UNIVERSITI PUTRA MALAYSIA

ASSESSMENT OF THINKING SKILLS IN RELATION TO READING AND WRITING IN ENGLISH AMONG MALAYSIAN UNIVERSITY STUDENTS

YAN ZIGUANG

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By

YAN ZIGUANG

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

August 2017

DEDICATION

To my Heavenly Grandmother, in whose presence I find comfort and strength

and

To Di Wentian, my blessed Grandfather who always supports and encourages me

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

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Chairman : Helen Tan, PhD
Faculty : Modern Languages and Communication

Thinking skills has been the central aim of education because it not only enables participants to become more successful in learning but for them to discover their own potential in order to contribute to the development of society (Barak, Ben-Chaim, & Zoller, 2007). However, lack of thinking skills is a big issue, especially among graduates. Many employers complained that graduates were merely proficient in academic knowledge but lacked soft skills such as analytical skills (Shakir, 2009). Consequently, the trend of unemployment rate is increasing in Malaysia (The Malaysia Statisitics Department, 2011). This study therefore aimed to investigate the thinking skills performance of the tertiary level participants through their application of thinking skills in a reading comprehension test and a writing test.

To achieve the general objective, the study first investigated the participants' perception of thinking skills that were infused in the classroom instructions. Second, the participants' thinking skills were investigated in a reading comprehension test and a writing test. Finally, the scores obtained in the reading and writing tests were correlated with the independent variables: departments (Communication, Malay, Foreign languages and English), MUET band scores (lower than 3, Band 3 and Band 4) and scores of reading and writing strategies (low, medium and high).

To realize the above objectives, a quantitative method was adopted as the main design of the study. A total of 218 participants were randomly selected from freshmen who were enrolled in the first semester of 2014/2015 in the Modern Languages and Communication Faculty of UPM. Three instruments were used in the study. The first was a set of questionnaire which was developed to obtain results of the participants'

perceptions of the infusion of thinking skills in classroom instructions. The second instrument was a series of reading comprehension test questions that were formulated based on Bloom's taxonomy. The third instrument was an argumentative essay in which the participants' employment of thinking skills in the writing test was evaluated. Finally, the data obtained from these instruments was analyzed using SPSS.

Based on the results, it showed that majority of the participants strongly believed that thinking skills were infused in the classroom teaching. Generally, in the reading and writing tests, participants' thinking skills performance was better in lower order thinking skills (LOTS) than in higher order thinking skills (HOTS). In comparing participants' thinking skills between different departments, the results illustrated that English language department participants obtained a higher median scores in the reading and writing tests compared to other departments' participants. As for the MUET bands, participants with MUET band 4 obtained higher median scores when compared with participants of other MUET Bands. The results also revealed that the usage of reading and writing strategies did not affect participants' thinking skills performance in the reading comprehension and writing test. The results of the relationship between students' thinking skills performance in reading and writing showed a positive co-relation, which means that the more proficient usage of thinking skills in the reading comprehension test, the more proficient application of thinking skills was displayed in the writing test. The results of the study are significant as they provide the evidence that freshmen still need to improve their ability of thinking skills. The development of LOTS and HOTS could not be separated because any inability in the LOTS could affect HOTS. One possible solution, perhaps, is by integrating LOTS and HOTS practices into the teaching and learning of reading and writing by the tertiary institution instructors.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

PENILAIAN KEMAHIRAN BERFIKIR BERKAITAN DENGAN MEMBACA DAN BERTULIS DALAM BAHASA INGGERIS DALAM KALANGAN PELAJAR UNIVERSITI MALAYSIA

Oleh

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Ogos 2017

Pengerusi : Helen Tan, PhD
Fakulti : Bahasa Moden dan Komunikasi

Kemahiran berfikir telah menjadi tujuan utama dalam pendidikan kerana ia bukan sahaja membolehkan pelajar-pelajar menjadi lebih berjaya dalam pembelajaran dan juga membolehkan mereka mengetahui potensi diri sendiri supaya menyumbang kepada pembangunan masyarakat (Miri, David, & Uri, 2007). Walau bagaimanapun, kekurangan kemahiran berfikir adalah satu isu yang besar, terutamanya di kalangan siswazah. Ramai majikan mengadu tentang walaupun siswazah adalah mahir dalam pengetahuan akademik tetapi mereka tidak mempunyai kemahiran insaniah seperti kemahiran analitikal (Shakir, 2009). Akibatnya, kadar pengangguran di Malaysia semakin meningkat (The Malaysia Statisitics Department, 2011).Tujuan kajian ini adalah menyiasat prestasi kemahiran berfikir para pelajar di peringkat pengajian tinggi melalui aplikasi kemahiran berfikir dalam ujian pemahaman membaca dan ujian bertulis.

Untuk mencapai objektif utama, kajian ini menyiasat persepsi pelajar terhadap kemahiran berfikir yang diselitkan dalam pengajaran di bilik darjah. Selain itu, kemahiran berfikir pelajar telah disiasat melalui ujian pemahaman membaca dan ujian bertulis. Akhirnya, skor yang diperolehi dalam ujian membaca dan bertulis telah dikaitkan dengan pembolehubah bebas: jabatan-jabatan (komunikasi, bahasa Melayu, bahasa asing dan bahasa Inggeris), skor MUET (rendah daripada Band 3, Band 3 dan Band 4) dan skor membaca dan bertulis strategi (rendah, sederhana dan tinggi).

Untuk mencapai tujuan di atas, kaedah kuantitatif telah dilaksanakan sebagai reka bentuk kajian yang utama dalam kajian ini. Seramai 218 peserta telah dipilih secara rawak daripada kumpulan mahasiswa dan mahasiswi yang telah mendaftar ke Fakulti Bahasa Moden dan Komunikasi pada semester pertama 2014/2015 di UPM. Tiga instrumen telah digunakan dalam kajian ini. Yang pertama ialah set soal selidik yang dibentuk untuk mendapatkan keputusan tentang persepsi peserta mengenai penyerapan kemahiran berfikir dalam pengajaran di bilik darjah. Instrumen kedua ialah siri soalan tentang ujian pemahaman membaca yang dirangka berasaskan Taksonomi Bloom. Instrumen ketiga ialah karangan argumentasi untuk menilai kemahiran berfikir peserta dalam ujian bertulis. Akhirnya, data yang diperolehi daripada tiga instruments telah dianalisis dengan menggunakan SPSS.

Keputusan menunjukkan majoriti peserta amat percaya bahawa kemahiran berfikir telah diselitkan dalam pengajaran di bilik darjah. Umumnya, dalam ujian membaca dan ujian bertulis, prestasi kemahiran berfikir peserta adalah lebih baik dalam LOTS berbanding dengan HOTS. Semasa membandingkan kemahiran berfikir peserta antara jabatan-jabatan yang berlainan, keputusan analisis menunjukkan peserta dari jabatan bahasa Inggeris mendapat skor median yang lebih tinggi dalam ujian membaca dan bertulis berbanding dengan peserta dari jabatan-jabatan lain. Selain itu, peserta dengan MUET band 4 mendapat skor median yang lebih tinggi berbanding dengan peserta dengan other skor MUET. Keputusan ini juga menunjukkan penggunaan membaca dan bertulis strategi tidak menjejaskan prestasi kemahiran berfikir peserta dalam ujian pemahaman membaca dan ujian bertulis. Keputusan hubungan antara prestasi kemahiran berfikir pelajar dalam membaca dan menulis yang linier positif, bermaksud bahawa penggunaan kemahiran berfikir yang lebih cekap dalam ujian kefahaman membaca, aplikasi kemahiran berfikir yang lebih mahir akan dipaparkan dalam ujian bertulis. Keputusan kajian ini adalah penting kerana ia membuktikan bahawa mahasiswa dan mahasiswi masih perlu meningkatkan keupayaan kemahiran berfikir mereka. Pembangunan LOTS dan HOTS tidak boleh dipisahkan kerana apa-apa kegagalan dalam LOTS boleh menjejaskan HOTS. Satu penyelesaian yang mungkin adalah mengintegrasikan LOTS and HOTS amalan ke dalam pengajaran dan pembelajaran membaca dan bertulis oleh pengajar institusi pengajian tinggi.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Declaration by graduate student

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This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

HOTS	Higher-order Thinking Skills
LOTS	Lower-order Thinking Skills
MUET	Malaysian University English Test

CHAPTER 1

INTRODUCTION

This chapter begins with the background of the study, discussing the issues of thinking skills in Malaysia and worldwide. The problem statement follows to explain the need for doing a study on the evaluation of students' thinking skills via a reading test and a writing test. Research objectives, research questions, and hypotheses are presented to further illustrate the aims of the study. To establish an overview of the study, both the conceptual framework and theoretical framework are presented. Subsequently, the significance of the study and definition of terms end the chapter.

