Chapter 2
Development of Metacognition in Higher Education: Concepts and Strategies

Maizam Alias
Universiti Tun Hussein Onn, Malaysia

Nor Lisa Sulaiman
Universiti Tun Hussein Onn, Malaysia

ABSTRACT
Metacognition promotes critical and creative thinking, enabling an individual to generate more options to problem solutions, better judgments and decision makings. It is thus, the key success factor for dealing with academic, career and life challenges. Although it can be improved through teaching, explicit teaching of metacognition is not prevalent in higher education as it is often assumed that metacognition is already acquired through previous educational experiences. This assumption may be true for some but lacking in others as both knowledge disseminators (teachers) and recipients (learners) are unable to access and assess their own thinking processes to optimize their thinking efficiency. As a consequence, there are learners in higher education who do not develop their full potential. The aim of this paper is to discuss the concepts in metacognition and strategies that can be adopted to promote the development of metacognition among higher education learners.

INTRODUCTION
Higher education graduates are expected to be able to deal with the complexities of real world problems. However, recently the quality of higher education graduates has been questioned. Despite having undergone a number of years of education they still do not possess the necessary thinking skills that involve metacognition to deal with professional demands successfully.

Metacognition is a process that regulates thoughts, enabling an individual to break rigidities in their thinking consequently leading to mindful and productive thoughts which is important for self-regulation. Thus, this process that is often coined as “thinking about thinking” (Flavell, 1979) is the key success

DOI: 10.4018/978-1-5225-2218-8.ch002
Development of Metacognition in Higher Education

factor for the academic world enabling learners to plan, monitor and evaluate their own learning as well as for dealing with life and work challenges. The importance of metacognition can be seen in the more comprehensive definition given by Hacker (1998), who states that metacognition includes having the knowledge of one’s own cognitive and affective processes and states as well as the ability to consciously and deliberately monitor and regulate those processes and states. However the way it is defined, metacognition promotes critical and creative thinking, allowing individuals to generate more options to problem solutions, better judgments and decision makings.

Metacognition is often assumed to have been acquired at lower stage of a person’s educational experiences. This assumption may be true for some but sadly lacking for many as both knowledge disseminators (teachers) and recipients (learners) are unable to assess and evaluate their own thinking processes in teaching and learning. Thus, there are higher education learners who cannot make wise decisions or solve problems although they may have received certifications for competence at the various levels of their education. The purpose of higher education is to prepare individuals for a profession with the necessary knowledge, skills and attributes that facilitate the achievement of the highest potential in their individual and professional capacity. The fullest potential can only be acquired by having adequate level of cognition and emotional intelligence that is necessary in social interactions. Higher education being the gatekeeper before learners enter the workplace and independence has the responsibility to equip their graduates with metacognition which is the qualifier for such goals. However, learners cannot develop metacognition without the support from higher education teachers. Consequently, metacognition of higher education teachers must also be assessed and improved for the stated reason as well as for professional and self-development. There are many strategies that can be used to promote and develop metacognition among higher education learners (and teachers) based on the understanding of the underlying processes as well as the supporting and hindering factors. Actually, there are three strategies that form the basis of metacognitive development approaches namely questioning, brainstorming and self-reflection which are the key activities of a thinking process that promotes metacognition.

The aim of this chapter then is to elaborate on the meaning and components of metacognition, factors contributing to and hindering its development, and strategies for developing metacognition - questioning, brainstorming and self-reflection - as well as techniques for metacognitive monitoring using cognition and emotional intelligence.

METACOGNITION, COGNITION, AND CRITICAL THINKING

Metacognition is a type of cognition and thus there is no metacognition without cognition. Cognition refers to “…the mental process by which external and internal input is transformed, reduced, elaborated, stored, recovered and used; as such, it involves a variety of functions such as perception, attention, memory coding, retention and recall, decision making, reasoning, problem solving, imaging, planning and executing action.” (Neisser, 1967 in Brandimonte, Bruno & Collina, 2006, p. 3). Learners with poor cognition have limited ability to carry out some of the mental functions mentioned above.

Perception, attention, memory coding, retention and recall are mental functions that are developed naturally through human maturation process. As a consequence of maturation, college students are expected to be better on these functions compared to students in schools. Decision making, reasoning, problem solving, planning and executing actions also increases with maturation but must be nurtured through appropriate experiences to be fully developed as these functions are more complex. Executing