Metacognition Perceived in the Education and English Language Education : A Systematic Literature Review

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ABSTRACT

Metacognition as a process of thinking is essential in all areas of education and life since it requires thought on one's current position, future goals, workable solutions, and outcomes. This study aimed to investigate how metacognition was perceived in Education and English Language Education. A systematic review was conducted to explore studies presenting the perceived metacognition in both areas. Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) 2020 standards were applied to ensure the systematic analysis of the selected papers. From two databases, Publish or Perish and Google Scholar a total of 11 peer-reviewed journal publications from the years 2018 to 2023 were accessed. From the articles reviewed, the concept of metacognition was perceived as 'understanding one's thinking; 'awareness of own thinking'; 'thinking about thinking'; 'self-regulation of own thinking'; 'awareness and understanding of own thinking' in education; while in English Language Education, it was perceived as metacognitive knowledge; metacognitive awareness; metacognitive experiences; metacognitive strategies; cognition and others (self-regulation, autonomous learning, higher-order skills, executive skills, metacomponents, metamemory). In addition to attempting to investigate how metacognition was regarded, this study suggested educators who need to redesign relevant knowledge, skills, and character qualities for the twenty-first century learning, they have to facilitate students engage in self-reflection, learn about their learning, use prospective actions and techniques that assist transferring competences across disciplines, and learn how to change their learning and behavior based on their goals.

Keywords: Metacognition, Education, English Language Education

INTRODUCTION

It is by no means easy to talk about metacognition, an apparently unproblematic thirteen-letter term, and its education, both due to the richness and heterogeneity of theoretical and methodological approaches and due to the vague and slippery nature of the metacognition construct (Mahdavi, 2014). Following John H. Flavell, the study of metacognition focused on the field of psychology. This focus has since broadened to include other fields, including education (Perry, 2019). Flavell (1979, p. 906) stated that "metacognition" refers to "one's knowledge about one's own cognitive processes or anything related to them" The term was later expanded by researchers in the field to include awareness and management of one's own thought to reflect metacognition as a form of executive control, involving monitoring and self-regulation (Cross & Paris, 1988; Kuhn & Dean, 2004; McLeod, 1997; Paris & Cross, 1983; Schneider & Lockl, 2002), as recited by Tay, et al (2020).

Metacognition has been defined as a construct that refers to thinking about one's thinking or the human ability to be conscious of one's mental processes (Nelson, 1996). Wenden (1998) defines metacognition as knowledge about learning that is a part of a learner's store of acquired knowledge and a system of related ideas, relatively stable, early developing and an abstraction of a learners' experience. Wenden (1998) as cited by Rahimi (2011), explained that metacognition is a form of cognition and a high level thinking process that involves active control over cognitive processes. It is also considered as the 'seventh sense' and one of the mental characteristics that successful learners use (Birjandi, 2006).

Flavell (1979) reviewed from investigators who stated that metacognition plays an important role in oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition, and, various types of self-control and self-instruction; there are also clear indications that ideas about metacognition are beginning to make contact with similar ideas in the areas of social learning theory, cognitive behavior modification, personality development, and education (Flavell, Note 1, Note 2, Note 3).

FlavelI (1979) stated that the monitoring of a wide variety of cognitive enterprises occurs through the actions of and interactions among four classes of phenomena: (a) metacognitive knowledge, (b) metacognitive experiences, (c) goals (or tasks), and (d) actions (or strategies).

Metacognitive knowledge is that segment of your (a child's, an adult's) stored world knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions, and experiences.

