

## **Academic Self-Regulation of Cognition and Metacognition among Undergraduates: a Malaysian Perspective**

**Bromeley Philip**

*Associate Professor, Academy of Language Studies, Universiti Teknologi MARA Sarawak, Malaysia*

*Corresponding Author: Bromeley Philip*

**Abstract:** The main aim of this study was to investigate the extent to which ESL students self-regulated their academic learning in terms of academic cognition and metacognition. This was a survey research which involved administering one set of questionnaire called Motivated Strategies for Learning Questionnaire (MSLQ) on a group of 23 undergraduates at a public university in Malaysia. The survey was conducted once early at the beginning of the semester and the data obtained were analysed using the SPSS Version 20 for descriptive statistics. Based on the statistical analysis done, it was found that the students' responses to the items in the MSLQ were generally high on all the four main categories: cognition, metacognition, motivation and behaviours, recording mean scores within the range of 4.0 and above. The findings therefore indicate rather positive response from the students implying that the degree of self-regulation activated by the students was moderately high against a scale of 1 to 7.

**Keywords** – cognition, metacognition, self-regulation, rehearsal, elaboration

---

Date of Submission: 12-03-2018

Date of acceptance: 26 -03-2018

---

### **I. INTRODUCTION**

In Malaysia, it has been a common knowledge over the years that graduates normally remain unemployed after graduation for quite sometime largely due to their lack of English proficiency. A New Straits Times (NST) report on March 20<sup>th</sup> 2005 established that poor proficiency in English was one of the main reasons why 80,000 graduates could not find employment. One probable explanation for this, according to Wong (1998), is that, a sizable proportion of students belong to the lower end of the proficiency scale at the point of entry into the university. According to a report by Stephanie Phang (2006), the Malaysian government revealed that even with 237,000 job vacancies, about 45,000 college grads are unemployed, mainly because of poor English. In the same report, when questioned on the cause of the underemployment Rafiah Salim, Universiti Malaya's Vice-Chancellor responded by saying: '*I'll give you one reason for it: English.*' "*The only industry that's really using Bahasa is the government service.*" If this is the current scenario as regards the poor command of English language among ESL tertiary students, then there is a need to look into how these students actually manage their learning of the English language.

A general working definition of self-regulated learning is that it is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment. In other words, self-regulation of academic learning according to Schunk (1996) refers to one's ability to understand and control one's learning environments. It means that in order to be able to self-regulate their learning, the students must set goals, select strategies that help them achieve these goals, implement those strategies, and monitor their progress towards their goals. In fact, often, students self-regulate their motivation by emphasizing or articulating particular reasons for wanting to complete an activity in which they are engaged. That is, students use thoughts or sub-vocal statements to remind themselves to recall or make it important for them to want to continue working on the activity (Schunk & Zimmerman, 1998).

A study conducted by Noran et. al. (1993) among Malaysian undergraduates found that low proficient students tended to believe that it was difficult to master the English Language so much so that they tended to dislike learning it. The study also found that these students were not motivated to learn English, thus, making no effort to improve their poor command of English. One probable reason as to why these students tend to dislike English is that they may not be aware of the need to manage not only their learning but also their motivation through what is known as self-regulation. Cognitive control and regulation include the types of cognitive and metacognitive activities that individuals engage in to adapt and change their cognition. As in any model of regulation, it is assumed that attempts to control, regulate, and change cognition should be related to cognitive

monitoring activities that provide information about the relative discrepancy between a goal and current progress toward that goal (Schraw, Crippen & Hartley, 2006). For example, if a student is reading a textbook with the goal of understanding (not just finishing the reading assignment), then as the student monitors his or her comprehension, this monitoring process can provide the student with information about the need to change reading strategies.

The present study was aimed at enabling ESL (English as a second language) students to self-evaluate their self-regulatory skills to find out the extent to which they are actually self-regulating their learning of English from two main perspectives namely, cognition and metacognition. This study is necessary because according to Pintrich (2000) and Zimmerman (2000) only a few students are fully self-regulated; however, those with better self-regulation skills typically learn more with less effort and report higher levels of academic satisfaction. Since it is important for students in order to reap success they need to become self-regulatory, it is also important therefore that a study be conducted to examine the extent to which Malaysian university students are self-regulatory in their learning process. The study will concentrate on the regulation and control phase of self-regulated learning in terms of the two domains namely, academic cognition and metacognition.

