



# **Analysis Of Primary School Students’ Self-Regulated Learning in Mastering Higher Order Thinking Skills in English Subject**

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### **ABSTRACT**

This study examines self-regulation to master higher-order thinking skills in English languages among primary school students. The design used in this study is a quantitative approach with the sample of 327 year five students in Kluang district. Self-Regulation Questionnaire was adapted to be used in data collection. The data were analyzed using inferential statistic to answer the research questions. The result shows that forethought phase, performance phase and self-reflection phase are highly correlated. The t-test result shows that there is a significant difference between males and females where female students are more self-regulated compared to male students. As a conclusion, the students still need more practice and guidance in order to be a self-regulated learner in mastering higher-order thinking skills in English language.

**Keywords:** Self-regulation, Higher-order thinking skills

### **INTRODUCTION**

Malaysian education structure has been changed several times for better accomplishment to address the issues of all Malaysian and set up the country to contend in the global level. Consistent with that, the mission of Ministry of Education Malaysia is to maintain a quality education system that creates individuals to their maximum capacity and satisfies the desires of the country. In order to achieve the aims and goals of Ministry of Education, self-regulation among students is important besides fostering the process of teaching and learning in the classroom. Self-regulation abilities facilitate goal-oriented actions and optimal adjusting to emotional and cognitive challenging stimulating throughout successful regulation of feelings, emotions, behaviours, and cognitions (Zenner, Herrnleben-Kurz & Walach, 2014). “Create and upgrade students’ intellectual limit concerning to sensible, essential and creative thinking” is one of the targets of secondary school education in Malaysia which was introduced by Curriculum Development Center (Curriculum Development Center, 1989, p.2). Therefore, Malaysian Ministry of Education emphasizes on the elements of higher-order thinking skills (HOTS) which has been stated in the Malaysia Education Blueprint (MEB) (2013-2025). This shows that we are at the stage of producing and developing students with HOTS. In order to achieve the goal of Malaysia Ministry Education, self-regulation among students is important to master HOTS.

21<sup>st</sup> century main competence emphasizes on self-regulated learning from kindergarten to higher education (Trilling & Fadel, 2012). Self-regulation is a key ingredient in learning performance as shown in a large number of studies (McClelland & Cameron, 2011; Daniela, 2015). In the blueprint of 21<sup>st</sup> century main competence, it is stated that self-regulated learning has become a vital topic in education and in educational research because it is an essential requirement for successful life-long learning in the 21<sup>st</sup> century. Since both self-regulation and higher-order thinking skills were emphasized equally by the Malaysian ministry of education, this study examined the relation between self-regulation and higher-order thinking skills.

### **BACKGROUND OF PROBLEM**

After many researchers have been carried out, the paradigm of education is being changing from traditional method of teaching and learning to higher-order thinking skills (HOTS). Various nations have embedded HOTS in their national curriculum. Thus, Malaysia made a positive move to implement HOTS in current curriculum to be at equal level with the international education system. In order to meet the need of future nation, government has highlighted the importance of HOTS. 2013 is the year where HOTS was conducted for the first time in mathematics and science subjects (Blueprint Ministry of Education, 2013). Since it is new to Malaysian education system, many questions about the execution and the success of HOTS has been generated.

According to Curriculum Development Centre (2002), without relying too much on instructors, the learners need to self-guide and self-pace in learning. Malaysian Strategic Research Centre (1994) reveals that the ordinary teaching and learning procedures in Malaysia lacks the substance to generate self-regulated learners. Self-regulation in learning is important as it links to positive educational outcomes. This was supported by previous studies by Lai and Gu (2011) and Whipp and Chiarelli (2004). At the same time, higher-order thinking skills have been emphasized by Malaysian Ministry of Education in learning English because subject learning is a skill learning which requires thinking and creativity to apply those skills that have been learned.

Researchers have conducted many researches on HOTS in different angles. According to Rosmawati (2009), there were many efforts made to infuse thinking skills in the English Subject classroom. However, most of the time teaching strategies that promote thinking skills were underutilized due to limited pedagogical content knowledge. Currently, many researchers focus on teaching HOTS in science and mathematics subjects. For example, a research by Murray (2011) focuses on implementing higher-order thinking in middle school mathematics classroom. According to Rosli and Maarof (2017), more studies should be carried on the factors that can contribute in HOTS.

