METACOGNITIVE AWARENESS: AN IMPERATIVE FOR EFFECTIVE TEACHING AND LEARNING FOR SUSTAINABLE DEVELOPMENT

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Abstract

The paper examined the theory and studies of metacognition. Both the theory and empirical studies of the theory across cultures indicated the centrality and indispensability of metacognitive strategies in learning tasks. A plethora of empirical evidence indicated that students high in metacognitive awareness and used metacognitive strategies achieved higher academically than their less metacognitive counterparts. The paper recommended the inclusion of metacognition in the curriculum of Nigerian educational system to help students develop metacognitive skills to compete effectively in the 21st century global market.

KEYWORDS: metacognition, strategies, awareness

INTRODUCTION

Education is central to development, and a nation cannot develope optimally without a strong and functional educational system. Teaching and learning, the essence of education, are not done haphazardly, hence, the emphasis on conducive environment that enhances teaching and learning processes. However, several other factors influence these processes. It is a common experience of teachers that a class of students who attended the same lecture came out with different amounts of learning, often reflected on their achievement scores on a test. Students have usually been categorized as high, or low achievers though they have the same exposure and same school environment, and to a considerable extent, to the same experiences.

While a variety of factors including heredity, socio-economic status of parents and other background variables can account for the differences in academic achievement of students, one area in the teaching and learning processes not emphasized in Nigerian educational system is metacognition.

John Flavell (1979, 2004) the proponent of this theory defined metacognition as knowledge about cognition and control of it. It is knowledge about one's knowledge, and thinking about one's thinking; it is an individual's knowledge of cognitive processes; this awareness and understanding of thinking processes play a critical role in the process of learning (Al-Jarrah et al, 2018). Metacognition literally means thinking about thinking (Woolfolk & Kapur, 2019), or knowledge about one's knowledge (Ormrod, 2016; Schunk, 2016). Jean Piaget's fourth stage in his theory of cognitive development influenced Flavell's metacognitive theory. In the fourth stage of Piaget's theory, which he referred to as formal operational stage, and generally attained during adolescence, the individual becomes capable of abstract reasoning. The individual can now deal with abstract issues like the origin of life, politics, cultural practices and the like. During this stage, individuals are aware of their own thoughts, and can think about their own thinking. The classroom is the most suitable environment to develope metacognitive skills because it is here that the minds of students are exercised, implying that teachers should know how to teach and develope these skills in students (Ozcakmak et al, 2021).

Flavell with his colleagues (1985) maintained that metacognition played pivotal role in various mental activities such as attention, comprehension of texts, memory, self-monitoring, self-regulation and problem-solving. Metacognition plays a central role in the development of critical thinking (Rivas et al, 2022). Planning how to approach a task including learning task, monitoring comprehension (in the case of learning task), and evaluating the progress made are metacognitive skills. Equally, the awareness of distractions during learning and he ability to sustain attention and effort in the learning process are all metacognitive in nature. The utility of metacognitive skills is not limited to schools, but spills to professional careers, and indeed useful throughout life (Al-Jarrah et al, 2018). Sequel to the centrality of metacognition in learning and achievement outcomes, it has become one area of research that has resulted in new conceptualizations of teaching and learning (Rivas et al, 2022). Various studies have shown a positive correlation between metacognitive awareness and academic achievement (Zhao & Mo, 2018). Similarly, Isgor (2016) documented a

significant positive relationship between metacognitive skills and academic achievement, just as Cer and Sahin (2016) showed that the use of metacognitive strategies among secondary school students helped them achieve higher in reading comprehension.

Employing strategies such as elaboration, underlining, diagramming, note-taking that can facilitate encoding and retrieval from long-term memory are sometimes referred to as metacognitive skills. When a student devices strategies that will enhance his understanding and retention of the material being read, he is being metacognitive. Metacognitive students tend to be high-achievers than those who are less metacognitive because they employ learning strategies that facilitate comprehension and retrieval of information. Such students tend to apply the three critical metacognitive skills of planning, monitoring and evaluating (Nelson cited in Woolfolk & Kapur, 2019). While planning involves making decision about how long the task will last, monitoring is following the progress of the task, and evaluating is making judgment about the outcome of the task (Woolfolk & Kapur, 2019).

