It is the determination of the metacognitive skills of the students by the pre-prepared individual checklist in the form of assessment. Metacognitive strategies are the sequential processes used to provide control in learning and in reaching one's goal. They help individuals significantly to make regulations and take control of their learning. For example, after reading a text, a student can query himself about the concepts discussed in the paragraph. This self-evaluation is a monitoring metacognitive strategy and at this stage, the cognitive purpose of students is to understand texts. If a student fails to answer his own question, he must determine what he needs to perform his cognitive purpose which is to understand the text. In order for him to answer his own question satisfactorily, for example, he may decide to read the paragraph again. After reading the text again, if he can answer the question, he may be able to understand the subject. Thus, the metacognitive strategy of self-evaluation would be fulfilled by the comprehension which is the aim of cognitive skills (Çakiroğlu, 2007).

Four approaches that students could use to gain metacognitive skills are identified by Paris and Winograd (1990) and Çakiroğlu (2007) as:

(1) Direct teaching of metacognitive skills.
(2) Teaching metacognitive skills configured in the course.
(3) Teaching metacognitive strategies with various strategies and techniques by an expert.
(4) Teaching metacognitive strategies with cooperative learning techniques.

When the conducted studies were examined, it was seen that the most preferred and proposed method as a theoretical implementation is teaching through structured practices (Gelen, 2003). In this approach, to gain the metacognitive skills together with the content of application are based on learning. When it comes to teaching metacognition, the most important advantage of structured teaching from other methods is that, it creates opportunity to teach where, when and how to use these skills while teaching them.

GEOGRAPHY TEACHING AND METACOGNITION

Geography is a characteristic of science that examines the relationships between people and earth, what people are doing as a result of these relationships and what they can do. This aspect of geography actually helps to generate solutions related to political and social problems that occur all over the world by getting them to comprehend the dimensions of relationships between people and their residence places. In addition, with geography lesson, it is intended to be productive to people who contribute to the development of the country and develop their cognitive characteristics.

The full and healthy geography education provides a connection to other people in the world, relationships with the environment, perceive the skills, knowledge, concepts and fundamentals that help humans understand themselves (Tomal, 2004). The countries which give necessary importance to the contemporary science of geography, and benefit from it at the highest level, give directions to today's world politics and economy. Quite on the contrary, countries which do not give necessary importance to the science of geography and do not benefit from it could not escape from being under the influence of other countries, and as such, are faced with a situation of instability that experience great turmoil in economical, social and political aspects. The understanding of contemporary geography science, application and earning from it is, no doubt, possible only with the teaching of geography efficiently and accurately (Demirci and Karakuyu, 2002: 113). Geography teaching should have the target of training students who have not been pushed into a sense of loneliness and isolation, and who can locate themselves in the scales of their country and the world by a vision based on the notion of information, questioning and analysis, and having universal civic rules and an awareness that the future is in their own hands (Mukul, 2006).

Geography teaching is among the main courses at all levels of education. Training individuals who have geographic inquiry skills and who understand the formation of geographical information is the basic principle. Within the framework of this basic principle, to cultivate a good citizen of the world who claims the land of the universe and respect for natural living is intended. On the basis of the gain of geography, it is expected that, the individual is not sensitive to its surrounding space, but should be conscious of the natural, political and social interactions all around the world in order to reach the sensitivity of solutions. That is, beyond being able to describe the space, a good geography education creates a person of the world adapted to the living conditions in space, uses the benefit without damaging the space, and has solved the interaction between himself and the space (Öztürk, 2008).

The success of students highly depends on their being aware of their own learning paths and their being able to direct their learning. Metacognitive skill is the awareness of the individual's own mental processes and skills, assessment of them and support of their own ideas.

Developing metacognitive skills of students may be possible with a variety of educational studies used during the course. For this reason, teachers are required to use various methods and strategies in lessons to enhance students' levels of cognitive skills. Metacognitive skills targets are to use problem solving and research activities on the point of fulfilling the objectives of the process and content. All of these cognitive approaches can be used successfully in geography lessons. Metacognition techniques appear as the processes of teaching different techniques including that of the constructivist approach.