### **PROBLEM STATEMENT**

Malaysian government emphasizes both higher-order thinking skills and self-regulated learning to be practised since young. However, many challenges faced by the students to master HOTS. A research by Heong, Yunosb and Sulongd (2010) reveals that the application of higher-order thinking skills is at low level and students only acquire higher-order thinking skills knowledge and participate in higher-order thinking skills related activities at moderate level. In addition, students are more dependent on teachers in learning where most of the students only rely on the exercises given by teachers and teachers' teaching.

Due to the challenges and obstacles, the aim of Ministry of education to produce more students with HOTS might be affected. Besides that, Malaysia might lack of citizens with higher-order thinking skills in order to compete in the international level (Baki, 2016). When students depend more on the teachers, they will not become a self-regulated learner. If this continues, the students will struggle to answer examination question which will be more on analytic and critical thinking.

### **RESEARCH QUESTIONS**

There are two research questions in this study which are:

- a) Is there any relationship between forethought phase, performance phase and self-reflection phase in mastering higher-order thinking skills in English subject?
- b) Is there any different on students' self-regulation in mastering higher-order thinking skills across gender in English subject?

### **RESEARCH METHODOLOGY**

#### **Research Design**

This study uses a quantitative approach. Specifically, the correlational design using survey was applied to identify, examine and describe the relationship between the phases and self-regulation level across gender in mastering Higher-order thinking Skills (HOTS). Zimmerman Self-regulation Model is used as a framework for collecting data in the HOTS area.

#### **Participants**

The research population for this study comprised all the year five students who are eleven years old and studying at national primary schools. In this study, the participant had to be studying in national primary schools in Kluang, Johor, the district where collection of data occurs and only participants who are willing to participate are selected. The population of national primary school students in Kluang is 14 214 students with 2 255 (15.86%) of year five students. Based on Krejcie and Morgan sample size table, the sample for 2 255 number of students is 327.

#### **Instrument**

The research instrument is adapted from self-regulation questionnaire. In this study, questionnaire is used to gain relevant data parallel to the study's objectives and research questions. The developers of the original questionnaire were Gaumer, Soukup, Noonam and McGurn (2015). 17 items covers the forethought phase of self-regulation in mastering HOTS in English subject, 19 items covers the questions on performance phase while 6 items that consists of self-reflection phase questions. The scale used to measure the items consists of five scales which includes not at all true for me, sometimes true for me, quite true for me, true for me and very true for me.

### Data Analysis

Inferential statistic which is Pearson correlation is used to answer research question 1 related to the relationship between forethought phase, performance phase and self-reflection phase in mastering higher-order thinking skills in English subject, Meanwhile, independent t-test is performed to answer research question 2 related to the difference on students' self-regulation in mastering higher-order thinking skills across gender in English subject).

### RESULT & DISCUSSION

Data from the students' questionnaires were obtained. The analysis process involving the use of Windows SPSS programme for questionnaire data was conducted.

**Table 1: Demographic information**

Gender		
Male	Female	
152 (46.5%)	175 (53.5%)	
Race		
Malay	Chinese	Indian
261 (79.8%)	35 (10.7%)	31 (9.5%)

Out of 327 respondents, 152 were male and 175 were female with 46.5% and 53.5% respectively. While for the race of the respondents who participated in this study, 261 (79.8%) respondents are Malay, 35 (10.7%) Chinese and 31(9.5%) Indians.

### Result and Discussion Research Question 1: Relationship between forethought phase, performance phase and self-reflection phase in mastering higher-order thinking skills in English subject

Pearson correlation analysis was carried out to determine the relationship between forethought phase, performance phase and self-reflection phase in mastering higher-order thinking skills in English subject. Table 2 shows the analysis for research question 1.

**Table 2: Analysis for relationship between self-regulation phases**

		Forethought	Performance	Self-Reflection
Forethought	Pearson Correlation	1	.796**	.741**
	Sig. (2-tailed)		.000	.000
	N	327	327	327
Performance	Pearson Correlation	.796**	1	.801**
	Sig. (2-tailed)	.000		.000
	N	327	327	327
Self-Reflection	Pearson Correlation	.741**	.801**	1
	Sig. (2-tailed)	.000	.000	
	N	327	327	327
**. Correlation is significant at the 0.01 level (2-tailed).				