1.1 Background of the Study

In the present information era, students are surrounded by a tremendous amount of information, which is accessible from different sources: online databases, books, articles, newspapers, and, through websites, blogs, and social networking. Students are expected to handle an unprecedented amount of information, especially when they are tertiary students who need to do assignments and self-directed learning. Thus, often the varied tasks require them to be equipped with skills that enable them to think for themselves, and be self-initiating, self-modifying, and self-directing (Costa, 2001). In order words, they are required to activate their cognitive skills to help them solve problems and to face challenges. Additionally, students in the process of their tertiary education are also preparing themselves for the work place. These days, national governments and employers alike have a keen interest in hiring individuals who are educated to be able to think well and to think for themselves (Pithers & Soden, 2000). Improving the quality of thinking skills has been the central aim of education for a long time because it not only enables students to become more successful in learning but also enables them to discover their own potential in order to contribute to the development of society (Barak, Ben-Chaim, & Zoller, 2007).

Developing students to become good thinkers is an increasingly recognized primary goal of tertiary education (Altbach, Reisberg, & Rumbley, 2009). Gelder (2005) emphasized that the main goal of education, at all levels, is to help students to establish and develop general thinking skills, especially critical thinking skills. It is obvious that schools play a major role in training students to develop their thinking skills (Mohd, 1994).

According to the Ministry of Higher Education Malaysia (2006), graduates should be able to think in a critical, creative, innovative, and analytical manner in the utilization of knowledge. They should also master the ability to expand and improve thinking skills, and to provide ideas and alternative solutions. And the public universities must introduce and infuse soft skills which include critical thinking and problem solving skills in the undergraduate syllabus (Ministry of Higher Education Malaysia, 2006).

1.2 Problem Statement

Although these new trends suggest students should master thinking skills, the state of thinking skills is not very encouraging. In the Malaysia context, Rosnani and Suhailah's (2003) study reported that after elven years of schooling, students could not use critical thinking skills in their classes nor the real life situation. In Malaysia, as Lie, Fei, and Ismail (2012) reported, a large number of Malaysian undergraduates were not able to respond critically to given information and consequently, they were not able to move on to create new ideas and new perspectives. Most of them had a tendency to accept ideas as they were presented. Lie, et al. (2012) pointed out that undergraduate and even postgraduate students seemed to have problems in listening, thinking, speaking, reading, and writing critically. Pandian (2007) and Koo (2003; 2008) supported this argument, and the empirical data of these studies indicated that Malaysian undergraduates were indeed lacking in their ability to think critically. As same as these studies, Veeravagu, Muthusamy, Marimuthu, and Subrayan (2010) found that Malaysian undergraduates could not handle the questions in higher-order thinking skills level. In classroom, Khan & Inamullah(2011) discovered that teachers more frequently ask the students lower-order thinking skills questions. Furthermore, Peen and Arshad (2014) reported that Malaysian students were familiar with lower-order thinking skills questions because their lecturers are prone to asking LOTS questions. As such, in Malaysia, thinking skills development is an issue for both students and lecturers.

In China, Wen and Liu (2006) found that thinking skills can affect the effectiveness of writing of English majors' theses. Their study reported that many English major students lacked higher-order thinking skills, which led to an impact on their graduate theses, whereby they only listed problems without solving the problems.

In the workplace, many employers criticized that graduates were merely proficient in academic knowledge but lacked soft skills such as analytical skills (Shakir, 2009). Unemployment becomes one of the obvious negative results due to the lack of thinking skills. This was duly emphasized by the Prime Minister of Malaysia in 2007, who, in his Budget speech, stated that the number of unemployed university graduates had reached up to 31,000 (Shakir, 2009). In support, the Department of Statistics Malaysia (2011) reported that the trend of the unemployment rate is increasing in Malaysia. However, the increase in unemployment is not due to lack of job vacancies in Malaysia. Based on information on job vacancies and job placement in Peninsular Malaysia in 2012, job vacancies were in fact increasing from year to year (Hanapi & Nordin, 2014). However, these job vacancies were not being filled by workers, and this is often attributed to the lack of critical and analytical skills among the graduates. Obviously, the graduates haven't prepared the thinking skills. Fong, Sidhu and Fook (2014) examined postgraduate students' readiness for careers with the 21st century skills. They found that students articulated successfully in using computer skills, collaborating and lifelong learning in being leaders but lacked critical and creative thinking.

In the latest Malaysia Higher Education Blueprint 2015-2025, to improve quality of graduates, thinking skills are listed as one of the four essential attributes of students (Ministry of Education Malaysia, 2015). As such, developing capacities of thinking skills is necessary for students when they are entering college. It could directly influence their academic success and employability.

Although the state of thinking skills is not very good, students often are not fully aware about their deficiencies in terms of thinking skills. The National Higher Education Research Institute in Malaysia conducted a study as early as 2003, and found that 561 unemployed graduates overrated themselves, believing that they were well qualified and met all requirements of the regular job market (National Higher Education Research Institute, 2003). Other studies also noted that not all students are well prepared to think critically (Crenshaw, Hale, & Harper, 2011; Hosler & Arend, 2012) even though Rodzalan and Saat's (2015) study purportly claimed that Malaysian students perceived themselves as having high critical thinking and problem solving skills. This further confirms the notion that students themselves are unaware of their limitation in the area of critical thinking. Additionally, Paul (2005) noted that most college faculty assumed that they were already teaching students thinking skills. Their assumption may have led to an oversight to incorporate the teaching of critical thinking in the university curriculum. Such oversight can be addressed by having assessment of critical thinking of tertiary students. In fact, Nicol (2009) opines that early formative assessment and feedback on critical thinking are important in order for first-year students to obtain a clear understanding of what is required for tertiary study. First-year students need to learn how to assimilate into the culture of the university, while also being given the skills to take control of their own learning (Nicol, 2009). Determination of freshmen's thinking skills performance could provide evidence for the students themselves, the instructors, and curriculum designers alike to take appropriate steps to nip the problem in the bud. Additionally, early in 1995, Daly emphasized that first-year students must develop thinking skills and must have thinking skills by the end of their senior year if they want a job (Daly, 1995). To summarise, critical thinking skill is not only an indispensable skill for achieving success at tertiary level education but also a valuable asset for the procurement of a place in the job market.

1.3 Objectives of the Study

Since thinking skill is crucial for securing a job and in view of the importance of the English language as a vehicle for thought expression this study has formulated measures to investigate students' thinking skills by way of a reading comprehension test and a writing test in English. In the Malaysian context, thinking skills have been chosen to be implemented in all higher learning institutions in Malaysia (Ministry of Higher Education Malaysia, 2006). Therefore, to test how well the thinking skills have been embedded in the classroom, the study first obtained views from the students to gauge their ability to express thinking skills in the reading test and writing test.