The significance of metacognitive awareness and skills in learning

The 21st century digital economy with rapid information flow requires that people must possess certain skills among which is metacognitive skills to participate effectively in the global market economy for sustainable development (Ozcakmat et al, 2021). A developing nation like Nigeria needs high achievers in various fields of endeavor including academics to lift a burdened nation out of dehumanizing poverty. Investigators have documented a significant correlation between metacognitive strategies and academic achievement. Students who employed metacognitive techniques when studying out-performed those who never used any study technique (Eskandari et al, 2017). Similarly, Bishara and Kaplan (2018) noted a relationship between locus of control and metacognitive knowledge. Students high in internal locus of control tended to be high in the use of metacognitive strategy.

Metacognitive students know when their learning is ineffective and change strategy accordingly to ensure success. These metacognitivists are aware of their strengths and weaknesses in learning tasks and make necessary

adjustments to maximize learning outcomes. Larger repertoire of metacognitive skills is advantageous in attainment of goals, especially learning goals. It should be noted that metacognitive skills apply across domains. This means that metacognitive skills are not subject-specific (or domain-specific), but cuts across subject areas. Metacognitive skills used in studying Mathematics, for instance, are used in studying English, or chemistry. Empirical evidence abound that metacognition plays a role in students' academic achievement (Zhao & Mo, 2016). Metacognitive skills help students to be self-regulated and self-directed, thus, making them autonomous learners who are in control of the learning process (Sonowal & Kalita, 2017; Listiana et al, 2016; Rivas et al, 2022); metacognition also enables students to be aware of the learning processes (Shank, 2017), and be more conscious and strategic when learning (Zhao & Mo, 2016). Metacognitive skills help students monitor and evaluate their performance (Molenberghs et al, 2016).

The role of teachers in the development of metacognitive skills in students

Teachers have crucial role to play in developing metacognitive skills in students because metacognitive skills are not developed spontaneously, especially among under-achievers. The academically weak students need the assistance of teachers in the development of metacognitive skills. Teachers, therefore, should know the various metacognitive strategies and know how to teach them to the students. This implies that teachers must be metacognitive themselves (Ozcakmak et al, 2021; Al-Jarrah, 2018). Teachers can assist students develope metacognitive skills for improved academic performance because these skills can be taught by teaching students study techniques. Teaching metacognitive skills has helped students achieve academic success by enabling them to think about their own thinking, and more importantly by helping them apply learning strategies that facilitate retention and retrieval of information (Coskun, 2018). A study (Eskandari et al, 2017) established a strong correlation between metacognitive strategies and academic achievement, and suggested that students should not only be aware of metacognitive strategies, but should

also employ these strategies in any learning activity. Metacognitive skills enhance learning outcomes, but metacognition is hardly taught explicitly in secondary or tertiary institutions. Consequently, potentially bright students unaware of the learning strategies continue to perform sub-optimally. In developed countries like the United States of America, teaching metacognitive skills has become part of their curriculum because these skills help students develop higher-order thinking ability which is reflected in their higher academic achievement (Flavell, 2004). Research (Yildiz & Akdag, 2017) indicated that metacognitive skills could be taught in the learning environment, and about a decade ago, Schraw (1998) suggested the following instructional strategies for teaching metacognitive skills:

1. Teachers should endeavor to promote metacognitive awareness in students.
2. They should assist students develope self-knowledge and regulatory skills.
3. They should encourage learning environment that promotes the development of metacognitive awareness and metacognitive skills.

When a student is able to ask himself "Am I understanding what I am reading?," if no, "What can I do differently to help me understand and retain the information being read?," then that student is being metacognitive. Students who have metacognitive awareness show self-knowledge, and know when and under what conditions they learn best.

Conclusion

The theory and studies of metacognitive awareness indicated that metacognition is about self-knowledge, and knowledge of cognitive processes and how these processes operate. It is incontrovertible that knowledge and application of metacognitive strategies in the learning process promotes learning outcomes; no empirical evidence suggests otherwise. Proper use of metacognitive strategies in learning enhances learning outcomes as it makes learning more effective and efficient. A body of literature has shown that students high in metacognitive skills have shown

consistent high academic performance, a reality that makes the recommendations that follow a desideratum.

Recommendations

Given the foregoing, the following recommendations were made:

Since metacognitive strategies facilitate learning, it is recommended that metacognition be incorporated in the curriculum of secondary and tertiary institutions of learning as knowledge of metacognitive skills and strategies will promote not just the development of metacognitive awareness and skills, but ultimately lead to higher academic achievement. The inclusion of metacognition in the curriculum of studies is imperative because the 21st century global market is highly competitive and students must be exposed to both creative and metacognitive skills to be effective participants in the competitive global economy.