The correlation between forethought phase and performance phase shows a positively high correlation with  $r = .796$  for  $n = 327$ . The value of  $p < 0.01$ , thus the correlation between forethought phase and performance phase is statistically significant.

The correlation between performance phase and self-reflection phase shows a positively high correlation with  $r = .801$  for  $n = 327$ . The value of  $p < 0.01$ , thus the correlation between performance phase and self-reflection phase is statistically significant.

The correlation between self-reflection phase and forethought phase shows a positively high correlation with  $r = .741$  for  $n = 327$ . The value of  $p < 0.01$ , thus the correlation between forethought phase and self-reflection phase is statistically significant. The null hypothesis is rejected. Table below shows the correlation between the three phases of self-regulation.

The correlation between forethought phase, performance phase and self-reflection phase show a positively high correlation. As a result, the correlation between forethought phase, performance phase and self-reflection phase are statistically significant. This means that there is a significant relationship between forethought phase, performance phase and self-reflection phase. Webber et al. (2010) mentioned that individual with high motivation will lead them to self-monitor and self-control their progress. This is because highly motivated person will observe and control their own progress in order to achieve their goals in any way (Zenner,

Herrleben-Kurz & Walach, 2014). Their aim is to achieve their goal. Thus, it can be concluded that forethought phase has significant relationship with performance phase because the relationship between motivation and self-monitoring is highly correlated (McClelland & Cameron, 2011; Daniela, 2015). Ash et al. (2005) informed that reflection exercises can possibly enhance students' performance and also enable educators to assess the nature of reasoning exhibited by individual students by accessing their interior points of view about the exercises. The study passes on the strength of student self-reflection as a learning action in connection to enhanced performance, inspiration, and metacognitive reasoning. Thus, the study supports the current study finding which shows a positive relationship between performance phase and self-reflection phase. Self-reflection and goal setting have a motivating force combination that changes learning. At the point when students reflect and after that deliberately set goals from those reflections, wonderful things begin to occur (Harford, 2008). According to Harford (2008), students who set new goals after self-reflection invest intensely in their own learning, perceive qualities and subsequent stages and search out chances to learn and request explicit criticism for their self-awareness. Therefore, self-reflection phase and forethought phase have a strong relationship as revealed from the findings of the study. There is a strong relationship between these three phases which means the phases are strongly related to each other. This finding is supported by Zimmerman Model of Self-Regulation where he emphasized the three phases are a cyclical phase which cycles from forethought phase to performance phase to self-reflection phase to forethought phase. The nature of a cyclic model is that the phases in a cycle should be related to each other otherwise it is not a cyclic process (Thompson, 1989).

**Result and Discussion Research Question 2: Is there any different on students' self-regulation in mastering higher-order thinking skills across gender in English subject**

Research question two was to investigate the level of students' self-regulation in mastering higher-order thinking skills across gender in English subject. Table 3 shows the analysis for research question 2.

**Table 3: Analysis for independent t-test**

	Gender	N	Mean	t	Significant (2-tailed)
Forethought phase	Male	152	2.59	-2.256	0.025
	Female	175	2.82		
Performance Phase	Male	152	2.95	-2.509	0.013
	Female	175	3.22		
Self-Reflection phase	Male	152	3.14	-3.147	0.002
	Female	175	3.46		
Overall	Male	152	2.89	-2.858	0.005
	Female	175	3.16		

The group statistic table shows that the mean for each phase is higher for female compared to male. Forethought phase is with the mean of 2.82 (female) and 2.59 (male), performance phase is 3.22 (female) and 2.95 (male) and for self-reflection phase is 3.46 (female) and 3.14 (male). The overall mean for self-regulation regulation in mastering higher-order thinking skills across gender in English subject is 3.16 (female) with the standard deviation of .79 and 2.89 (male) with the standard deviation of .93. Thus, it can be concluded that self-regulation in mastering higher order thinking skills in English subject is higher among females compared males.

An independent-samples t-test was conducted to compare the level of students' self-regulation in mastering higher-order thinking skills across gender in English subject. There was a significant difference between male and female in self-regulation to master higher order thinking skills in English subject as the significant value for all the three phases and overall significant is  $p < 0.05$ . The result suggest that female are more self-regulated learners compared to male in mastering higher order thinking skills in English subject.