To get an insight of students' thinking skills' performance in assessments, reading and writing tests were formulated as instruments for the study. Both reading and writing involve the thinking process. For ESL readers, the reading process is a critical thinking process, which involves psychological, linguistic, and sociological aspects (Rivers, 1981).Writing is not only a simple task but also a process of thinking. Writing could reflect people's thinking, so some researchers have defined/supported that writing as a form of thinking (Smith, 2004; Turuk, 2010; Wellington, 2003). Another reason for selecting reading and writing as instruments is because both skills are intimately intertwined. (Paul & Elder, 2006). Paul and Elder (2006) further noted that any significant deficiency or superiority in reading entails a parallel deficiency or superiority in writing. In reading and writing, since the process could not be observed, so the reading strategies and writing strategies were both investigated as manifestations of the students' abilities to demonstrate their thinking skills. In addition, the study intended to establish the relationship between thinking skills' performance in the reading comprehension test and writing test through statistical means. The study also involved participants from a Social Science and Humanities Faculty from a local university in Malaysia. The reasons are two folds. Firstly, the researcher is a student there and is familiar with the site. Secondly, the students came from four departments (Malay, English, Foreign Languages and Communication). According to Entwistle's (2000) learning-teaching model, departmental characteristics could affect ways of learning and studying. The nature of the academic discipline could influence the kind of thinking strategies students use to learn. Different disciplines would pose different demands on the way subject matter is studied; therefore, the differences in the students' thinking skills performance were studied in the present research. The departmental factors would contribute to thinking performance but the studies on this are limited. This study would narrow the gap by comparing different thinking skills performance among the selected departments' participants. Such comparison would not only help to highlight the levels of thinking skills performance but would also help to identify the gaps which would thereby inspire the effort to develop thinking skills. The premise of this research was then translated into specific research questions to guide the attainment of the intended research outcomes. Additionally, as for the freshmen's instructors, they should understand their responsibility. They should scaffold students' study of thinking skills by making the skills explicit, asking students about their learning from different perspectives, and presenting them with structured opportunities. Therefore, the students' views of thinking skills in the classroom infused by the instructors will first be investigated. As such, the research questions are presented in the next section.

1.4 Research Questions

1) What is the students' perception on the infusion of thinking skills in the classroom?
2) How do students perform in reading with regard to the use of thinking skills?
3) Is there a significant difference in students' thinking skills performance in reading according to:
   a) Departments at the Faculty of Modern Languages and Communication. (English, Malay, Foreign languages, and Communication)
   b) MUET band scores
   c) Reading strategy
4) How do students perform in writing with regard to the use of thinking skills?
5) Is there a significant difference in students' thinking skills performance in writing according to :

a) Departments at the Faculty of Modern Languages and Communication
b) MUET band scores
c) Writing strategy

6) What is the relationship between students' reading and writing performance in relation to thinking skills?

1.5 Theoretical Framework

Based on the main purpose of the study, all instruments used to evaluate thinking skills were based on Bloom's taxonomy. Thus, this taxonomy is a major underpinning for the theoretical foundation of the study as it is able to explain the phenomenon of thinking skills and the thinking process. This taxonomy provides a continuum of six levels of thinking skills, ordered from Lower Order Thinking Skills (LOTS), which consist of *Knowledge*, *Comprehension* and *Application*, to Higher Order Thinking Skills (HOTS), comprising *Analysis*, *Synthesis*, and *Evaluation*(Churches, 2008).

Figure 1.1 is a detailed categorization of different levels of thinking skills. It clearly shows that higher education' thinking skill levels concentrate on *Analysis*, *Synthesis*, and *Evaluation*. This illustration displays in definite terms Bloom's hierarchy of thinking skills with a progression of sophistication in learning.

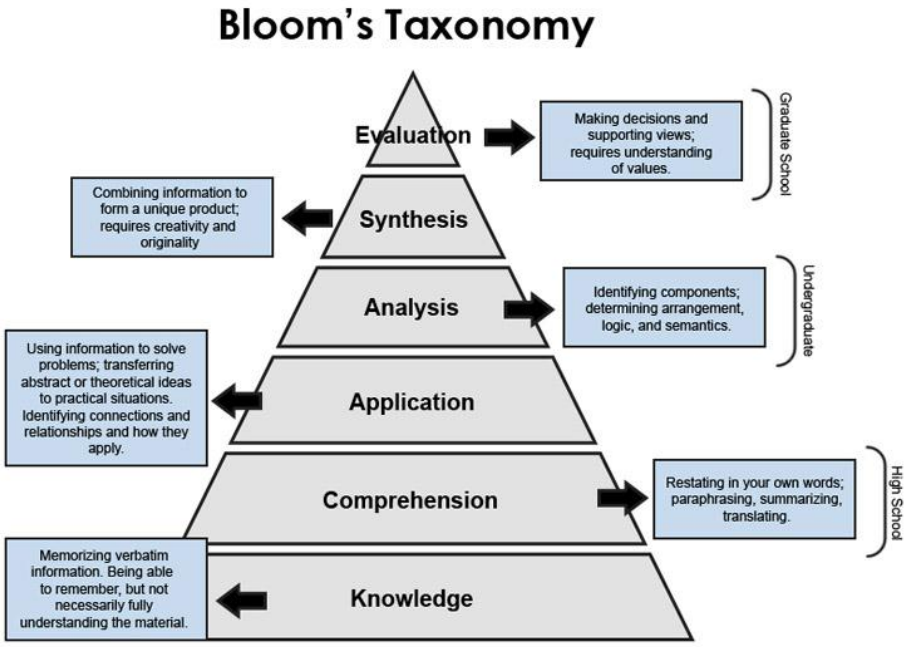

Figure 1.1 : Bloom's Taxonomy of Different Levels of Thinking Skills
(Adapted from: Zoe-s-wiki - Bloom's taxonomy. 2017. Retrieved March 5, 2017, http://zoe-s-wiki.wikispaces.com/Bloom%27s+taxonomy)

As mentioned, Bloom's taxonomy (Bloom & Krathwohl, 1956) has six thinking skills, the very basic level of which is *Knowledge*, which can test what you know, remember, or describe (knowing and remembering), repeat, define, identify, telling who, when, which, where, or what is related to the knowledge. Example questions for this related to Bloom's taxonomy, developed by Barton (1994), are：

> What is...? How is...? Where is...? When did _____ happen? When did...? Can you recall...? How would you show...? Can you select...? Who were the main...? Can you list three...? Which one...? Who was...?

The second level of thinking skills is *Comprehension*. *Comprehension* relates to the demonstration of understanding of facts and ideas by, for example, organizing, comparing, and/or translating ideas. For example, Instead of simply naming the various types of cloud, in that manner, students would be able to understand why each type of cloud is formed. Example questions related to this topic are:

> How would you classify the type of...? How would you compare...? Will you state or interpret in your own words...? How would you rephrase the meaning...? Which statements support...? Which is the best answer...? How would you summarize...? and so on (Barton, 1994).

The third level of thinking skill is *Application*, which relates to problem solving by applying acquired knowledge, facts, techniques, and rules in a different way. Students might be asked to solve a problem by employing what they learned from class to create a viable solution. The example questions are:

> How would you use...? What examples can you find to...? How would you solve _____ using what you have learned...? How would you organize _____ to show...? What approach would you use to...? What other way would you plan to...? Can you make use of the facts to...? What elements would you choose to change...? What questions would you ask in an interview with...? and so on (Barton, 1994).

The fourth level is *Analysis* aims to examine and break information into parts by identifying motives or causes, making inferences, and finding evidence to support generalizations. At this level, students may be asked to analyse ideas such as a character's motivation for an action in a novel. The example questions are:

> What are the parts or features of...? How is _____ related to...? What motive is there...? What inference can you make...? What conclusions can you draw...? How would you classify...? How would you categorize...? What evidence can you find...? What is the relationship between...? Can you make a distinction between...? What is the function of...? What ideas justify...? and so on (Barton, 1994).

The fifth level is *Synthesis*, which compiles information together to develop, improve, and/or create one's own or propose alternative solutions. Students are required to use the given facts and information to create new theories or make predictions. The example questions are:

> How would you improve...? What would happen if...? Can you elaborate on the reason...? Can you propose an alternative...? Can you invent...? How would you adapt _____ to create a different...? How could you change (modify) the plot (plan)...? What could be done to minimize (maximize)...? What way would you design...? What could be combined to improve (change)...? Suppose you could _____ what would you do...? How would you test...? Can you formulate a theory for...? Can you predict the outcome if...? and so on (Barton, 1994).

The highest level of thinking skill is *Evaluation*. It relates to the skill of presenting and defending opinions, by making judgments about information, validity of ideas, or quality of work based on a set of criteria. The example questions are:

> Do you agree with the actions with the outcomes...? What is your opinion of...? How would you prove/ disprove...? Can you assess the value or importance of...? Would it be better if...? Why did they (the character) choose...? What would you recommend...? How would you rate the...? What would you cite to defend the actions...? How would you evaluate...? How could you determine...? What data was used to make the conclusion...? Why was it better that...? How would you prioritize the facts...? and so on (Barton, 1994).