Metacognitive experiences are any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise. He

assumed that metacognitive knowledge and metacognitive experiences differ from other kinds only in their content and function, not in their form or quality. Some metacognitive experiences are best described as items of metacognitive knowledge that have entered consciousness. Metacognitive experiences can have very important effects on cognitive goals or tasks, metacognitive, knowledge, and cognitive actions or strategies. First, they can lead you to establish new goals and to revise or abandon old ones. Experiences of puzzlement or failure can have any of these effects, for example. Second, metacognitive experiences can affect your metacognitive knowledge base by adding to it, deleting from it, or revising it. You can observe relationships among goals, means, metacognitive experiences, and task outcomes. Finally, metacognitive experiences can activate strategies aimed at either of two types of goals-cognitive or metacognitive.

Goals (or tasks) refer to the objectives of a cognitive enterprise.

Actions (or strategies) refer to the cognitions or other behaviors employed to achieve them.

This study employed a systematic literature review of past studies on the metacognition in education and in the English Language Education. To get deeper understanding upon this concept, reviews on historical contexts were needed as well as its implementation in the education area. Therefore, three questions were formulated :

RQ 1: What is metacognition perceived in education?
RQ 2: What is the metacognition perceived in English Language Education?
RQ3: How is metacognition addressed in education and in English Language Education practice?

The main objectives of this systematic literature review is as follow:
● To explore the metacognition perceived in education.
● To investigate the metacognition perceived in English Language Education.
● To analyze the metacognition addressed in education and English Language Education.

METHOD

This study employed a systematic literature review using PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis). A systematic review is a research method that aims to evaluate, identify, analyze all previous research results that are related and relevant to a particular topic, particular research, or the latest phenomenon of concern.

Because relevant study findings are compiled through systematic reviews, the offered information is complete and fair. The systematic literature review includes the following steps: formulate research questions, conducting systematic literature review searches, screening and

selecting suitable research articles, conduct analysis and synthesis of qualitative findings, implement quality control, prepare a final report (Perry & Hammond, 2002). Howard et.al (2019) as cited by Hamzah (2022) stated that the procedure of this systematic review consists of several steps,: identification, screening, eligibility, and article quality evaluation.

1. Identification

Identification is a process that involves identifying and diversifying appropriate keywords for an article search. In order to improve the accuracy of the articles, the search process must use keywords. In this study, three main keywords were selected, namely, Metacognition, Education, English Language Education. The database were searched from Publish or Perish. In addition to this technique, manual searches using handpicking methods in Google Scholar was conducted.
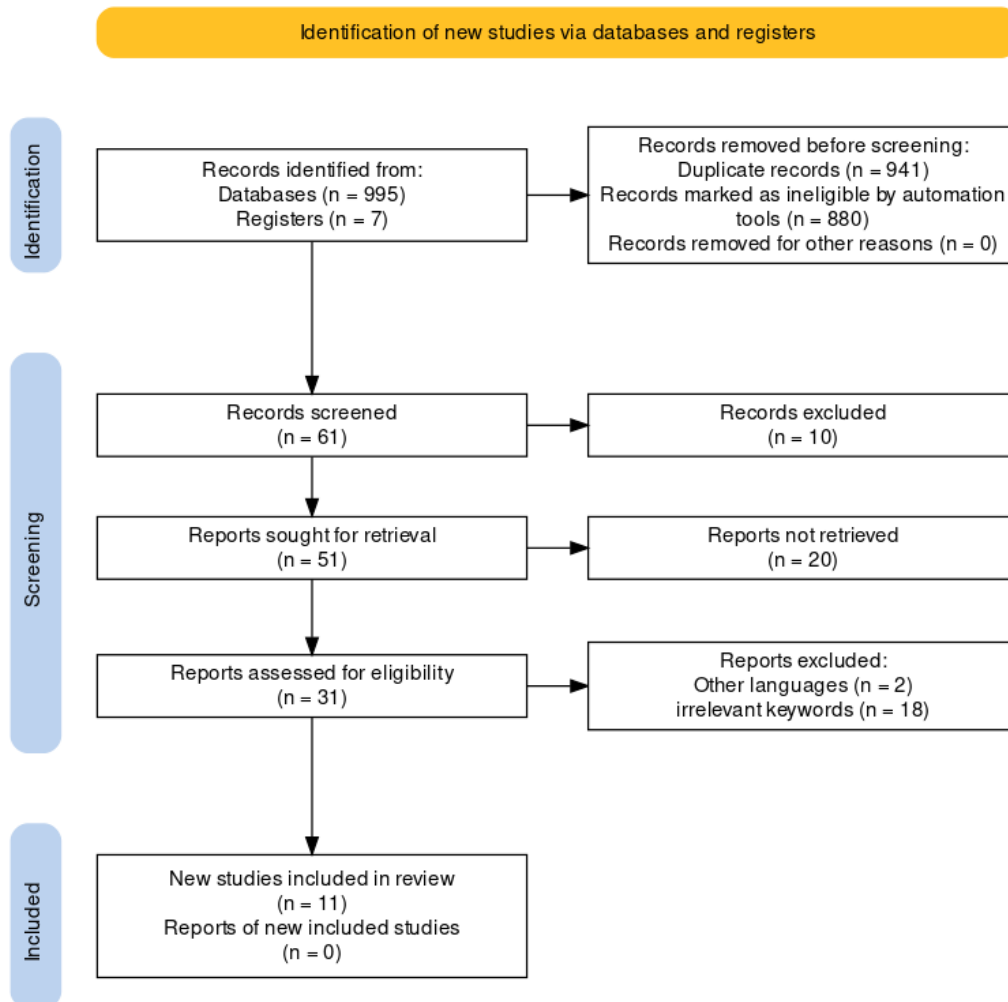
2. Screening