## **OBJECTIVES**

- To determine the extent to which ESL students self-regulate their academic cognition in ESL classroom contexts.
- To determine the extent to which ESL students self-regulate their metacognition in ESL classroom contexts.

## **II. LITERATURE REVIEW**

### **1. Introduction**

The scope of the study however is limited to surveying self-regulation of academic cognition, metacognition, motivation and behaviours among a small group of 23 ESL students doing a diploma course at Universiti Teknologi MARA Sarawak using the **Motivated Strategies for Learning Questionnaire (MSLQ)**. The study will only employ a quantitative approach of using a single instrument, that is, MSLQ, focusing only on four main domains of **academic self-regulation which include cognition, metacognition**

### **2. Self-regulation of cognition**

Self-regulated learning refers to one's ability to understand and control one's learning environments. To do so, one must set goals, select strategies that help one achieve these goals, implement those strategies, and monitor one's progress towards one's goals (Schunk, 1996). Social-cognitive perspectives of self-regulated learning postulate that individuals learn to become self-regulated by advancing through four levels of development: observational, imitative, self-controlled, and self-regulated levels (Schunk, 1996; Zimmerman, 2000). Learning at the observational level focuses on modelling, whereas learning at the imitative level focuses on social guidance and feedback. Both of these levels emphasise a reliance on external social factors. In contrast, as students develop they rely increasingly on internal, self-regulatory skills. At the self-controlled level, students construct internal standards for acceptable performance and become self-reinforcing via positive self-talk and feedback. At the self-regulatory level, individuals possess strong self-efficacy beliefs, as well as a large repertoire of cognitive strategies, that enable them to self-regulate their learning (Velzen, 2016).

#### **2.1 Regulation of cognition**

One of the central aspects of the control and regulation of cognition is the actual selection and use of various cognitive strategies for memory, learning, reasoning, problem solving, and thinking. In research on self-regulated learning, there are a large number of cognitive and learning strategies that individuals use to help them understand and learn course material. For example, many researchers have investigated the various rehearsal, elaboration, and organizational strategies that learners can use to control their cognition and learning (Pintrich and De Groot, 1990; Pressley and Afflerbach, 1995; Weinstein and Mayer, 1986).

The cognitive component comprises three general types of learning skills, which are referred to as cognitive strategies, problem solving strategies, and critical thinking skills. Cognitive strategies include a wide variety of individual tactics that both students and instructors normally utilise to enhance learning. Chinn and Brown (2002), gave one example of a cognitive strategy, that is, the use of student-generated questions before or during reading to focus the learner's attention. Other examples include the use of active learning strategies such as constructing graphs and tables and the use of cloze assessment tasks such as the Koch-Eckstein technique to promote deeper understanding as proposed by Koch (2001). In fact, according to Pressley & Wharton-McDonald (1997), previous studies indicate that self-regulated learners of all ages employ different types of cognitive learning strategies in a flexible way.

## **2.2 Cognitive strategies**

Rehearsal refers to the mental review of information which according to Schunk (2000) serves a key role in the retention of knowledge. It is a cognitive strategy that involves repeating information to oneself aloud or sub-vocally, which in turn helps to maintain information in working memory and ultimately improves recall. Rehearsal needs to be supported by another cognitive strategy called elaboration which assists in relating the information to something already known.

Elaboration is the process of expanding upon new information by adding to it or linking it to what one knows (Schunk, 2000). According to Anderson (1995), elaborations assist encoding and retrieval because they (elaborations) link the to-be-remembered information with other knowledge. Anderson stresses further that recently learned information is easier to access in an expanded memory network. In relation to elaboration is a strategy called organisation which is a useful technique for recall.

Organisation strategy includes mnemonics, grouping, outlining, and mapping, all of which will elaborate information and organise it in meaningful fashion. Information can be organised by grouping it before using rehearsal; organisation is an effective aid to recall (Weinstein & Mayer, 1986).

Critical thinking involves a variety of skills such as the individual identifying the source of information, analysing its credibility, reflecting on whether that information is consistent with their prior knowledge, and drawing conclusions based on their critical thinking (Linn, 2000). Research in argumentation and critical thinking (Halpern, 1998) indicates that many students fail to utilise sophisticated reasoning even at the college level. Critical thinking can be improved through instruction, although it typically requires an extended instructional sequence (e.g., three months) to do so (Baird & White, 1996; Huffman, 1997).