In this study, all the instruments used were adapted based on Bloom's taxonomy to evaluate students' thinking skills. Another framework used relates to the language constructs of writing and reading, which have long been considered to be related activities. The field of English literacy, involves the act of writing and reading to express thinking skills (Langer, 1987). Reading and writing share an intimate relationship and may influence each other. A number of studies have investigated how reading and writing interact and are informed by one's facility with writing and reading, respectively (Langer & Flihan, 2000). Readers/writers "transform texts" (Spivey, 1990) through the constructive tasks of selecting, connecting, and organizing information from source texts and their prior knowledge. Stein (1990) refers the incorporation of prior knowledge in elaboration, which is a cognitive process and "the principle means by which information from memory is combined with source text material in the reading process" (p. 146). Elaborations during reading create a "pool of ideas from which to draw during the writing process" (p. 147). It is obvious that reading is an input procedure of knowledge with information re-transfer and re-working as well as writing as an output procedure. Thus, for students, along with understanding the content meanings of reading materials, they should know how to process the printed information to achieve different targets (e.g., writing) through the activation of the cognitive process. To illustrate the cognitive process of reading and writing, the study resorted to the framework proposed by Khalifa and Weir (2009), who captured in detail the important elements engaged in earlier frameworks and elucidated the interactions between reader purpose, cognitive processes, and knowledge stored in long-term memory (see Figure 1.2, below). Khalifa and Weir's (2009) model is a conceptualization, which consists of reading skills in multiple dimensions — careful reading versus expeditious reading. Careful reading is the type of reading that readers engage in to comprehend every part of the contents of a text, whereas expeditious reading refers to the processing of a text by readers quickly, selectively, and efficiently (Urquhart & Weir, 1998). Within the two dimensions, there are two levels: local and global. Reading at the local level is defined to comprehend propositions at the microstructure level, such as meaning of lexical items and pronominal reference, while at the global level, reading refers to the understanding of structures beyond the microstructure level, that is, at the macrostructure level, which involves the expression of main ideas and supporting details (Urquhart & Weir, 1998).

Figure 1.2 outlines the cognitive processes that contribute to reading success according to different purposes (e.g., in relation to writing). The left column specifies the metacognitive activity of a goal setter in deciding what type of reading should be applied when faced with a text. The critical decisions would be taken on the level(s) of processing which activated in the central core of the model. The right column lists

the linguistic knowledge and general knowledge, which support the accomplishing of the cognitive process of reading. The middle column illustrates the cognitive process of reading from the visual input to an intertextual representation. In the middle column, the various elements of this processing core are listed. On the left, we are informed that the goal setter could decide how the readers could work at varying levels of reading. For application of thinking skills in reading comprehension, the critical thinker can apply metacognitive knowledge and use metacognitive strategies in a purposeful way throughout the thinking process to achieve particular goals in reading tasks. In the middle column, we are made clearly aware of the thinking skills involved in the mental process of reading, such as building a mental model: integrating new information (synthesis) and enriching the proposition (evaluation). Furthermore, in Khalifa and Weir's (2009) model, the output/result of reading could be materialized as writing since Figure 1.2 shows the last stage of reading is creating an intertextual representation: constructing an organized representation across texts. As such, this reading model can illustrate the work of cognitive and critical thinking processes from reading to writing and also provides the basic linguistic and general knowledge that would be employed in this procedure. In addition, this model indicates the integrated relationship between reading and writing, both of which fall under the manifestation of the thinking process: reading could be simplified as an input and writing as an output to represent the decision-making involved in reading.

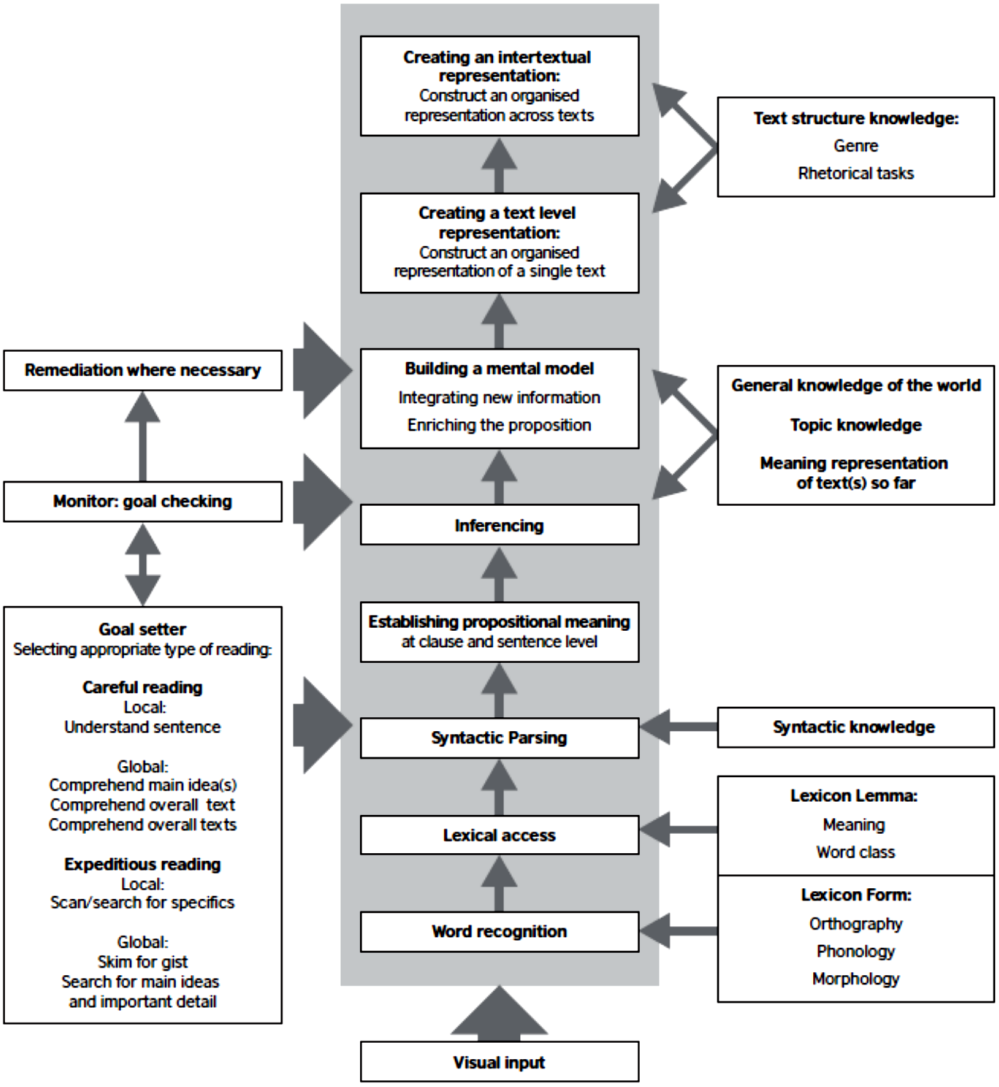

Figure 1.2 : Cognitive Process of Reading
(Adapted from Khalifa, H., & Weir, C. J. 2009. Examining Reading: Research and practice in assessing second language reading. In *Studies in Language Testing 29*. Cambridge: UCLES/Cambridge University Press)

1.6 Scope and Significance of the Study

Hard skills are basic skills of students, and they can get them materially in the form of concrete content that can qualify them as professional. Thus an engineer can be well-trained in engineering content and a language arts student in the dimension of communication content. However, we cannot ignore soft skills, which include critical thinking skills, a dimension of skill that relates to overall students' competences and achievements in their education particularly relevant for job seeking purposes and future success. Although soft skills, especially thinking skills are very important, previous researchers showed that Malaysian university students did not have a clear

perception about how their thinking skills were(Lie, Fei, & Ismail, 2012; Rosnani & Suhailah, 2003). Therefore, students need to know the level of their thinking skills. It is necessary to evaluate the university students' thinking skills by providing critical thinking skill assessment at the beginning of their college years. Such assessment would create awareness among tertiary students on their ability to think critically and at the same time the assessment report might be a valuable input for the university to structure programmes that would further enhance students' critical thinking skills.