Also, teachers, who will be in the vanguard of this effort, should be exposed to metacognitive strategies as most teachers even those in teacher preparatory institutions like Colleges of Education and those in Faculties of Education are not familiar with these metacognitive skills and strategies. Workshops for teachers and academic conferences may provide fora for teachers to acquaint themselves with metacognition and metacognitive skills.

References

Akpunar, B. (2011). The analysis of the concept of cognition of metacognition in terms of philosophy of mind. *International Periodical for the Languages, Literature and History of Turkish or Turkic,* 6(4), 353-365

Al- Jarrah, T., Mansor, N., Talafhar, R., & Al-Jarrah, J. (2018). A review of research into metacognitive strategies in the process of education: Teaching and learning of English skill. *International Journal of Current Research*, 10(12), 76832-76838. https://doi.org/10.24941/ijer.33608.12.2018

Avila, M., Bianchetti, M., Gonzalez, A. (2017). Using the method of Think Aloud in the teaching of metacognition. *Journal of Education,* 39, 26-38

Bishara, S., & Kaplan, S. (2018). The relationship between locus of control and metacognitive knowledge of Mathematics with Mathematics achievement. *International Journal of Disability, Development and Education*, 65(2), 1-18

Cer, E., & Sahin, E. (2016). Improving reading comprehension skills with children's books through metacognitive strategy: The Turkish context. *Journal of Education and Training Studies*, 4(9), 109-119

Coskun,Y. (2018). A study of metacognitive thinking skills of University students. *Journal of Education and Training Studies*, 6(3), 2018. https://doi.org/10.11114/jets.v6i3.2931

Eskandari, M., Amini, M., Delavari, S., Mokhtarpur, S., & Jaafari, M. (2017). The effect of metacognitive skills and academic motivation of academic performance. On-line https://doi.org/10.21203/rs.2.20995/v1

Flavell J.H., Miller, P.H., & Miller, S.A. (1985). *Cognitive Development*. Prentice-Hall).

Flavell, J. H., & Flavell, E.R. (2004). Development of children's intuitions bout thought-action relations. *Journal of Cognition and Development*, 5(4), 451-460

Flavell, J.H. (1979). Metacognition and cognitive monitoring: A new era of cognitive developmental inquiry. *American Psychologist*, 34(10), 906-911

Flavell, J.H. (2004). Theory of the mind development: Retrospect and Prospect. *Merrill-Palmer Quarterly*, 50,274-290

Listiana, L., Susilo, H., Suwono, H., & Suarsini, E. (2016). Empowering students' metacognitive skills through new teaching strategy. *Journal of Baltic Science Education*, 15(3), 391-400

Molenberghs, P., Trautwein, F., Singer, T., & Kanske, P. (2016). Neural correlates of metacognitive ability and of feeling confident: A large scale study. *Social Cognitive & Affective Neuroscience*, 11(12), 1942-1951

Ormrod, J. (2016). *Human Learning*. Pearson

Ozcakmak, A., Koroglu, M., Korkmaz, C., & Bolat, Y. (2021). The effect of metacognitive awareness on academic success. *African Educational Research Journal,* 9(2), 434-448

Rivas, S., Saiz, C., & Ossa, C. (2022). Metacognitive strategies and development of critical thinking in higher education. https:// doi.org/10.3389/psyg2022913219

SazManzanare, C., & Carbonero, M.A. (2017). Metacognitive precursors: An analysis in children with different disabilities. *Brain Science,* 7(10), 1-14

Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Sciences,* 26, 113-125

Schraw, G., Dennison, R. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology,* 19, 460-470

Schunk, D. (2016). *Learning Theories: An Educational Perspective*. Pearson

Shank, P. (2017). Self-sufficient learners make successful workers. *Talent Development,* 71(4), 42-46

Slavin, R. (2018). *Educational Psychology: Theory and Practice*. Pearson

Sonowal, M., & Kalita, M. (2017). A study of metacognitive awareness and academic achievement of higher secondary level students in Dibrugarh town, India. *International Multidisciplinary Journal,* 6(1), 69-74

Woolfolk, A., & Kapur, P. (2019). *Educational Psychology,* Pearson

Yildiz, H., & Akdag, M. (2017). The effect of metacognitive strategies on prospective teachers' metacognitive awareness, and self-efficacy belief. *Journal of Education and Training Studies,* 5(12), 30-40

Zhao, L., & Mo, S. (2016). The impact of metacognitive awareness on class performance in financial accounting courses. *Academy of Educational Leadership Journal,* 20(2), 78-88