## **III. SELF-REGULATION OF METACOGNITION**

Metacognition as we conceptualise it includes two main subcomponents generally referred to as knowledge of cognition and regulation of cognition (Schraw & Moshman, 1995). Knowledge of cognition refers to what we know about our cognition, and may be considered to include three subcomponents. The first, declarative knowledge, includes knowledge about ourselves as learners and what factors influence our performance (Chamot & O'Malley, 1994). For example, most adult learners know the limitations of their memory system and can plan accordingly. Procedural knowledge, in contrast, refers to knowledge about strategies and other procedures cognition (Schraw & Moshman, 1995). For instance, most adults possess a basic repertoire of useful strategies such as note-taking, slowing down for important information, skimming unimportant information, using mnemonics, summarising main ideas, and periodic self-testing. Finally, conditional knowledge includes knowledge of why and when to use a particular strategy (Paris et. al., 1983). This means that individuals with a high degree of conditional knowledge are better able to assess the demands of a specific learning situation and, in turn, select strategies that are most appropriate for that situation using their metastrategic knowledge components (Dedic, 2014).

### **3.1 Regulation of metacognition**

According to Baird and White (1996), adults tend to have more knowledge about their own cognition and are better able to describe that knowledge than children and adolescents. This is because research suggests that an individual's knowledge of cognition is late developing and explicit. However, Butler and Winne (1995) are of the opinion that many adults cannot explain their expert knowledge and performance and often fail to spontaneously transfer domain-specific knowledge to a new setting. What this suggests is that metacognitive knowledge need not be explicit to be useful and, in fact, may be implicit in some situations. Regulation of cognition typically includes at least three components, planning, monitoring, and evaluation (Ozturk, 2016; Ozturk, 2017; Schraw & Moshman, 1995). Planning involves the selection of appropriate strategies and the allocation of resources.

### **3.2 Metacognitive strategies**

Strategies that students engage in include to plan, monitor, and regulate their cognition. Planning and forethought activities can include setting specific target or cognitive goals for learning, activating prior knowledge about the material to be studied, as well as activating any metacognitive knowledge students might have about the task or themselves (Garcia et.al, 2015; Pintrich, 2000). Pintrich (2000) further explains that an important aspect of regulating cognition is the monitoring of cognition. Students have to become aware of and monitor their progress toward their goals, monitor their learning and comprehension, in order to be able to make any adaptive changes in their learning. Cognitive control and regulation include the types of cognitive and metacognitive activities that individuals engage in to adapt and change their cognition. As in any model of regulation, it is assumed that attempts to control, regulate, and change cognition should be related to cognitive monitoring activities that provide information about the relative discrepancy between a goal and current progress toward that goal (Zimmerman and Martinez-Pons, 1986). For example, if a student is reading a

textbook with the goal of understanding (not just finishing the reading assignment), then as the student monitors his or her comprehension, this monitoring process can provide the student with information about the need to change reading strategies.

Planning includes goal setting, activating relevant background knowledge, and budgeting time. Previous research suggests that experts are more self-regulated compared to novices largely due to effective planning, particularly global planning that occurs prior to beginning a task.

According to Pressley & Ghatala (1990), monitoring includes the self-testing skills necessary to control learning. Adults monitor at both the local (i.e., an individual test item) and global levels (i.e., all items on a test). Further, even skilled adult learners may be poor monitors under certain conditions. Evaluation refers to appraising the products and a regulatory process of one's learning (Schunk, 2000). Some common examples include re-evaluating one's goals, revising predictions, and consolidating intellectual gains. Rehearsal strategies include attempts to memorize material by repeating it over and over or other types of "shallow" processing. On the contrary, elaboration strategies involve a "deeper" approach to learning, by attempting to summarize the material, put the material into one's own words, and so forth. Finally, organizational strategies also involve some deeper processing which include the use of various tactics such as taking notes, drawing diagrams, or developing concept maps to organize the material in some manner.

Metacognitive self-regulation includes various planning, monitoring, and regulation strategies for learning, such as setting goals for reading, monitoring comprehension as one reads, and making changes or adjustments in learning as one progresses through a task. A number of researchers (Butler & Winne, 1995; Pressley, Borkowski, & Schneider, 1989) suggest that self-regulatory processes, including planning, monitoring, and evaluation, may not be conscious or explicit in many learning situations. This is probably because many of these processes are highly automated, at least among adults.