In thinking skills assessment, students' thinking skills were tested by way of reading and writing because the intimate relationship between reading and writing. In thinking skills field, Paul and Elder (2006) noted that reading and writing constructed a parallel relationship in thinking skills. Reading is an input while writing could be an output. In Khalifa and Weir's (2009) model, the result of reading could be materialized into an intertextual representations (writing). As such, the students' thinking skills were tested in reading and writing. The findings could also show the different dimensions of thinking abilities executed by the students in reading and writing. This information could help in a focused approach to addressing the issue, especially in the beginning of the university study. The students' performance would help in understanding the thinking processes, and with this understanding, instructors could tailor their teaching approaches to suit students' needs. Meanwhile, the process of reading and writing is not easy to be observed. Therefore, in the study, reading and writing strategies questionnaires were applied to investigate students' thinking skills process in reading and writing. The result could provide an empirical data for researchers, who wants to observe the thinking process during students' activity.

The study also involved participants from different departments in a local university in Malaysia. Although some researchers proposed that departmental characteristics could affect ways of learning and studying, few studies contributed this in thinking skills field.

Therefore, the study compared the thinking performance of students who came from different departments (Malay, English, Foreign languages and Communication). It hopes that the result could contribute on thinking skills and narrow the gap by comparing different thinking skills performance among the selected departments' participants. Such comparison could both help to highlight the levels of thinking skills performance and identify the gaps which would thereby inspire the effort to mature thinking skills. Additionally, the infusion of thinking skills into the curriculum could be aided by a better paradigm of thinking skill evaluative measures. Insights from the instruments used and the analytical procedures that have been used in the research effort could help in more investigative efforts. The overall significance is a contribution towards understanding the execution of thinking skills through informed procedures that can help elevate student performance in this perspective as they are important resources in nation building for the leaders of tomorrow. The process of establishing the instruments (questionnaire of students' perception on thinking skills infusion in classroom) and designing the thinking skills tests (reading comprehension test and writing test) provided an exemplary procedure, which could be adopted or

adapted by future researchers for the construction of comprehension and writing tests. Meanwhile, the tests and results of the tests are empirical evidences for educators and researchers to design/ improve university students' thinking skills. Besides, because the comparisons of students' thinking skills among departments are limited. The results of such comparison would not only help to highlight the levels of thinking skills performance but would also help to identify the gaps which would thereby to inspire the effort to develop thinking skills.

1.7 Definition of Terms

Thinking skills：

1. *Knowledge. Knowledge* relates to what you know, or describing (knowing and remembering), repeating, defining and identifying.
2. *Comprehension*. *Comprehension* relates to demonstration of understanding of facts and ideas by, organizing, comparing, and/or translating ideas.
3. *Application*. *Application* relates to problem solving by applying acquired knowledge, facts, techniques, and rules in a different way.
4. *Analysis. Analysis* relates to examining and breaking information into parts by identifying motives or causes, making inferences, and finding evidence to support generalizations.
5. *Synthesis*. *Synthesis* relates to compiling information together to develop, improving, and/or creating one's own or proposing alternative solutions.
6. *Evaluation. Evaluation* relates to the skill of presenting and defending opinions, by making judgments about information, validity of ideas, or quality of work based on a set of criteria.

LOTS refers to lower order thinking skills, which contains *Knowledge, Comprehension* and *Application* based on Bloom's taxonomy (Fisher, 2010; Liu, 2010).

HOTS refers to higher order thinking skills, which contains *Analysis, Synthesis* and *Evaluation* based on Bloom's taxonomy (Fisher, 2010; Liu, 2010).

MUET is an abbreviation of Malaysian University English Test. It assesses the English language proficiency of pre-university students for entry into tertiary education.

REFERENCES

Abdullah, A. C., Marimuthu, S., & Liau, M. (2003). *A study on the use of higher order thinking skills in the teaching of English language in schools in Penang* (English La). University Putra Malaysia Press.

Abdullah, A. S. (2000). Development of a learning and thinking society. In *International Conference on Teaching & Learning: ―Strategising Teaching & Learning in the 21st Century*. Kuala Lumpur: Fakulti Pendidikan, UKM.

Adreani, A. (1990). *A Model of Infused Lessons for the Intermediate Grades*. Boston: University of Massachusetts Press.

Afflerbach, P., Pearson, P. D., & Paris, S. G. (2008). Clarifying differences between reading skills and reading strategies. *The Reading Teacher*, *61*(5), 364–373. http://doi.org/10.1598/RT.61.5.1

Ali, N., Jusoff, K., Ali, S., Mokhtar, N., & Salamat, A. S. A. (2009). The factors influencing students' performance at Universiti Teknologi MARA Kedah, Malaysia. *Management Science and Engineering*, *3*(4), 81.

Altbach, P. G., Reisberg, L., & Rumbley, L. E. (2009). Trends in Global Higher Education : Tracking an Academic Revolution Trends in Global Higher Education. *Higher Education*, 22. Retrieved from http://unesdoc.unesco.org/images/0018/001832/183219e.pdf

Anderson, C. A., Lepper, M. R., & Ross, L. (1980). Perseverance of social theories: The role of explanation in the persistence of discredited information. *Journal of Personality and Social Psychology*, *39*(6), 1037.

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives: Complete edition*. New York: Longman.

Anderson, L. W., & Sosniak, L. A. (Eds.). (1994). *Bloom's taxonomy: A forty-year retrospective. Ninety-third yearbook of the National Society for the Study of Education*. Chicago: University of Chicago Press.

Anderson, N. J. (2002). The role of Metacognitive in Second Language Teaching and Learning. *Modern Language Journal*, *75*, 460–472.

Anderson, R., & Pearson, P. (1984). A Schemata Theoretic View of Basic Processes on Reading Comprehension,. In P. D. Pearson (Ed.), *Handbook of Reading Research*. London: Longman.

Anderson, S. B. (1975). *In Encyclopedia of Educational Objectives*. San Francesco. California. USA.: Jossey Bass Publishers.

Ankiewics, P. J., De Swardt, A. E., & Stark, R. (2000). *Principles, methods and techniques of Technology Education Module 1*. Johannesburg: RAU Centre for Distance Education.

Arshad, A. S., Zainab, S., & Siti, N. (2008). Refining English language tests for university admission: a Malaysian example. *Asian Journal of University Education, 3*(1), 57–71.

Ary, D., Jacobs, L. C., & Razavieh, A. (2014). Introduction to Research in Education / D. Ary, L.C. Jacobs, A. Razavieh.

Asmari, A. Al. (2013). Investigation of Writing Strategies, Writing Apprehension, and Writing Achievement among Saudi EFL-Major Students. *International Education Studies*, *6*(11), 130–143. http://doi.org/10.5539/ies.v6n11p130

Bachman, L. (1990). *Fundamental considerations in language testing.* Oxford: Oxford University Press.

Baddeley, A. (1998). *Human memory*. Boston: Allyn & Bacon.

Baddeley, A. (2003). Working memory and language: An overview. *Journal of Communication Disorders*, *36*(3), 189–208.http://doi.org/10.1016/S0021 - 9924(03)00019-4

Bahaman, A. S., & Suandi, T. (1999). *Statistic for Communication Research* (Institute). Universiti Putra Malaysia.

Bailin, S., Case, R., Coombs, J., & Daniels, L. (1999). Common misconceptions of critical thinking. *Journal of Curriculum Studies*, *31*(3), 269–283.

Baird, L. L. (1988). The college environment revisited: A review of research and theory. *Higher Education: Handbook of Theory and Research*, *4*, 1–52.

Baker, L. (1985). Differences in the standards used by college students to evaluate their comprehension of expository prose. *Reading Research Quarterly*, *20*, 297–313.

Barak, M., Ben-Chaim, D., & Zoller, U. (2007). Purposely Teaching for the Promotion of Higher-order Thinking Skills: A Case of Critical Thinking. *Research in Science Education*, *37*(4), 353–369. http://doi.org/10.1007/s11165-006-9029-2

Bartlett, J. E., Kotrlik, J. W. K. J. W., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, *19*(1), 43.

Barton, L. G. (1994). *Quick Flip Questions for Critical Thinking*. Edupress.

Bauer, L., Holmes, J., & Warren, P. (2006). *Language matters*. New York: Palgrave Macmillan.

Becher, T. (1994). The significance of disciplinary differences. *Studies in Higher Education*, *19*(2), 151–161.

Ben-chaim, D., Ron, S., & Zoller, U. (2000). The Disposition of Eleventh-Grade Science Students Toward Critical Thinking. *Science Education*, *9*(2), 149–159. http://doi.org/10.1023/A:1009474023364

Biggs, J. (1999). *Teaching for Quality Learning*. Buckingham, Society for Research into Higher Education & Open University Press.

