Metacognition in Reading Comprehension

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Abstract: Metacognition is defined basically as thinking about thinking. It is a significant factor that affects many activities related to language use. Reading comprehension, which is an indispensable part of daily life and language classrooms, is affected by metacognition, too. Hence, this paper aims to present an overview of the recent theoretical and empirical studies about metacognition and reading comprehension. Firstly, it provides the definitions and the importance of metacognition. Secondly, the dimensions of metacognition, namely metacognitive knowledge and metacognitive regulation are explained. Finally, the study focuses on metacognition in reading comprehension. The previous research shows that the instruction of metacognitive reading strategies significantly improves reading comprehension. Accordingly, this study suggests that second language learners should receive metacognitive reading strategy training. Language teachers should benefit from metacognitive strategies and integrate them into their reading courses. They should raise their students' awareness of what metacognitive strategies are and how they can employ these strategies during reading activities. Thus, students can have control over the reading processes, can monitor their understanding, and can detect the problems they experience while reading. After reading, they can question themselves whether or not they have achieved their reading goals, whether or not their strategies have worked, and how things should be done differently next time.

Key words: Metacognition, metacognitive knowledge, metacognitive regulation, metacognitive strategies, reading comprehension.

1. Metacognition

Metacognition is an essential factor that influences both overall learning and second language learning. There are a variety of definitions of the term 'metacognition'. It is basically defined as 'thinking about one's own thinking', or 'thinking about cognition'. Flavell (1976, p. 232) coined the term 'metacognition' and, defined it as follows:

> "Metacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them…the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects on which they bear, usually in the service of some concrete goals or objectives."

Bonds, Bonds & Peach (1992, p.56) state that it is "the knowledge and awareness of one's own cognitive processes and the ability to regulate, evaluate, and monitor one's thinking." Schraw&Dennison (1994, p.460) describe it as "the ability to reflect on, understand, and control one's learning". According to Livingston (2003, p.1), it refers to "higher order thinking that involves active control over the cognitive processes engaged in

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learning." Wong (2015, p.37) defines it as "the process of understanding how you learn, what you need to learn, and finally, which strategies or techniques would be the most effective and the best matched to the learning task." According to Vandergrift, Goh, Mareschal & Tafaghodtari (2006), metacognition is basically both self-reflection and self-direction. Scott&Levy (2013, p. 123) point out that metacognition is not a simple construct. They support that it is a complex process in which several subcomponents are engaged as follows:

> It involves *knowledge* of one's own and others' cognitive processes; *planning* prior to performing a task; *monitoring* one's own thinking, learning and understanding while performing a task; *regulating* one's thinking by making the proper adjustments; *controlling* thinking to optimize performance; and *evaluating* cognitive processes after a solution has been found.

The definitions below indicate that the learners using metacognition have knowledge of both their own and others' cognitive processes. They can manage, direct, regulate, and guide their learning (Wenden, 1998). They are aware of what they know and do not know (Dunlosky & Metcalfe, 2009). Paris & Winograd (1990) say that they can monitor their own learning, thus shifting part of the responsibility from teacher to student. Paris&Winograd (1990) also claim that the students utilizing metacognition develop positive self-perceptions and become motivated. To emphasize the importance of metacognition, Nisbet&Shucksmith (1984) describe it as the "seventh sense" in the learning process. Metacognition assists learners to be a better problem solver. It helps learners "(a) strategically encode the nature of the problem and form a mental model or representations of its elements (b) select appropriate plans and strategies for reaching the goal, and (c) identify and conquer obstacles that impede progress" (Davidson and Stenberg, 1998, p.48). According to Anderson (2008) the outcome of metacognition is a critical and a healthy reflection on learning processes. This reflection enables learners to make particular changes in what they do to succeed in a learning task (Anderson, 2008). Thus, they can be more prepared and successful in performing similar learning tasks. Briefly, we can acknowledge that the learners employing metacognition have a great advantage in learning processes.