## **IV. RESEARCH METHOD**

### **1. Research Design**

This study employed a survey research design which refers "...to procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people in order to describe the attitudes, opinions, behaviours or characteristics of the population".(Cresswell, 2005: 354). Cresswell (2005) adds further that, in this procedure, survey researchers collect quantitative, numbered data using questionnaires or interviews and statistically analyse the data to describe trends about responses to questions and to test research questions or hypotheses. The present study employed a cross-sectional survey design whereby it only administered MSLQ questionnaire to a group of ESL students at one point in time. It sought to measure the current beliefs of the students as regards their self-regulation of academic learning in terms of cognition, metacognition,

### **2. Setting**

The study was conducted at a public university in Sarawak, Malaysia. The university is located about 30 kilometres from Kuching, the capital city of the state of Sarawak, Malaysia. The Sarawak campus is one of the many branch campuses of the Malaysian public university and it has a population of about 6,000 students reading diploma, degree and postgraduate courses. The main medium of instruction is English, which means that mastery of English is very vital in determining the success of the students. In this respect, it is crucial that a survey be done to determine how these students actually learn English. Hence, the survey using the MSLQ questionnaire was targeted at determining the students' trend of beliefs as regards their self-regulation of academic learning in English classes.

### **3. Participants**

The participants were students doing a diploma course in science. The subjects were chosen on the basis of cluster random sampling due to the large population of the whole campus, and the constraints of time duration to complete the study. The cluster selected was one English class out of the many English classes in the Sarawak Campus. A classroom is a cluster because it is a collective unit composed of many single units (i.e., students) will all the necessary elements included in the sample (Johnson & Christensen, 2004). The subjects comprised students within the age range of 19 to 20 years old, completed their pre-science in the same university before entering the Diploma in Science Programme. They were in their second semester of studying in the programme at the university, whereby in their semester 1 they previously had completed one English proficiency course. In their semester 2, when the survey was conducted, they were doing another English proficiency course, Preparatory English for MUET (Malaysian University English Test). The students were generally of mixed proficiency levels by virtue of their previous English grades, whereby most of them obtained grades within the range of C+ to B.

#### **4. Instrumentation**

The main instrument used in the study was the Motivated Strategies for Learning Questionnaire (MSLQ) (Appendix A) developed by a group of researchers at the University of Michigan, Ann Arbor in 1991 (Pintrich et al., 1991). There are 81 items altogether in MSLQ version 1991. The cronbach's alphas of items in MSLQ are robust, ranging from .52 to .93 indicating that the instrument reasonable factor validity (Pintrich et al., 1991).

#### **5. Data collection and analysis**

The MSLQ was administered once at the beginning of the semester to a group of 23 students. All the respondents returned the questionnaire and all could be used for statistical analysis. The data collected were scored using SPSS Version 20 for descriptive statistics on all 81 items in the MSLQ questionnaire. The results obtained were interpreted accordingly based on a scale of 1 to 7. The data were obtained from the MSLQ questionnaire administered to 23 ESL students doing a diploma course in science. The data were analysed using the SPSS Version 16 for descriptive statistics on all of the 81 items in MSLQ. The items were grouped according to the main category, for example, the academic cognition category is consisted of items 39, 46, 59, and 72 and similarly for other main categories.

## **V. RESULTS AND DISCUSSION**

### **1. Self-regulation of cognition**

The academic cognition category is consisted of four sub-categories of cognitive strategies namely, rehearsal, elaboration, organisation and critical thinking. Below are the results of descriptive statistics on the cognitive strategy – rehearsal administered on 23 student respondents.

#### **1.1 Cognitive strategy – Rehearsal**

**Table 4.1:** Cognitive strategy - Rehearsal (n=23)

Item No.	Rehearsal	Mean	SD
39	When I study for this class, I practice saying the material to myself over and over.	4.60	.49
46	When studying this course, I read my class notes and the course readings over and over.	5.0	.79
59	I memorise key words to remind me of important concepts in this class.	4.78	.42
72	I make lists of important items for this course and memorize the lists.	4.34	.98
	Average mean	4.68	.67

The results of analysis for Cognitive strategy – rehearsal in Table 4.1 indicate that the average mean score for the four items is 4.68 (SD =.67). This mean score is reasonably high against a 1 to 7 scale. Item 39 recorded a mean score of 4.60 (SD = .49) which shows that quite a big number of the students (out of 23) ‘practised saying the material to themselves over and over’. Item 46 displays a mean score of 5.0 (SD = .79) to indicate that a large number of the respondents ‘read their class notes and course readings over and over’. Item 59 recorded a mean score of 4.78 (SD = .42) to show that a reasonably large number of respondents ‘memorised key words to remind them of important concepts in class.’ Quite high also is the mean score for Item 72 (mean = 4.34; SD = .98) which reveals that a reasonably large number of the respondents ‘made and memorised lists of important items for their course.’