Screening is a process in which inclusion or exclusion criteria is conducted to select suitable articles to form the systematic literature review. A total of 1002 articles that were gathered in the identification process were subjected to the screening process. The first criterion was the year of publication being within the last 5 years (2018–2023).

Papers with relevant empirical data were considered in this study. This study included inclusion criterion in this process. Inclusion is important to ensure all selected articles contribute relevant findings to the systematic literature review. In this study, the selected articles contained findings that focus on the term metacognition in education and English education. Therefore, the articles on other subjects were removed. After the screening process, 941 articles were eliminated, leaving 61 articles for the next process.

3. Eligibility

The remaining 61 articles were subjected to a second screening process, known as eligibility. The eligibility screening process is carried out to ensure that all selected articles are relevant and could be used in an SLR. This process is accomplished by consulting the title and its abstract. In this process, a total of 47 articles were excluded because they did not focus on the metacognition in education and English language education. Following this process, 11 articles were subjected to the next process, which was the quality assessment. The systematic search process, using PRISMA, is shown in Figure 1

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Figure 1. The systematic search process using PRISMA (2020)

4. Article quality evaluation

The interpretation of the synthesis findings and the choice of the conclusions expressed can both be influenced by the evaluation of research quality.

FINDINGS

Metacognition; Concept; Definition in Education and English Language Education

The concept of metacognition will be reviewed from some scholars. Mahdavi (2014) wrote that John Flavell, a developmental psychologist who is now considered to be as the father of the field, was the first one who introduced the term 'metacognition' in the 1970s (1971, 1976, 1979). Concerning 'metacognition' the field of psychology Flavell (1979) stated:

> "The positive effects metacognition has on learning in general: I believe that metacognitive knowledge can lead you to select, evaluate, revise, and abandon cognitive tasks, goals, and strategies in light of their relationships with one another and with your own abilities and interests with respect to that enterprise. Similarly, it can lead to any of a wide variety of metacognitive experiences concerning self, tasks, goals, and strategies, and can also help you interpret the meaning and behavioral implications of these metacognitive experiences (p. 908)"

Mohsen Mahdavi in his study stated that in actuality, offering a definition of metacognition is much more complex than that and is not that simple. There are considerable debates over what exactly this umbrella term is. It has been considered as a fuzzy concept of multifarious definitions by many researchers (Flavell, 1981).