Biggs, J. B. (1987). *Student Approaches to Learning and Studying. Research Monograph.* ERIC.

Bloom, B., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives, handbook 1: cognitive domain.* New York: David McKay.

Bloom, B. S. (1956). Bloom's Taxonomy of Critical Thinking and Writing Effective Learning Objectives / Outcomes Effective Learning Objectives / Outcomes. RetrievedOctober 6, 2015,from,http://www.sandiego.edu/cas/documents/assment/UsingBloomsTaxonomyforLearningOutcomes.pdf

Boddy, N., Watson, K., & Aubusson, P. (2003). A trial of the five Es: A referent model for constructivist teaching and learning. *Research in Science Education, 33*, 27–42.

Brandenburg, M. L. (2002). Advanced math? Write! *Educational Leadership, 30,* 67–68.

Brem, S. K., & Rips, L. J. (2000). Explanation and evidence in informal argument. *Cognitive Science*, *24*(4), 573–604. http://doi.org/10.106/S0364-0213 (00)00033-1

Brewer, W. F., & Treyens, J. C. (1981). Role of Schemata in Memory for Places'. *Cognitive Psychology*, *13*.

Brookfield, S. D. (1987). *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*. San Francisco, California: Jossey-Bass Inc.

Brown, A. L., & Compione, J. C. (1990). Communities of learning and thinking, or a context by any other name. In D. Kuhn (Ed.), *Developmental perspectives on teaching and learning thinking skills* (pp. 108–126). Basel; New York: Karger.

Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy*. Pearson Education.

Burbules, N., & Berk, R. (2006). *Mirror of language: The debate on bilingualism*. New York: Basic Books, Inc.

Brynard, P. A., & Hanekom, S. . (2005). *Introduction to research in Public Administration and related academic disciplines.* Pretoria: Van Schaik.

Cain, K. (2005). Children's reading comprehension difficulties. *Contemporary Perspectives on Reading and Spelling*.

Cain, K., & Oakhill, J. V. (1999). Inference making ability and its relation to comprehension failure in young children. *Reading and Writing*, *11*(5–6), 489–503.

Cain, K., Oakhill, J. V, Barnes, M. A., & Bryant, P. E. (2001). Comprehension skill, inference-making ability, and their relation to knowledge. *Memory & Cognition*, *29*(6), 850–859.

Calkins, L. M. (1983). *Lessons from a Child.* Exeter, NH: Heinemann Educational Books.

Carlson, S. (2011). Student Perceptions of Critical Thinking Instructional Methods:Findings in A. In *Academy of Educational Leadership* (Vol. 16, pp. 11–17).

Carlson, S. C. (2013). Instructional Methods Influence Critical Thinking: Do Students and Instructors Agree? *Academy of Educational Leadership Journal*, *17*(1), 27.

Carrell, P. L., Devine, J., & Eskey, D. E. (1988). Introduction. In *Interactive approaches to second language reading* (pp. 1–5). Cambridge: Cambridge University Press.

Carson, J. (2007). A problem with problem solving. *Teaching Thinking without Teaching Knowledge*, *17*(2), 7–14.

Çavdar, G., & Doe, S. (2012). Learning through Writing: Teaching Critical Thinking Skills in Writing Assignments. *PS: Political Science & Politics*, *45*(2), 298–306. http://doi.org/10.1017/S1049096511002137

Chia, H. L. (2001). Reading Activities for Effective Top-down Processing. *FORUM*, *39*(1), 22.

Christie, K., & Kaminski, K. (2002). Creative problem solving at the United Way. *CPSB Communique*, *13*, 8–11.

Chun, M. (2010). Talking teaching to (performance) tasks: Linking pedagogical and assessment practices. Retrieved Jan 5, 2015, from http://www.changemag.org

Churches, A. (2008). Bloom's Taxonomy Blooms Digitally. Retrieved October 6, 2015, from,http://edweb.sdsu.edu/courses/EDTEC470/sp09/5/bloom staxanomy.html

Cobb, P. (1994). Constructivism in mathematics and science education. *Educational Researcher*, *23*(4).

Cochran, W. G. (1977). *Sampling Techniques*. *Technometrics* (Vol. 20). Retrieved October 6, 2014,from http://www.amazon.com/Samplimg-Techniques -3rd-William-Cochran/dp/047116240X

Costa, A. (Ed.). (2001). *Developing minds*. Alexandria,VA: ASCD.

Cottrell, S. (2005). *Critical thinking skills: Developing effective analysis and argument*. Palgrave Macmillan Ltd.

Crebert, G., Patrick, C., Cragnolini, V., Smith, C., Worsfold, K., & Webb, F. (2011). Griffith Graduate Attributes Critical Evaluation Skills Toolkit, (C), 1–42.

Crenshaw, P., Hale, E., & Harper, S. L. (2011). Producing intellectual labor in the classroom: The utilization of a critical thinking model to help students take command of their thinking. *Journal of College Teaching and Learning*, *8*(7), 13.

Creswell, J. W. (2003). *Qualitative inquiry and research design: Choosing among five approaches*. sage. Retrieved October 10, 2015,from,http://isites.harvard.ed u/fs/docs/icb.topic1334586.files/2003_Creswell_A Framework for Design.pdf

Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among the five traditions (3rd ed.).* Thousand Oaks,CA: sage.

Culp, M. ., & Spann, S. (1997). The Influence of Writing. *Home Healthcare Nurse: The Journal for the Home Care and Hospice Professional*. http://doi.org/10.1097/00004045-199705000-00001

Curriculum Development Center. (1993). Kemahiran berfikir: konsep, model dan strategi pengajaran dan pembelajaran. Kuala Lumpur, Malaysia: Ministry of Education

Daly, W. T. (1995). Beyond Critical Thinking: Teaching the Thinking Skills Necessary to Academic and Professional Success. *The Freshman Year Experience*. Monograph Series Number 17.

Daneman, M., & Merikle, P. M. (1996). Working memory and language comprehension: A meta-analysis. *Psychonomic Bulletin & Review*, *3*(4), 422–433.

Davies, M. (2013). Critical thinking and the disciplines reconsidered. *Higher Education Research & Development*, *32*(4), 529–544.

Devadason, E. S., Gnanamalar, E., & Daniel, S. (2010). *Final year undergraduates ' perceptions of the integration of soft skills in the formal curriculum : a survey of Malaysian public universities*. Asia Pacific Educ. Rev., 1971(Amended 1996). http://doi.org/10.1007/s12564-010-9090-4

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: D. C. Heath and Company.

Donald, D., Lazarus, S. ., & Lolwana, P. (2006). *Educational psychology in social context (3rd ed)*. Cape Town, SA: Oxford University Press.

Driver, R., Asoko, H., Leach, J., Mortimer, E., & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, *23*, 5–12.

Duron, R., Limbach, B., & Waugh, W. (2006). *Critical Thinking Framework For Any Discipline, 17*(2), 160–166.

East Carolina University. (2014). *Question & Review: Higher Order Questiosn Games*. Retrieved October 6, 2014 from, https://www.ecu.edu/cs-educ/TQP/upload/ISLES -S-Question-Declarative-Aug2014.pdf

Eberly Center of Teaching Excellence & Educational Innovation. (n.d.). Explore Strategies. Retrieved October 6, 2015, fromhttps://www.cmu.edu/teaching/solveproblem/strat-examhard/examhard-03.html

Edwards, M. C., & Briers, G. E. (2000). Higher-order Thinking Versus Lower-order Thinking Skills: Does School-day Scheduling Pattern Influence Achievement at Different Levels of Learning? *Journal of Agricultural Education*, 2–14.

El-Koumy, A. S. A. (1997). Exploring the reading-writing relationship in NES and EFL students. *Education Resources Information Center (ERIC), USA*.

Elder, L., & Richard, P. (2010). Universal Intellectual Standards. Retrieved May 9, 2015, from http ://www.critical thinking .org/pages/universal-intellectual-standards/527

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review, 32*, 81–111.

Ennis, R. H. (1996). *Critical Thinking*. NJ, Prentice-Hall: Upper Saddle River.