#### **1.2 Cognitive strategy – Elaboration**

=The cognitive strategy – elaboration below is represented by 6 items analysed for descriptive statistics as displayed in Table 4.2 below.

**Table 4.2:** Cognitive strategy - Elaboration (n=23)

Item No.	Elaboration	Mean	SD
53	When I study for this class, I pull together information from different sources, such as lectures, readings and discussions.	4.47	.99
62	I try to relate ideas in this subject to those in other courses whenever possible.	4.65	.48
64	When reading for this class, I try to relate material to what I already know.	5.13	.75
67	When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.	4.08	.94
69	I try to understand the material in this class by making connections between the readings and the concepts from the lectures.	4.39	1.07
81	I try to apply ideas from course readings in other class activities such as lecture and discussion.	3.73	1.0
	Average mean	4.40	.87

Based on the results tabulated in Table 4.2, the response from the students on Cognitive strategy – Elaboration was relatively high at an average mean score of 4.40 (SD = .87) vis-à-vis a scale of 1 to 7. Item 53 obtained a mean score of 4.47 (SD = .99) which shows that a large number of respondents ‘pulled together information from different sources, such as lectures, readings and discussions. Item 62 indicates a mean score of 4.65 (SD = .48) which is generally high implying that quite a big number (out of 23) respondents ‘tried relating ideas in their English subject to those in other courses whenever possible. Item 64 displays a mean score of 5.13 (SD = .75) which indicates a reasonably high response from the respondents. This confirms that the respondents ‘tried to related material to what they already knew.’

Item 67 displays a mean score of 4.08 (SD = .94) indicating that the respondents were generally ‘writing brief summaries of the main ideas from the readings and their class notes.’ Quite similarly is Item 69 which indicates a reasonably high mean score of 4.39 (SD = 1.07) implying that a reasonably large number of respondents were ‘trying to understand the material in their English class by making connections between the readings and the concepts from the lectures. Item 81 however shows a slightly lower mean score of 3.73 (SD = 1.0) which implies that a lesser number of respondents were ‘trying to apply ideas from course readings in other class activities such as lecture and discussion.’ The probable reason for the slightly lower score is that the students might find course readings in other class activities of little relevance to the activities in the English class.

### 1.3 Cognitive strategy – Organisation

The cognitive strategy – organisation is analysed for descriptive statistics as displayed in Table 4.3 below. This strategy is represented by items 32, 42, 49, and 63.

**Table 4.3:** Cognitive strategy - Organisation(n=23)

Item No.	Organisation	Mean	SD
32	When I study the readings for this course, I outline the material to help me organise my thoughts.	5.21	.73
42	When I study for this course, I go through the readings and my class notes and try to find the most important ideas.	4.39	1.11
49	I make simple charts, diagrams, or tables to help me organise course material.	4.43	.50
63	When I study for this course, I go over my class notes and make an outline of important concepts.	4.08	.84
	Average mean	4.52	.79

Table 4.3 above shows the mean scores of Items 32, 42, 49 and 63 for Cognitive strategy – Organisation. The response from the students was relatively high at an average mean score of 4.52 (SD = .79) against a 1 to 7

scale. Item 32 displays a mean score of 5.21 ( $SD = .73$ ) which shows that a large number of the respondents were ‘outlining the material to help them organise their thoughts.’ Item 42 (mean = 4.39;  $SD = 1.11$ ) shows that a reasonably big number of students ‘went through the readings and class notes and tried to find the most important ideas.’ Item 49 indicates a mean score of 4.34 ( $SD = .50$ ) which again, implies that a favourably high number of the respondents were making simple charts, diagrams, or tables to help them organise course material.’ Item 63 displays a mean score of 4.08 ( $SD = .84$ ) which reveals that relatively high number of respondents were ‘going over their class notes and made an outline of important concepts.’