Concerning the concept of 'metacognition' some scholars put their ideas upon it. It is perceived as a construct that refers to thinking about one's thinking or the human ability to be conscious of one's mental processes (Rahimi, M., & Katal, M, 2012). Mohsen Mahdavi cited what Sternberg (2009) contends that:

> In the early days, metacognition was more of a curiosity and some psychologists wondered whether it was even a viable construct. Today, I think the question is not whether it is a viable construct, but rather, how it best can be understood, assessed, and developed [taught]. (P. ix).

Haque (2019) stated that the term metacognition refers to "the processes involved when learners plan, monitor, evaluate, and make changes to their own learning behaviours". He added that over the course of time, metacognition has eventuated in an umbrella term, which includes self-regulation, higher-order skills, executive skills, metacomponents, metamemory, comprehension monitoring, feeling of knowing, judgment of learning, heuristic strategies, and learning strategies as its associative terms and thus makes the research of metacognition a domain which is lacking consistency.

Siddiqui, S., & Dubey, R. (2018) further explained the concept of metacognition as a combination of two words: Meta and Cognition. 'Meta' means something that transcends the subject it is related to while 'Cognition' is the internal structure and process that is involved in the acquisition and use of knowledge including sensation, perception, attention, learning, memory, language, thinking and reasoning. Thus, metacognition is a level of thinking that involves active control over the process of thinking that is used in learning situation.

Hague (2019) in his research, gave further details on the term of cognition and metacognition:

> Cognition can be thought of as a learning canvas on which metacognition works to maximize the learning through reflection, planning, monitoring, and evaluation, and the operation of metacognition as such leads towards autonomy.

Metacognition also includes the psychological processes that are involved in the way a person controls, modifies, and appraises his own thoughts (Kaur, 2010).

Concerning the definition, metacognition is defined in various terms. Siddiqui (2018) in his study compiled some definitions from scholars:

- Flavell (1976) defines metacognition as the individual's own **awareness** and consideration of one's **cognitive processes** and **strategies.**
- Metacognition refers loosely to one's **knowledge** and control of one's own **cognition system** (Brown, 1987).
- '**Metacognitive skills** include taking conscious control of learning, planning and selecting **strategies**, monitoring the progress of learning, correcting errors, analysing the effectiveness of learning strategies and changing learning behaviour and strategies when necessary' (Ridley et al., 1992).
- According to Houston (1995), 'Metacognition is **knowledge** or **beliefs** about factors affecting one's own **cognitive** activities; also reflection on monitoring of one's own cognitive processes such as memory or comprehension.'
- Wilson (1999) defines metacognition as: (1) **Metacognitive Awareness**: It relates to an individual's **awareness** of where they are in the learning process, their **knowledge** about content, personal learning strategies and what has been done and needs to be done. (2) **Metacognitive Evaluation**: It refers to judgments made regarding one's thinking capacities and limitations as these are employed in a particular situation or as self- attributes. (3) **Metacognitive Regulation**: It occurs when individuals modify their thinking.
- Veenman et al. (2006) regard metacognition as"… a higher order agent overlooking and governing the **cognitive system** while simultaneously being a part of it." Metacognition can be defined as the ability to

evaluate one's own comprehension and understanding of subject matter and use that evaluation to predict how well one might perform on a task. This is the process where the student takes conscious control of the learning and thinks about how one is thinking in a cognitive sense.

- Lin (2018) defines metacognition as **'adaptive metacognition'**. Adaptive metacognition involves both the adaptation of one's self and one's environment in response to a wide range of classroom variability.