In addition, the studies assert that metacognition might be associated with a variety of different concepts: academic success (Landine&Stewart, 1998; Coutinho, 2007; Young & Fry, 2008), self-efficacy (Landine&Stewart, 1998; Cera, Mancini&Antoniette, 2013), self-regulated learning (Cera, Mancini&Antoniette, 2013), motivation (Paris&Oka, 1986; Landine & Stewart, 1998).

Countinho (2007) examined the relationship between academic success, achievement goal orientation, and metacogniton. The participants in the study were 179 undergraduates. They were given three instruments, an inventory about goal orientation, an inventory about metacognition, and a demographics sheet that also asked for their college grade point average (GPA). The results showed that metacognition is a predictor of academic success, that is, the students with high metacognition had higher GPAs.

Cera, Mancini & Antoniette (2013), in their study examined the relationship between metacognition and several concepts including self-efficacy, self regulation and autonomy. The participants were 130 students attending their last year of high school. They were given five different questionnaires: Metacognitive Awareness Inventory, Adaptive Self-efficacy Scale, the Questionnaire about Popular Conceptions of Learning, the Awareness of Independent Learning Inventory and also the Learning and Study Strategies Inventory. The researchers

found that metacognition is positively correlated with self-efficacy, self regulation, and autonomy.

According to Flavell (1979), metacognition is a significant factor that affects many activities related to language use. It influences the oral communication of information, oral persuasion, oral comprehension, reading comprehension, and writing. A number of studies report significant improvement in second language learning with metacognition (Çubukçu, 2008; Lam, 2009; Zhao, 2009; Tan & Tan, 2010).

Çubukçu (2008) studied with 130 third-year university students in an English department and investigated the impact of metacognition on reading and vocabulary. The students in the treatment group (N=65) were instructed in reading metacognitive strategies over five weeks. The students in the control group (N=65) did not receive any metacognitive instruction at all. Two instruments were used as pre- and post-test tools, a 20 item multiple-choice test of vocabulary developed by the researcher and the reading comprehension test developed by TOEFL. The results indicated that the treatment group achieved significantly better results than the control group. Thus, the results confirmed that metacognition affects reading and vocabulary.

Lam (2009) investigated whether the instruction of metacognitive strategies lead to improved performance in L2 oral tasks. The study took place in eight oral lessons spread over five months. Each lesson lasted for 80 minutes. While the treatment group received instruction in metacognitive strategies, the control group did not. Except from the strategy instruction, the two classes performed very similar activities in their English oral lessons. To measure the effect of instruction on metacognitive strategies, the researcher rated students' performances on group work discussions. The findings revealed that the treatment group generally outperformed the control group in these discussions.

2. Dimensions of metacognition

Many researchers support that metacognition is made up of two dimensions (Flavell, 1979; Sharp et al, 1979; Jacob&Paris, 1987; Schraw& Dennison, 1994; Vandergrift, Goh, Mareschal,&Tafaghodtari, 2006). Flavell (1979) identifies these two dimensions as metacognitive knowledge and metacognitive experience or regulation. Sharp and colleagues (1979) identify them as awareness about one's own cognitive processes and conscious control of one's own cognitive processes. Jacob&Paris (1987) identify as self-appraisal of cognition and self-management of thinking. Schraw&Dennison (1994) identify them as knowledge of cognition and regulation of cognition, and finally Vandergrift and colleagues (2006) as self-reflection and self-direction.

2.1. Metacognitive knowledge

Metacognitive knowledge refers to one's accumulated knowledge about their own cognition, tasks, goals, actions, and experiences (Flavell, 1979). "Metacognitive knowledge consists primarily of knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises" (Flavell, 1979, p.907).Wenden (1998) simply defines it as knowledge about learning. According to Schraw (1998), it refers to "what individuals know about their own cognition or about cognition in general" (p.114). Hadwin (2008, p.176) describes metacognitive knowledge as "what learners know and believe themselves, the task, and the strategies for completing the task."