#### **1.4 Cognitive strategy – Critical thinking**

Below is the analysis of the cognitive strategy – critical thinking using descriptive statistics on five items which include items 38, 47, 51, 66, and 71.

**Table 4.4:** Cognitive strategy – Critical thinking(n=23)

Item No.	Critical thinking	Mean	SD
38	I often find myself questioning things I hear or read in this course to decide if I find them convincing.	4.60	.58
47	When a theory, interpretation, or conclusion is presented in class or in readings, I try to decide if there is good supporting evidence.	4.26	.68
51	I treat the course material as a starting point and try to develop my own ideas.	4.21	.67
66	I try to play around with ideas of my own related to what I am learning in this course.	4.26	.61
71	Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.	4.43	.72
	Average mean	4.35	.65

Table 4.4 above shows the response for Cognitive strategy – Critical thinking which reveals an average mean score of 4.35 ( $SD = .65$ ). This implies that a relatively high number of respondents were involved in critical thinking. Item 38 displays a mean score of 4.60 ( $SD = .58$ ) indicating that quite a high number of the respondents ‘found themselves questioning things they heard or read in the course to decide if those things were convincing.’ Item 47 (mean = 4.26;  $SD = .68$ ) shows that a relatively large number of the respondents tried to decide whether or not a theory, interpretation, or conclusion presented in the class had good supporting evidence. Item 51 (mean = 4.21;  $SD = .67$ ) also demonstrates that quite a large number of the respondents were ‘treating the course material as a starting point and tried to develop their own ideas.’ Item 66 (mean = 4.26;  $SD = .61$ ) also seems to indicate that a reasonably high number of the respondents ‘were trying to play around with ideas of their own related to what they were learning in the course.’ Quite similarly, Item 71 (mean = 4.43;  $SD = .72$ ) also indicates that reasonably large number of respondents ‘whenever they read or heard an assertion or conclusion in the class, they would think about possible alternatives.’

## **2. Self-regulation of metacognition**

The metacognition category in the MSLQ is represented by 12 items grouped under self-regulated strategies.

### **2.1 Metacognitive self-regulated strategies**

The items representing metacognitive self-regulated strategies include items 33, 36, 41, 44, 54, 55, 56, 57, 61, 76, 78 and 79. The results of descriptive statistics for each item are displayed in Table 4.5 below.

**Table 4.5:** Metacognitive self-regulated strategies(n=23)

Item No.	Metacognitive self-regulated strategies	Mean	SD
33	During class time I often miss important points because I’m thinking of other things.	4.08	.79
36	When reading for this course, I make up questions to help focus my reading.	4.34	.57
41	When I become confused about something I’m reading for this class, I go back and try to figure it out.	4.52	.51
44	If course readings are difficult to understand, I change	4.47	1.20

	the way I read the material.		
54	Before I study new course material thoroughly, I often skim it to see how it is organised.	4.17	.77
55	I ask myself questions to make sure I understand the material I have been studying in this class.	4.04	.76
56	I try to change the way I study in order to fit the course requirements and the instructor's teaching styles.	4.43	.78
57	I often find that I have been reading for this class but don't know what it was all about.	4.65	.98
61	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.	3.86	.69
76	When studying for this course, I try to determine which concepts I don't understand well.	4.08	.99
78	When I study for this class, I set goals for myself in order to direct my activities in each study period.	3.69	.82
79	If I get confused taking notes in class, I make sure I sort it out afterwards.	4.30	.87
	Average mean	4.21	.81

The results of analysis in Table 4.5 reveal a relatively high level of use of Metacognitive self-regulated strategies with an average mean of 4.21 ( $SD = .81$ ). Item 33 displays a mean score of 4.08 ( $SD = .79$ ) and item 36 shows a mean score of 4.34; ( $SD = .57$ ). These two items show that quite a big number of the respondents were aware of their weakness (item 33) and that they self-regulated their learning by keeping focus through self-questioning (item 36). Item 41 displays a mean score of 4.52 ( $SD = .51$ ) which implies that a relative big number of the students were employing a self-regulated strategy of 'going back to what they were reading when they got confused and tried to figure it out.' Item 44 (mean = 4.47;  $SD = 1.20$ ) reveals that quite a big number of the respondents were 'changing their approach when they found the course readings difficult.' Quite similarly, item 54 (mean = 4.17;  $SD = .77$ ) shows that a relatively predominant number of the respondents were employing skimming strategy to see how new course material was organised.' The respondents also recorded quite a high level of use of self-questioning strategy as in item 55 (mean = 4.04;  $SD = .76$ ) to make sure they understood the material they studied in the class. Item 56 (mean = 4.43;  $SD = .78$ ) also reveals quite a high use of self-regulated strategy of changing the way they studied to fit the course requirements and the instructor's teaching styles. Item 57 (mean = 4.65;  $SD = .98$ ) shows that a generally large number of the respondents were aware of their weakness whereby they still could not understand despite reading the material. This shows that the respondents were employing a self-regulated strategy of self-awareness.