To sum up, the concepts and the definitions of metacognition from scholars from time to time, are identified by the following 'key components':
(1) Metacognitive knowledge (Flavell,1979); (Brown, 1987); Wilson (1999)
(2) Metacognitive awareness Flavell (1976); Wilson (1999)
(3) Metacognitive strategies (Flavell,1976)
(4) Metacognitive skills (Ridley et al., 1992)
(5) Metacognitive evaluation (Wilson, 1999)
(6) Metacognitive regulation (Wilson, 1999)
(7) Cognition (Hague, 2018); (Siddiqui, S., & Dubey, R. , 2018); (Brown, 1987); (Kaur, 2010); (Flavell,1976)

In a previous study conducted by Dennis, J. L., & Somerville, M. P. (2022), there were five main concepts undestood by the respondents dealing with 'metacognition' namely: (1) Understanding one's thinking; (2) Awareness of own thinking; (3) thinking about thinking; (4) Self-regulation of own thinking; (5) Awareness and understanding of own thinking

For more search on 'metacognition', Table 1 and Table 2 show the concepts and definitions which are addressed by eleven scholars in their articles.

Table 1.Metacognition perceived in education

METACOGNITION	NAME OF SCHOLAR										
	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11
1. Concepts											
- Understanding one's thinking	v										
- Awareness of own thinking	v	v					v				
- Thinking about thinking	v		v		v						
- Self-regulation of own thinking	v		v	v							
- Awareness and understanding of own thinking	v								v		
2. Definitions											
- metacognitive knowledge	v			v			v				
- metacognitive awareness	v	v					v				
- metacognitive experiences				v							
- metacognitive skills					v					v	v
- metacognitive strategies		v		v			v	v	v	v	v
- cognition	v	v	v			v					
- others: self-regulation, autonomous learning, higher-order skills, executive skills, metacomponents, metamemory			v		v	v	v	v	v	v	

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Table 2. Metacognition perceived in English Language Education

KEY COMPONENTS OF METACOGNITION	NAME OF SCHOLAR (*S) AND TARGET SKILL			
	S-8 Reading	S-9 Writing	S-10 Listening	S-11 Writing
- metacognitive knowledge	v			
- metacognitive awareness			v	
- metacognitive experiences	v	v	v	v
- metacognitive strategies	v	v	v	v
- cognition		v		v
- others: self-regulation, autonomous learning, higher-order skills, executive skills, metacomponents, metamemory	v			v

Abbreviation Notes:
S-1: Dennis, J. L., & Somerville, M. P. (2022).
S-2: Lin, X., Schwartz, D. L., & Hatano, G. (2018)
S-3: Haque (2019)
S-4: Sun Q, Zhang LJ and Carter S (2021)
S-5: John Perry, David Lundie & Gill Golder (2018)
S-6: Hamzah, H.; Hamzah, M.I.; Zulkifli, H.(2022)
S-7: Siddiqui, S., & Dubey, R. (2018)
S-8: Navarro, Z. I. T. (2021)
S-9: Cer, E. (2019)
S-10: Robillos, R. J., & Bustos, I. G. (2022)
S-11: Shirvani, M., & Porkar, R. (2022)

DISCUSSION

With respect to the first research question, it was found that there were key concepts referring to the term 'metacognition' perceived in education. The scholar (S1) addressed metacognition as 'Understanding one's thinking; 'Awareness of own thinking' was stated by (S1),(S2) and (S7); 'Thinking about thinking' was mentioned by (S1),(S3),(S5),(S7); Self-regulation of own thinking was referred to by (S1),(S3),(S4); Awareness and understanding of own thinking was highlighted by (S1),(S9).
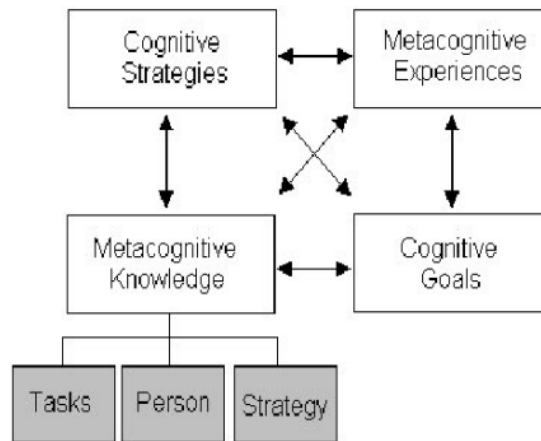
Since 'metacognition' is still perceived differently, it is viewed as efforts to concretize the concept itsef and a manifestation of hidden and highly abstract metacognitive structures. Veenman, van Hout-Wolters & Afflerbach (2006) as cited by Haque, M. M. (2019), identified this proliferation of metacogniton as the inconsistency that "marks conceptualization of the construct metacognition]" (p. 4) and recommend that there is a need for more theoretical work to establish a unified definition for metacognition and its components. With that being said, there is no scope of minimizing the significant impact of metacognition on the process of learning as Flavell (1979) emphasizes that metacognition could help both adults and children "make wise and thoughtful life decisions as well as to comprehend and learn better in formal settings" (p.910).