Flavell (1979) divides metacognitive knowledge into three types of knowledge: person, task and strategy. Person knowledge refers to "general knowledge learners have acquired about human factors that facilitate or inhibit learning" (Wenden, 1998, p.518).

According to Victori & Lockhart (1995), person knowledge comprises a variety of human factors such as age, gender, intelligence, personality, motivation, learning style, and beliefs about their weaknesses and strengths. In the case of reading, it is the knowledge that language learners have about themselves when they read a text. Some examples of person knowledge would be to believe that you are better at reading than speaking, or the fact that you often get anxious while readinga difficult text.

Other type of knowledge is task knowledge which refers to the knowledge of the purpose, nature, and demands of a learning task (Wenden, 1998). In other words, when the learners are involved in a learning task, they ask themselves several questions. They ask themselves why they are doing the task, what kind of task it is, and how they should do the task (Wenden, 1995). Task knowledge enables learners to perform a task successfully. An example of task knowledge would be to think that reading an academic text is more difficult than reading a daily conversation among friends. The knowledge of a reading task means to know the demands of different types of reading passages.

The third type of metacognitive knowledge is strategic knowledge which is defined as "the knowledge about what strategies are, why they are useful and specific knowledge about when and how to use them" (Wenden, 1998, p.519). Strategic knowledge plays an important role in second language acquisition. That is why much of the previous research has focused on strategic knowledge in language learning strategy (Anderson, 1991; Cohen, 1998; O'Malley&Chamot, 1990; Oxford, 1990; Wenden, 1991).

2.2 Metacognitive regulation

The regulation of cognition is the other dimension of metacognition. As mentioned before, many researchers have identified it in different ways: metacognitive experiences or regulation (Flavell, 1979), self-management of thinking (Jacob & Paris, 1987), regulation of cognition (Schraw& Dennison, 1994), and self-direction (Vandergrift et al, 2006).

Metacognitive regulation refers to how someone employs metacognitive knowledge to regulate or control cognition (Schraw & Moshman, 1995). According to Paris & Winograd (1990) it refers to "metacognitions in action" (p.18). Even though there are a number of metacognitive activities to regulate cognition, three of them are more emphasized by researchers: planning, monitoring, and evaluation (Jacobs & Paris, 1987; Schraw&Moshman, 1995; Wenden, 1998; Anderson, 2002).

Of the activities that regulate cognition, planning has an important role to play in learning tasks. Planning consists of determining the goal and the nature of the task and deciding which information and strategies are required and how much time and resources are needed (Schraw, 1998). In this case, when the learners plan reading tasks, they can prepare themselves by recalling what they know about the topic, analyzing the text genre, predicting what they will read, clearing their minds of distractions, and focusing their attention.

After planning, learners monitor their cognitive activities to see whether their learning goal is met or not (Anderson, 2002). According to Schraw&Moshman (1995, p.355), monitoring refers to "one's on-line awareness of comprehension and task performance." While monitoring a reading task, learners regularly evaluate what they understand, check for

consistency between the knowledge put forth in text and their own knowledge, and also decide whether their approach fits for the reading purpose at hand.

After performing a task, learners evaluate their cognitive processes and decide whether they were successful in reaching their goal or not. In the evaluation process, learners ask themselves whether or not they have achieved their goals, whether or not their strategies have worked, what else they could have done to improve upon the outcome, and how things should be done differently next time (Anderson, 2002; Schraw, 1998). According to Vandergrift & Goh (2012), these processes, namely planning, monitoring, and evaluating do not necessarily work in a linear manner. In other words, when the learners realize that there is a problem with the strategies or resources employed, they can turn back to planning and modify them, and then continue to perform the learning task.