Entwistle, N. (1988). Motivational factors in students' approaches to learning. In *Learning strategies and learning styles* (pp. 21–51). Springer.

Entwistle, N. (2000). Some aspects of the teaching–learning environment influencing approaches to studying. In *the first meeting of the Edinburgh-2000 Group*. Edinburgh,UK.

Entwistle, N., McCune, V., & Hounsell, J. (2003). "Investigating ways of enhancing university teaching–learning environments: Measuring students" approaches to studying and perceptions of teaching'. In E. de Corte, L. Verschaffel, N. Entwistle, & J. van Merrie¨nboer (Eds.), *Powerful Learning Environments: Unravelling Basic Components and Dimensions* (pp. 89–107). Oxford: Pergamon.

Erickson, B., Peters, C., & Strommer, D. (2006). *Teaching first-year college students*. San Francisco, CA: Jossey-Bass. Wiley Imprint.

Fearon, D. D., Copeland, D., & Saxon, T. F. (2013). The relationship between parenting styles and creativity in a sample of Jamaican children. *Creativity Research Journal*, *25*(1), 119–128.

Fisher, R. (2010). Thinking Skill. In J. Dalam Arthur & T. Cremin (Eds.), *Learning to Teach in the Primary School* (2nd ed). New York,NY: Routledge.

Fitzgerald, J., & Shanahan, T. (2000). Reading and writing relations and their development. Educational Psychologist, 35(1), 39–50.

Floyd, C. B. (2011). Critical thinking in a second language. Higher Education Research & Development, 30(3), 289–302.

Fong, L. L., Sidhu, G. K., & Fook, C. Y. (2014). Exploring 21st century skills among postgraduates in Malaysia. *Procedia-Social and Behavioral Sciences*, *123*, 130–138.

Forehand, M. (2012). Bloom's Taxonomy. Retrieved May 13, 2015, from http://projects.coe.uga.edu/epltt/index.php?title=Bloom%27s_Taxonomy

Foundation for Critical Thinking. (2013). Critical Thinking Testing and Assessment. Retrieved April 26, 2015, from http: // www.critical thinking .org/pages/ /critical-thinking -testing-and-assessment/594

Fowler, B. (2013). Use of Bloom ' s Taxonomy in Developing Reading Comprehension Specifications. *Technology*, *Applied Testing Publishers*, *Test*, *14*(April).

Freeman, T., Wolfe, P., Littlejohn, B., & Mayfield, N. (2001). Measuring success: Survey shows CPS impacts Indiana. *CPSB Communique*, *12*, 1–6.

Fluellen Jr, J. E. (2011). Connecting Minds: Emergence of a Future Bent, Writing/Thinking Intensive Psychology Course. Occasional Paper# 10. *Online Submission*.

Gammill, D. M. (2006). Learning the write way. *The Reading Teacher*, *59*, 754–762.

Garner, C., & Raudenbush, S. J. (1991). Neighborhood effects on educational attainment: A multilevel analysis of the influence of pupil ability, family, school, and neighborhood. *Sociology of Education*, *64*, 251–262.

Giles, H., & Coupland, N. (1991). *Language: Contexts and consequences*. Thomson Brooks/Cole Publishing Co.

Goodson, L., & Rohani, F. (1998). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment. *Thinking*, *18*, 458. Retrieved from http://www.cala.fsu.edu/files/higher_order_thinking_skills.pdf

Govier, T. (1997). *Socrates' Children*. *1997*. Peterborough, Ontario, Canada: Broadview Press.

Grabe, W. (1991). Current development in second language reading research. *TESOL Quarterly*, *25*, 375–406.

Graham, M. (2011). Synthesis: D. Measurement. What Is Inter Rater Agreement and How Can Designer of Teacher Evaluation System Maximize It? Retrieved May 12, 2015, fromhttp://www.cecr.ed.gov/researchSyntheses/34008_CECR_RS_Inter_Rater_ measurement_508.pdf

Graham, S., & Perin, D. (2007). Writing Next-Effective strategies to improve writing of adolescents in middle and high schools.

Hakuta, K. (1986). Cognitive Development of Bilingual Children. ERIC.

Haller, C., Fisher, R., & Gapp, R. (2007). Reflection as a means of understanding: Ways in which Confucian Heritage students learn and understand organisational behaviour. Multicultural Education & Technology Journal, 1, 6–24. http://doi.org/10.1108/17504970710745175

Halpern, D. F. (1999). Teaching for Critical Thinking: Helping College Students Develop the Skills and Dispositions of a Critical Thinker. *Education*, (80), 69–75. http://doi.org/10.1002/tl.8005

Hanapi, Z., & Nordin, M. S. (2014). Unemployment among Malaysia Graduates: Graduates'Attributes, Lecturers' Competency and Quality of Education. Procedia - Social and Behavioral Sciences, 112(Iceepsy 2013), 1056–1063. http://doi.org/10.1016/j.sbspro.2014.01.1269

Harwell, M. R. (2011). Research Design in Qualitative/Quantitative/ Mixed Methods. Opportunities and Challenges in Designing and Conducting Inquiry, University of Minesotta, 147–182. http://doi.org/10.4135/9781412961288.n380

Hashim, Y. (2010). Determing Sufficiency of Sample Size in Mangement Surevy Research Activities, *6*(1), 119–130.

Hayikaleng, N., Nair, S. M., & Krishnasamy, H. N. (2016). Thai Students ' L2 Reading Comprehension Level for Lower Order Thinking Skills and Higher Order Thinking Skills Questions. Journal of Applied Linguistics and Language Research, 3(5), 83–91.

Hechinger, F. (1987). About Education - Thinking Critically - NYTimes.com. Retrieved March 16, 2017, fromhttp://www.nytimes.com/1987/02/24/science/about-education-thinking-critically.html

Ho Van Chung, M. A. (1998). *A Study of Reading Comprehension Problems in English Encountered by First Year Students of Faculty of Vietnamese Studies at Hune*.ESP Division.

Holland, B. (2016). Climbing to the Top: Increasing Critical Thinking Through Writing. Retrieved November 3, 2017, from http://blogs.edweek.org/edweek/edtechresearcher/2016/04/climbing_the_pyramid_of_blooms_taxonomy_through_the_writing_process.html

Hood, S. (2008). Linguistics and education. *An International Research Journal*, *19*(4), 351–365.

Horowitz, D. (1991). Evaluating learners' performance. In *Literacy and language Teaching*. Oxford University Press.

Hosler, K. A., & Arend, B. D. (2012). The importance of course design, feedback, and facilitation: student perceptions of the relationship between teaching presence and cognitive presence. *Educational Media International*, *49*(3), 217–229.

Hosseini, E., Khodaei, F. B., Sarfallah, S., & Dolatabadi, H. R. (2012). Exploring the relationship between critical thinking, reading comprehension and reading strategies of English university students. *World Applied Sciences Journal*, *17*(10), 1356–1364.

Howard, R. M., Serviss, T., & Rodrigue, T. K. (2010). Writing from sources, writing from sentences. *Writing and Pedagogy*, *2*(2), 177–192.

Huddleston, R. D., & Pullum, G. K. (2005). *A student's Introduction to English Grammar*. Cambridge, UK: Cambridge University Press.

Jalaludin, N. H., Awal, N. M., & Bakar, K. A. (2008). The mastery of English language among lower secondary school students in Malaysia: A linguistic analysis. *European Journal of Social Sciences*, *7*(2), 106–119.

Imam, O. A., Mastura, M. A., Jamil, H., & Ismail, Z. (2014). Reading Comprehension Skills and Performance in Science Among High School. *Asia Pacific Journal of Educators and Education, 29*, 81–94.

Isaacs, P. Das. (2010). *Exploringtheuse of Language Cuesfor Higher-order Thinking Skilss intheMUET Syllabus*. University of Malaysia Kulala Lumpur.

Isaksen, S. G., & Treffinger, D. J. (2004). Celebrating 50 years of Reflective Practice: Versions of Creative Problem Solving. *The Journal of Creative Behavior*, *38*(2), 75–101. http://doi.org/10.1002/j.2162-6057.2004.tb01234.x

Ismail, H., & Hassan, A. (2009). Holistic Education in Malaysia. *European Journal of Social Sciences*, *9*(2), 231–236.

Ismail, R. (2008). *Strategies, Factors Affecting less Proficient ESL Learners' use of Learning： for language and content area*. Universiti Putra Malaysia.

