

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **A. The Concept of Metacognitive Awareness**

Metacognition is one of the prominent terms when looking at education from the psychological perspective. The term might seem difficult to understand at first, but the concept is actually fairly easy to grasp. Higher order thinking, also known as metacognition, is characterized by the active control of the cognitive processes that are involved in the act of learning (Livingston, 2003). To put simply, metacognition is the understanding of the thinking process. Ormrod (2018) also describes it as our understanding of cognitive processes, as well as the use of this understanding when learning and remembering new things. It is then obvious that metacognition plays a part in our daily life. In fact, metacognition is essentially the core of activities such as making a decision, checking understanding, and evaluating progress.

More importantly, metacognition it is also deeply linked to intelligence. Garner & Alexander (1989) established that learners who are informed of their metacognition are more strategic and have greater performance than learners who are uninformed of their metacognition. This is because metacognitive awareness, as defined by Marton & Booth (2013), can be reflected from the different ways in which people face a variety of situations in their lives. In an academic setting, individuals are able to organize, sequence, and monitor their own learning due to their metacognitive awareness, so that improvements can be observed immediately in their performances (Schraw & Dennison, 1994).

Furthermore, the name John Flavell is most often used in conjunction with the word "metacognition" as he was one of the most prominent figures who shaped the foundation of this field of study. Based on the definition set by him, metacognition is made up of four components: metacognitive knowledge,

metacognitive experience, goals, and the activation of strategies. Flavell believed that the interaction between these four components are the basics behind the growth or decline of one's metacognitive skills. In a slightly different variation of the concept, Schraw & Dennison (1994) claimed that there are two subsections of metacognition, which are knowledge of cognition and regulation of cognition (see Brown & DeLoache, 1983).

### **1. The Components in Knowledge about Cognition**

According to (Livingston, 2003), a very simple explanation of "knowledge about cognition" would be that it contains both an overall understanding of how information is absorbed by people and their knowledge regarding how they themselves learn. For instance, being in a quieter and more relaxing environment will be more beneficial for the learning process and the individual understands this point very well. In addition, once the individual is well acquainted with the process, then it can be said that the individual has knowledge about cognition. One of the examples is seen in the knowledge that reading a novel would be less tasking rather than understanding a scientific article since it is more technical and heavier.

Then, Schraw & Moshman (1995) illustrated that our understanding of cognition can further be broken down into three categories. Firstly, it is our understanding of our learning process. Secondly, it is comprehension regarding which method is the most fitting. Lastly, it is the situations that are suitable for certain cognitive activities. Then, these three points can also be represented by these more well-known terms below.

- a. Declarative Knowledge refers to what we understand about the factors that impact our learning and how we learn.
- b. Procedural Knowledge refers to our understanding of the many learning techniques that are most effective for us.

- c. Conditional Knowledge refers to the information that we have about the circumstances in which we are able to use a variety of different cognitive techniques.

## **2. The Components in Regulation of Cognition**

The term "regulation of cognition" refers to the practice of exercising control over one's own cognitive processing, such as the use of a variety of strategies in a flexible manner based on the circumstances and on intermediate learning objectives. According to Pintrich (2004) and Vermunt & Vermetten (2004), the actions of regulation include planning and monitoring before taking a certain class or completing a specific assignment, as well as the use of information management methods while doing learning activity. In the context of education, regulation of cognition describes the actions that students take in order to control and alter the trajectory of their cognitive activity when they are learning.

Therefore, regulation of cognition may be split into five distinct activities, which are as follows.

- a. Planning involves planning, goal setting, and allocating resources prior to learning.
- b. Information management strategies consists of skills and strategies used in the process of understanding the information more efficiently.
- c. Comprehension Monitoring is the assessment process of one's learning or strategy use.
- d. Debugging strategies include strategies used to correct comprehension and performance errors.
- e. Evaluation is the analysis of performance and strategy effectiveness once the learning process has completed.

## **B. The Concept of Metacognitive Awareness Inventory (MAI)**

In 1994, Schraw & Dennison developed an instrument to assess metacognitive awareness, which is called Metacognitive Awareness Inventory (MAI). There are three main aspects that are important to the establishment of this instrument. First, it is to validate whether the two main processes (knowledge and regulation of cognition) are vital in the learning process. Secondly, it is to discover the statistical relationship between knowledge and regulation of cognition. Lastly, it is to measure the pre-test monitoring ability, test performance, and the ability to monitor one's test performance in an accurate manner to compare the relationship between knowledge and regulation of cognition. The two experiments done by Schraw and Dennison confirmed the high degree of correlation between knowledge and regulation of cognition as well as with the level of one's intelligence.