Item 61 (mean = 3.86;  $SD = .69$ ) also shows quite a big number of the respondents employing a self-awareness strategy as they tried to think through a topic and decided on what they were supposed to learn from it. Item 76 (mean = 4.08;  $SD = .99$ ) shows that a reasonably large number of the respondents were employing a self-regulated strategy of selective attention, i.e., determining which concepts they did not understand well. Item 78 (mean = 3.69;  $SD = .82$ ) shows that slightly lower number of the respondents were setting goals for themselves in order to direct their activities in each study period. The respondents also indicated that they employed self-regulated strategy of sorting out their confusion even after class as displayed by item 79 (mean = 4.30;  $SD = .87$ ).

The findings of the study provide some evidence as to the extent to which the students self-regulated their academic learning in an English class. Based on the findings, the teacher should be able to find out the extent to which students self-regulate their academic cognition in terms of strategy use, for example, cognitive strategies of rehearsal, elaboration, organisation and critical thinking. With this knowledge, the teacher should be able to guide the students into intensifying the use of those strategies to assist and facilitate their learning process. The study also provides some data on the students' self-regulation of metacognition. Again, quite similarly, the teacher can prepare lessons that would enable students to utilise their metacognition to the fullest, for example, problem solving activities. The data from the study also revealed that students need to be motivated in order to succeed in their learning.

## VI. CONCLUSION

It is recommended that in the future further research may be conducted involving a larger population sample in order to obtain a more reliable and concrete data. It is also recommended that some comparative study be done between different groups of students to find out the differences and similarities that might exist in terms of self-regulation of academic learning. Another useful future research is to correlate students' self-regulation of

academic learning to their academic performance in English. These strands of research can be conducted using a survey approach via the administration of the MSLQ.