The result reveals that there was a significant difference between male and female in self-regulation to master higher-order thinking skills in English subject which female are more self-regulated learners compared to male in mastering higher-order thinking skills in English subject. Adiguzel and Orhan (2017) who investigated on the relation between English learning students' levels of self-regulation and metacognitive skills and their English academic achievements. Their result revealed that students' self-regulation skills contrasted for the female students compared to male students which is similar to the current study that shows female students are more self-regulated learners compared to male students. The result of current study is consistent with past research by Saad, Tek and Baharom (2009) on self-regulated learning amongst Malaysian Science students. The result indicates that there were defences in self-regulation across gender where girls reported with higher level of self-regulatory learning compared to boys. This result is also supported by another research by Saido and Siraj (2015) that focuses on higher-order thinking skills among secondary school students in science learning where the result indicated that male students are lower in thinking skills compared to female students. Maria and Pedro (2004) (as cited in Saad et al. 2009) hypothesized that females demonstrate a more versatile cognitive

inspirational pattern than males. In Malaysian setting, such theorisation could be bolstered by the way that, females' accomplishment is higher than guys in the National Standardized Examinations, for example, Pentaksirfan Tingkatan 3 (PT3) and Sijil Pelajaran Malaysia (SPM). From research by Anderman and Young, 1994; Zimmerman and Martinez, 1990 (as cited in Saad et al 2009) that analyzes whether gender orientation can be separated as for the utilization of self-regulatory learning procedures, it was discovered that, over the two components of self-regulated learning, females demonstrated more tendency towards task or learning procedures, while males accentuated more on performance goals.

## CONCLUSION

The different intellectual or cognitive strategies associated with self-regulation emphasize the function of critical thinking or higher-order thinking as a subprocess that may empower students to change their psychological capacities into good academic achieving. On the other hand, the proactive procedure of self-regulation may empower students to get the academic ability of higher-order thinking, for this situation, as showed by the capacity to analyse, synthesis, and evaluate (Ignatavicius, 2001). Ignatavicius (2001); Leung and Kember (2003); Phan (2006); Mirici and Sari (2021) have revealed, higher-order thinking is a psychological expertise that empowers students to utilize profound processing strategies in their learning to dismember and assess classroom materials. Specifically, theoretical framework by Zimmerman (1994, 2002) proposes that higher-order thinking may influence its commitment in the self-regulation phase processes. From these studies, it is clear that during a specific given tasks there is an engagement with higher-order thinking where the students deal with uncertainty, assume liability for their activities, and to create certainty and self-efficacy sincerity when faced with hasty decision making (Kuiper, 2002).

The results of this study have implications to students, teachers and parents. In order to acquire higher-order thinking skills, the students need to be a critical thinker and think out of the box which needs to be practised since young. When it comes to English subject, the students need to use their higher-order thinking skills especially in their writing. There result of this study will motivate the students to improve their self-regulated learning in mastering higher order thinking skills. Besides that, the students can relate each phase in order to achieve higher level of self-regulated learning in mastering higher-order thinking skills. Besides that, the teachers will be aware of the relationship between forethought phase, performance phase and self-reflection phase in mastering higher-order thinking skills in English subject and also the levels of self-regulation in mastering higher-order thinking skills across gender in English subject. Besides that, this study helps the parents to identify the differences in self-regulation among male and female.

This study was carried out examine self-regulation in mastering higher-order thinking skills in English subjects among primary school students. For the future study, it is recommended to include sample from year one to year six in order to test the self-regulation level among primary school students in more detailed and to see the differences with the current findings. Next, this study used Zimmerman self-regulation model in order to test students' self-regulation level. It is recommended that future researcher use different self-regulation model or use a combination of self-regulation model in order to test students' self regulation in mastering higher order thinking skills. Besides that, future studies can focus on higher-order thinking skills in different subject besides English. The same study could be carried out using qualitative analysis since this study only focuses on quantitative approach in order to get more detailed findings. Furthermore, it is recommended that future study focuses on different factors that can contribute to the mastery of higher-order thinking skills as this study focused on self-regulated learning.

In a nutshell, this research identified that students need more exposure and guidance in order for them to be a self-regulated learner to master higher order thinking skills. This study have positive implications to groups of people and thus this study help them to understand more on self-regulation and higher-order thinking skills. It would be good if future researcher could consider the recommendation of future research in order to get more information and findings.

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