Schraw and Dennison also tested the convergent validity of the MAI by comparing the results of the MAI with the results of other tests that were thought to be related to metacognition. These tests included the ability to accurately monitor test performance, the ability to monitor performance on a pretest, and the ability to monitor performance on an actual test. They did not detect a significant association between monitoring accuracy and the MAI, and they also did not find a significant relationship between pretest evaluations and monitoring accuracy. They discovered that greater test performance was associated to the knowledge of cognition component of the MAI, however the regulation of cognition factor of the MAI was not connected to higher test performance. They also observed a correlation between the MAI and knowledge of cognition as measured by pretest judgements. Additionally, a positive correlation was found between pre-test judgements and test performance.

All in all, MAI has been proven to have a high degree of reliability and validity. Consequently, MAI has been widely used in the academic setting to

investigate the metacognitive awareness among students as it serves as a valid instrument that can be applied under most circumstances.

### **C. The Role of Metacognitive Awareness in Students' Academic Performance**

It is imperative to assist students to develop the awareness of themselves as learners and to oversee the process. By doing this, one of the objectives of education, which is to lead students to be lifelong learners, can be accomplished. This is where metacognitive ability comes into play, because when students improve their metacognitive abilities, they often report a rise in their level of self-confidence (Jaleel, 2016). Additionally, the ability to participate in metacognition will lead to the opportunity to become good learners as it is associated to intelligence as well (e.g., Borkowski et al., 1987; Sternberg, 1984). Hence, it has been widely claimed that metacognitive awareness plays a pivotal role in the academic performance of students.

One explanation behind this is because metacognition is largely a part of self-regulatory learning. In other words, learners who are able to implement self-regulation are deemed as active participants to accomplish their goal for their learning process (Zimmerman & Martinez-Pons, 1990). However, it is noteworthy to understand that the phrases self-regulation and metacognition do not relate to the same phenomenon, despite the fact that they are often used interchangeably with one another. Self-regulation requires metacognition, in addition to a great number of other things, including "goal formulation, monitoring, and assessing one's behavior" (Williams et al., 2015).

Additionally, Pintrich (1995) established that it is not the tutors or parents, but it is the students themselves who are in charge of maintaining the appropriate conduct throughout the whole of the educational process. On top of that, learners will have the capacity to direct their motivation, metacognitive processes, and actions toward achieving their academic goals at every step of the learning process in this scenario (Schunk, 2008). Ultimately, it is the responsibility of the learners themselves to begin and take control of

their learning process, and this can be achieved by taking into account the level of their metacognitive awareness.

#### **D. Previous Relevant Studies**

Metacognition is not a new term in the education field. In fact, numerous studies have been conducted to discover the role of metacognitive awareness in the academic setting. The majority reported a positive and strong correlation between metacognitive awareness and academic performance.

First and foremost, Young & Fry (2008) reported in their research that both the understanding of cognition factor and the control of cognition factor had a statistically significant link with one another. It was also revealed that there were significant relationships between the MAI and many broad indicators of academic success. The knowledge and cognition element of the MAI had a correlation with both the overall grade point average (GPA) and the grades at the completion of each course.

In addition, other research has been done to discover other factors that have a significance in metacognition. Bursalı & Öz (2018) found out that the role of goal setting in metacognitive awareness in foreign language learning is indeed pivotal in metacognition. Moreover, it can be beneficial for learners to incorporate goal orientation into the curriculum by highlighting the importance of learner's engagement, agency, and self-regulation to achieve successful language learning process.

Moreover, an analysis of goals as a factor that contributes to metacognitive awareness was also conducted in the research performed by Coutinho (2007). By looking at different types of goals in metacognitive awareness, this study depicts that learners who aim to absorb the material thoroughly are more likely to achieve high academic achievement. In contrast, the performance of learners who only attempt to score well on an exam without understanding the material is not always excellent.

Furthermore, research about the role of metacognitive awareness in specific part of the learning process have also been taken. El-Hindi (1996) discovered evidence that metacognitive awareness for both reading and writing can be enhanced through direct instruction for college students. The findings also indicate that metacognitive awareness can be taught, which is aligned with the concept proposed by Baker & Brown (1984).

Following this, a study by Negretti (2012) examines how metacognitive awareness plays a role in academic writing. More specifically, this study took a closer look on how students practice academic written communication and develop rhetorical consciousness. Then, the changes in awareness are observed as well as how it connects to students' perceptions of the writing assignment, metacognitive awareness of strategic decisions, and evaluations of their writing. The statistics indicate a connection between task perception and students' conditional metacognitive awareness, or their ability to adapt writing styles to certain rhetorical situations.

Another similar research was conducted by Teng (2020) which focused on the role of group metacognitive guidance in English writing. There were 120 Chinese students involved in two different group metacognitive support methods for a college writing course. Journal entries revealed qualitative data indicating that learners who received group feedback guidance are likely to demonstrate distinct metacognitive regulating processes, a high degree of task perception, and the development of an awareness and application of metacognitive strategies