## REFERENCES

- [1] Anderson (1995). Learning and memory: an integrated approach. New York: John Wiley & sons.
- [2] Baird, J. R., & White, R. T. (1996). Metacognitive strategies in the classroom. In D. F. Treagust, R. Duit, & B. J. Fraser (Eds.), Improving teaching and learning in science and mathematics (pp. 190–200). New York: Teachers College Press.
- [3] Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning:A theoretical synthesis. *Review of Educational Research*, 65(3), 245–281.
- [4] Chamot & O’Malley, 1994). The CALLA handbook: implementing the Cognitive Academic Language Learning Approach. Reading: Addison-Wesley Publishing Company.
- [5] Chinn and Brown (2002) Chinn, C., & Brown, D. A. (2002). Student-generated questions: A meaningful aspect of learning in science. *International Journal of Science Education*, 24(5),521–549.
- [6] Creswell, J.W.2005 Educational Research: Planning, conducting, evaluating quantitative and qualitative research. New Jersey. Pearson Prentice Hall.
- [7] Dedic, Z.R. (2014). Metacognitive Knowledge in Relation to Inquiry Skills and Knowledge Acquisition Within a Computer-Supported Inquiry Learning Environment. *Psychological Topics* 23 (2014), 1, 115-141.
- [8] García, T, M. Cueli, C. Rodríguez, & J. Krawec. (2015). Metacognitive Knowledge and Skills in Students with Deep Approach to Learning. Evidence from Mathematical Problem Solving. *Revista de Psicodidáctica*, 2015, 20(2), 209-226.
- [9] and Paloma González-Castro
- [10] Halpern, D. F. (1998). Teaching critical thinking for transfer across domains. *American Psychologist*, 53(9), 449–455.
- [11] Huffman, D. (1997). Effect of explicit problem solving instruction on high school students’ problem-solving performance and conceptual understanding of physics. *Journal of Research in Science Teaching*, 34(6), 551–570.
- [12] Koch, A. (2001). Training in metacognition and comprehension of physics texts. *Science Education*, 85(6), 758–768.
- [13] Linn, 2000) Linn, M. C. (2000). Designing the knowledge integration environment. *International Journal of Science Education*, 22(8), 781–796.
- [14] Noran Fauziah Yaakub, Habibah Elias, Rahil Hj. Mahyuddin, Nora Nohd. Nor and Mohd. Faiz Abdullah. (1993). Psychological factors in English language learning among students in Higher Education. *Research Report: Universiti Pertanian Malaysia*.
- [15] New Straits Times (NST). March 20<sup>th</sup> 2005. The unemployable Malaysian graduates.
- [16] Ozturk, N. (2016). An analysis of pre-service elementary teachers’ understanding of metacognition and pedagogies of metacognition. *Journal of Teacher Education and Educators*, 5(1), 47–68.
- [17] Ozturk, N. (2017). Assessing metacognition: Theory and Practice. *Int. J. Asst. Tools in Educ.*, Vol. 4, Issue 2, (2017) pp. 134-148.
- [18] Paris, S.G., Lipson, M.Y., and Wixson, K.K. 1983. Becoming a strategic reader. *Contemporary Educational Psychology*. 8: 293-316.
- [19] Pressley & Ghatala (1990), Pressley, M., & Ghatala, E. S. (1990). Self-regulated learning: Monitoring learning from text. *Educational Psychologist*, 25(1), 19–33.
- [20] Pressley & Wharton-McDonald (1997), Pressley, M., & Wharton-McDonald, R. (1997). Skilled comprehension and its development through instruction. *School Psychology Review*, 26(4), 448–466.
- [21] Pressley, M & Afflerbach, P. 1995. Verbal protocols of reading. New Jersey: Lawrence Erlbaum Associates.
- [22] Pressley, M., Borkowski, J., & Schneider, W. (1989). Good information processing: What is it and what education can do to promote it. *Journal of Experimental Child Psychology*, 43(2), 194–211.
- [23] Pintrich, P. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 452–501). San Diego, CA: Academic Press.
- [24] Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82, 3340.
- [25] Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review*, 7(4), 351–371
- [26] Schraw, G., Crippen, K.J, & Hartley, K. (2006) Promoting Self-Regulation in Science Education: Metacognition as Part of a Broader Perspective on Learning. In *Research in Science Education*, 36, pp.111–139.

- [27] Schunk, D. (1996). Goal and self-evaluative influences during children's cognitive skill learning. *American Educational Research Journal*, 33(2), 359–382.
- [28] Schunk, D.H. & Zimmerman, B.J. 1998. Conclusions and future directions for academic interventions. In D.H. Schunk & B.J Zimmerman (Eds), *Self-regulated learning: From teaching to self-reflective practice*, pp. 225-236, New York: Guildford Press.
- [29] Schunk, D.H. 2000. Learning theories: an educational perspective. 3rd Edition. New Jersey: Prentice Hall.
- [30] Stephanie Phang. (2006). Lack of English hinders Malaysian grads. *International Herald Tribune*. Online <https://www.ytlcommunity.com>.
- [31] Velven, J.A. (2016). *Metacognitive Learning*. Springer International Publishing Switzerland.
- [32] Wong, H. 1998. ESL Programmes at tertiary level: Balancing Policy, attitudes and Learner Realities. In Renandya.,W.A. & Jacobs, G.M. (eds). 1998. *Learners and Language Learning*. Anthology Series 39: 286-299. Singapore: SEAMEO Regional Language Centre.
- [33] Weinstein, C. E., &Mayer, R. (1986). The teaching of learningstrategies. InM. Wittrock (Ed.), *Handbook of research on teaching and learning* (pp. 315-327). New York: Macmillan.
- [34] Zimmerman, B. J., and Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *Am. Educ. Res. J.* 23: 614–628.
- [35] Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In Boekaerts, M., Pintrich, P. R., and Zeidner, M. (eds.), *Handbook of Self-Regulation: Theory, Research, and Applications*, Academic Press, San Diego, CA, pp. 13–39.

IOSR Journal Of Humanities And Social Science (IOSR-JHSS) is UGC approved Journal with Sl. No. 5070, Journal no. 49323.

Bromeley Philip "Academic Self-Regulation of Cognition and Met cognition among Undergraduates: a Malaysian Perspective." IOSR Journal Of Humanities And Social Science (IOSR-JHSS). vol. 23 no. 3, 2018, pp. 13-22.