Supportive teaching of metacognitive skills should be done to achieve the goals set in geography course in all educational processes. Students can gain the metacognitive skills by a geography lesson based on the constructivist approach. In the constructivist approach, the information is configured by the students themselves, and not the individual. However, not transferring information to the individual, to configure the information by passing mental processes is essential in learning. In recent years, "constructivist learning" theory which has an important place in the field of geography education, aims to educate students who play an active role of engaging in research for deep knowledge, and use the information they have learnt rather than the students, who play a passive recipient role in information. There are approaches such as cooperative learning, problem based learning and project based learning which can establish a relationship between their knowledge and new information, observe their own learning and internalize the information by using what they learn in new areas. In this regard, it gives integrity to constructivist learning theory. Using these methods in geography lessons is expected to enhance the metacognitive skills of students. The teaching techniques applied in geography lessons are usually insufficient in students' learning issues and in using what they have learnt. The most important reason is the use of teaching methods which is teacher-centered and a portion of students or all of them are passive. Instead of this teaching method, the teaching methods in which students are active and teacher's guidance is passive should be used. Cooperative learning method which is one of the methods that show the activeness of students is an approach that learning takes place. Students in small groups work with a common purpose by helping each others' learning. With this understanding, the secondary students, especially a certain age group will enhance their ability of self-expression by efforts to learn and share what they have learnt. Likewise, in the group, close learning courses will take place. The problem of education is not only to teach information, but at the same time, students are required to gain some social skills. In the process of cooperative learning, students gain some social skills such as problem solving, communication skills, decision making and time management. There are a lot of researches indicating that cooperative learning has positive effects on the high-

level cognitive strategies used in the realization of a difficult and complex job (Açikgöz, 1992; Genç, 2007; Langford and Cleary, 1995).

Slavin (1990) has stated that while students work in a group, some academic conflicts could arise and imbalances and inconsistencies could be visible. However, with the discussion of all of them, high-level cognitive skills are produced. When the studies investigating the effects of cooperative learning method on geography teaching are looked at (Le Heron et al., 2006; Holliday, 2000, 2002; Reed and Mitchel, 2001; Rich et al., 2000; Chang and Mao, 1999; Hertzog and Lieble, 1994; Mattingly and Van Sickle, 1991; Aydin, 2009) it is found that cooperative learning in geography lesson has an effect on the academic success of the students, as well as it has a positive effect on the attitude towards geography course, motivation, class participation, geographical skills, retention and social skills.

In general, the teaching methods based on constructivist approach can be said to have positive effects on many products of cognitive and affective learning such as achievement, retention, transfer, attitude, motivation, high-level cognitive strategies, attendance, peer-relations and self-esteem. The remarkably positive effects on effective variables, besides cognitive variables, increase the importance of teaching methods based on the constructivist approach more and more.

CONCLUSION

When the researches related to metacognition are looked at generally, it emerged that metacognitive skills develop thinking skills, increase the speed of learning and learning level, provide active learning, develop general ability and intelligence, develop problem-solving skills, provide self-confidence, improve care, attention, motivation and attitude, develop the strength of prediction, increase the success of reading comprehension, develop effectiveness on retention and recall, gain planning and self-evaluation skills, provide self-monitoring and control by asking questions to oneself and the learning process, provide independent learning, provide strategic planning, development of a variety of ways of thinking, increase academic success, develop the association of information and cooperation and communication skills, develop critical-thinking, creative and reflective skills, and provide high correlation between intelligence. Besides, they can be used to gain a lot of cognitive-effective and psychomotor behaviour. When these developments in the world and the overall level of Turks' education are taken into consideration, the need for metacognitive skills, including learning to think and learning to learn skills to be gained, emerges (Gelen, 2003).

"Learning to learn" lies on the basis of the researches. The use and transfer of knowledge to live can only be performed by providing individuals with ways of how to

learn. Thus, humans can solve the current problem by using their own minds, based on preliminary information, to obtain new information. Therefore, the realization of active learning through new teaching approaches should be included in geography lessons as in all other sciences. Constructivist teaching of geography places emphasis on the fact that the individuals should think more and understand that they are responsible for their own learning, and should learn to control their own behaviours. Geography teaching introduced a holistic perspective according to the constructivist approach. Geography teaching should take a place in the active participation of students in the process of holistic and meaningful relationships, while processing topics and multi-dimensional thinking skills in students related to events should be developed.

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