Haque, M.M (2019) stated:

> ".. to put it simply, metacognition is a mental process for monitoring and controlling cognition. Metacognition plays a crucial role in learning, and the use of metacognition indicates effective learning. Considering its vast impact on learning, different models for metacognition have been proposed so that metacognition can be utilized in its entirety."

To illustrate metacognition concept, Mahdavi (2018) used Flavell's model to make some helpful cases of metacognition in real-life experiences as illustrated below:

Figure 1: Flavell's model of metacognition (1981, p. 40)

On the second question of the term 'metacognition' perceived in English Language Education, this study found that it was perceived in numbers of definitions. Some scholars referred the term as metacognitive knowledge (S1),(S4),(S7)(S8); metacognitive awarenes (S1),(S2),(S7), in listening practice is shown by (S10); metacognitive experience (S2),(S4),(S7),(S8),(S9),(S10),(S11), cognition (S1),(S2),(S3),(S6)(S9)(S11); metacognitive strategies is cleary applied in reading comprehension in a basic education(S-8), listening skills (S10), writing skills (S9, S11). Other definitions (self-regulation, autonomous learning, higher-order skills, executive skills, metacomponents, metamemory) is found in (S3),(S5),(S6),(S7),(S8),(S11).

Concerning the third research question about the practice of the concept and definition in education area, Haque (2018) reported that "metacognition and language learning are tied together" and "learners who employ metacognition turn out to be better at language learning" (p.189). Haque (2019) also summarized that, successful language learners use more metacognitive strategies than unsuccessful language learners. This establishes the close relationship of metacognition with high achievement and better learning outcomes in language learning.

Mahdavi (2014) stated with regard to the centrality of metacognition to learning, Flavell (1979) contends, though with little empirical evidence, that metacognition plays an important role in varying areas of learning such as oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition, and various types of self-control and self-instruction (p. 906).

Anderson (2008), as cited by Mahdavi (2014), suggested that metacognition in language learning can be divided into five primary and intersecting components: 1. Preparing and planning for learning, 2. Selecting and using strategies, 3. Monitoring learning, 4. Orchestrating strategies, and 5. Evaluating learning. It merits a mention that each of these five components of metacognition is engaged in an interactive process which is not of a linear nature, moving from preparation and planning to evaluation, rather a cyclic one.

CONCLUSION

This study looked at the history of metacognition and summarized the essential studies on its use in English Language Education in an effort to give a quick overview of the concept. Additionally, it described certain fundamental characteristics, many elements of metacognition and their possibility of implementation in the area.

In spite of its limitations, the study certainly adds to our understanding of the fundamental idea of metacognition, a concept in today's educational environment which can surely gives students a sense of freedom and autonomy. Metacognition in education is required to facilitate students engage in self-reflection, learn about their learning, use prospective actions and techniques that assist transferring competences across disciplines, and learn how to change their learning and behavior based on their goals. Further research on this concept should be undertaken to explore its effectiveness in real classroom practices.

ACKNOWLEDGEMENT

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