3. Metacognitionin reading comprehension

The actual use of metacognition can only be achieved by supporting the use of metacognitive strategies (Magaldi, 2010). Hence, many researchers assert that metacognitive strategies play a crucial role in reading comprehension (Brown, Armbruster, & Baker, 1983; Çubukçu, 2008; Mokhtari&Reichard, 2002; Sheorey&Mokhtari, 2001). They posit that students need to receive instruction in metacognitive strategies in order to improve their reading comprehension. Klinger, Morrison & Eppolito (2011) state that the students who have trouble with reading usually lack metacognitive strategies. According to Boulware-Gooden, Carreker, Thornhill, Joshi (2007), "the use of metacognitive strategies helps students to think about their thinking before, during, and after they read." O'Malley, Chamot, Stewner-Manzanares, Kupper & Russo (1985) also emphasize that learners who do not use metacognitive strategies do not have a direction and an ability to assess their progress, achievements, and future learning directions. The studies further show that metacognitive strategies have a significant impact on reading comprehension.

Many researchers have attempted to define metacognitive strategies (O'Malley and Chamot, 1990; Oxford, 1990; Chamot, 1995; Wenden, 1998). According to O'Malley and Chamot (1990, p.8) "metacognitive strategies involve thinking about the learning process, planning for learning, monitoring of comprehension or production while it is taking place, and self-evaluation after the learning activity has been completed." Oxford (1990) describes metacognitive strategies as essential factors which go beyond cognitive devices and enable learners to coordinate their own learning process. Chamot (1995, p.15) defines them as "executive processes associated with the regulation and management of learning, and include strategies used to plan a task, to monitor a task in progress, and evaluate the success of a task after its completion." In the case of reading, metacognitive strategies can be defined as strategies through which readers manage, direct, regulate, and guide their comprehension (Wenden, 1998). These strategies include "having a purpose or plan in mind, previewing the text as to its length and organization, or using typographical aids and tables and figures" (Sheorey & Mokhtari, 2001, p.6).

The studies show that metacogntive strategies have a significant impact on reading comprehension. Sheorey&Mokhtari (2001) investigated the differences in the reading strategies of native and non-native English speakers. The study was conducted with 302 participants (150 native-speakers and 152 non-native speakers). The data was collected through a survey of reading strategies to measure what kinds of strategies are used by these two groups. The results indicated that both native and non-native high-reading-ability students reported higher usage for metacognitive reading strategies than lower-reading-ability students in the respective groups.

Boulware-Gooden, Carreker, Thornhill, & Joshi (2007) aimed to determine the effect of systematic direct instruction of metacognitive strategies on the reading comprehension and vocabulary achievement of 119 third-grade students. The five-week intervention study took place in six third-grade classrooms in two elementary schools in United States that were demographically and academically equal. One school was selected as the intervention school and the other school was the comparison school. The students in both schools had pre-test before the five-week study and had post-test at the end of the study. The students in both schools received 30 minutes of reading comprehension instruction a day for 25 days. While the intervention group received instruction of metacognitive strategies, the control group did not. The results revealed that the intervention group improved significantly over the comparison group in vocabulary and in reading comprehension.

Razı & Çubukçu (2014) examined whether a metacognitive reading strategy training programme affected metacognitive reading strategies and reading comprehension. The quasi-experimental study was conducted with 93 native Turkish speakers majoring in an English Language Teaching Department (46 in the treatment group and 47 in the control group).All the participants were considered advanced Turkish learners of English. Before and after metacognitive strategy training, both groups took a reading comprehension test and a metacognitive awareness scale. The results of the study demonstrated that the metacognitive reading strategy instruction significantly improved reading comprehension skills.

4. Conclusion

In the light of aforementioned studies, we can state that metacognition is a vital factor to become a good reader. There are a variety of benefits of metacognition for especially second language readers. It facilitates them to have control over the reading processes. It enables the students to monitor their understanding. Through metacognition, the learners can detect the problems they experience while reading. Therefore, second language learners need to receive metacognitive reading strategy training. Language teachers should benefit from metacognitive strategies and integrate them into their reading courses. They should raise their students' awareness of what metacognitive strategies are and how they can employ these strategies during reading activities.

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