Kabilan, M. K. (2000). Creative and critical thinking in language classrooms. *The Internet TESL Journal*, *6*(6). Retrieved November 3, 2017 from, http://itselj.org/Techniques/Kabilian-

Karimi, M. N. (2014). Disciplinary variations in English domain-specific personal epistemology : Insights from disciplines differing along Biglan ' s dimensions of academic domains classification. *System*, *44*, 89–100. http://doi.org/10.1016/j.system.2014.03.002

Karpicke, J. D., & Iii, H. L. R. (2007). Repeated retrieval during learning is the key to long-term retention.*Journal of Memory and Language*, *57*, 151–162. http://doi.org/10.1016/j.jml.2006.09.004

Kauchak, D. P., & Eggen, P. D. (1998). *Learning and teaching: Research-based methods (3rd ed.)*. Boston: Allyn and Bacon.

Keow, T., Nair, S., & Prachak, B. (2014). Developing instruments to measure thinking skills and problem solving skills among Malaysian primary school pupils. *Procedia - Social and Behavioral Sciences*, *116*, 3760–3764. http://doi.org/10.1016/j.sbspro.2014.01.837

Khairunnisa, W. (2014). Students' problems in paraphrasing. *Jurnal Pendidikan Dan Pembelajaran*, *3*, 1–9.

Khalifa, H., & Weir, C. J. (2009). Examining Reading: Research and practice in assessing second language reading. In *Studies in Language Testing 29*. Cambridge: UCLES/Cambridge University Press.

Khan, W. B., & Inamullah, H. M. (2011). A study of lower-order and higher-order questions at secondary level. *Asian Social Science*, *7*(9), 149–152. http://doi.org/10.5539/ass.v7n9p149

Kieft, M., Rijlaarsdam, G., & van den Bergh, H. (2008). An Aptitude–treatment Interaction Approach to Writing-to-learn. *Learning and Instruction*, *18*(4), 379–390.

Kim, K. H., Cramond, B., & VanTassel-Baska, J. (2010). The Relationship between Creativity and Intelligence. *The Cambridge Handbook of Creativity*, 395–412.

King, F., Goodson, L., & Rohani, F. (1988). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment. *Center for Advancement of Learning and Assessment*, 177. Retrieved October 6, 2015,from,http://www.cala.fsu.edu/files/higher_order_thinking_skills.pdf

Kirkland, M. R., & Saunders, M. A. (1991). Maximising Student Performance in Summary Writing: Managing Cognitive Load. *TESOL Quarterly*, 105–121.

Kispal, A. (2008). *Effective teaching of inference skills for reading: Literature review*.Department for Children, Schools and Families.

Kissock, C., & Iyortsuun, P. T. (1982). *A Guide to Questioning: Classroom Procedures for Teachers*. London: Macmillan Press Ltd. Retrieved May 9,2014,from https://books.google.com.my/books?id=oaBsQgAACAAJ

Koehler, D. J. (1991). Explanation, Imagination, and Confidence in Judgment. *Psychological Bulletin*, *110*(3), 499.

Koehler, D. J. (1994). Hypothesis generation and confidence in judgment. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *20*(2), 461.

Koo, Y. . (2003). Socioculturally-oriented critical reading in the learning space: empowering multicultural/lingual voices. In A. Pandian, G. Chakravarthy, & P. Kell (Eds.), *New literacies, new practices, new times* (pp. 128–138). Selangor: Universiti Putra Malaysia Press.

Kottke, J. L., & Schuster, D. H. (1990). Developing tests for measuring Bloom's learning outcomes. *Psyclwlogical Reports*, *66*, 27–32.

Kroll, B. (1993). Teaching writing IS teaching reading: Training the new teacher of ESL composition. *Reading in the Composition Classroom: Second Language Perspectives*, 61–81.

Krulik, S., & Rudnick, J. A. (1996). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School. A Longwood Professional Book.* Needham Height, Massachusetts: A. Simon & Schuster Company.

Kuhn, D. (1991). *The Skills of Argument.* Cambridge: Cambridge University Press.

Kuteeva, M., & Airey, J. (2014). Disciplinary differences in the use of English in higher education: Reflections on recent language policy developments. *Higher Education*, *67*(5), 533–549. http://doi.org/10.1007/s10734-013-9660-6

Langer, J. A. (1987). *Language, literacy, and culture: Issues of society and schooling*. Norwood, NJ: Ablex.

Langer, J. A., & Flihan, S. (2000). Writing and Reading Relationships: Constructive Tasks. Retrieved April 4, 2014, fromhttp://www.albany.edu/cela/publication / /article/writeread.htm

Larsen, R., & Wactlar, H. D. (2003). Knowledge lost in information: Report of the NSF Workshop on Research Directions for Digital Libraries. *University of Pittsburgh*, *Pittsburgh*, 15–17.

Larson, M., Britt, M. A., & Larson, A. A. (2004). Disfluencies in Comprehending Argumentative Texts. *Reading Psychology*, *25*(3), 205–224. http://doi.org/10.1080/02702710490489908

Lee, A. S., & Baskerville, R. L. (2003). Gerneralizing Generalizability in Information Systems Research. *Information Systems Research*, *14*(3), 221–243. http://doi.org/10.1287/isre.14.3.221.16560

Leou, M., Abder, P., Riordan, M., & Zoller, U. (2006). "Using HOCS-centered learning" as a pathway to promote science teachers' metacognitive development. *Research in Science Education*, *36*(1–2), 69–84.

Lewis, A., & Smith, D. (1993). Defining Higher Order Thinking. *Theory into Practice.*, *32*, 131–137.

Liao, Y. (2002). Issues of Validity and Reliability in Second Language Performance Assessment. *TESOL&Applied Linguistics*, *4*(2), 2–5.

Liaw, M. (2007). Content-Based Reading and Writing for Critical Thinking Skills in an EFL Context.*English Teaching & Learning*,*2*(Summer), 45–87.

Lie, K. Y., Fei, W. F., & Ismail, K. (2012). Students' Critical Consciousness Through Critical Literacy Awareness, *12*(May), 727–743.

Lim, S., & Smith, J. (2008). The structural relationships of parenting style, creative personality, and loneliness. *Creativity Research Journal*, *20*(4), 412–419.

Limbach, B., & Waugh, W. (2010). Developing higher level thinking. *Journal of Instructional Pedagogies*, *3*.

Liu, X. (2010). *Essentials of science classroom assessment*. Sage Publications.

Lundstrom, K., Diekema, R. A., Leary, H., Haderlie, S., & Holliday, W. (2015). Teaching and Learning Information Synthesis. *Communications in Information Literacy*, *9*(1), 15–16. Retrieved March 15, 2014, fromhttp://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:MATHEMATICS+TEACHING+AND+LEARNING#3

Lynch, C. L., & Wolcott, S. K. (2001). IDEA PAPER # 37 Helping Your Students Develop Critical Thinking Skills. Retrieved September 20, 2016, from http://ideaedu.org/research-and-papers/idea-papers/idea-paper-no-37/

Maarof, N., & Yaacob, R. (2011). Meaning-making in the first and second language: reading strategies of Malaysian students. *Procedia-Social and Behavioral Sciences*, *12*, 211–223.

Mahbube, K. (2013). Critical thinking and language proficiency. *International Journal of Language Learning and Applied Linguistics World*, *4*(November), 24–32.

Mahyuddin, R., Pihie, Z. A. L., Elias, H., & Konting, M. M. (2004). The Incorporation of Thinking Skills in the School Curriculum. *Kajian Malaysia*, *22*(2), 23–33.

Malaysian Examinations Council. (2008). Malaysian University English Test, 1–20.

Malaysian University English Test. (2015). Retrieved March 26, 2015, from http://en.wikipedia.org/wiki/Malaysian_University_English_Test

Manalo, E., & Sheppard, C. (2016). How Might Language Affect Critical Thinking Performance. *Thinking Skills and Creativity*, *21*, 41–49. http://doi.org/10.1016/j.tsc.2016.05.005

Manalo, E., Watanabe, K., & Sheppard, C. (2013). Do Language Structure or Language Proficiency Affect Critical Evaluation? *Proceedings of the 35th Annual Conference of the Cognitive Science Society*, 2967–2972.

Manalo, E., & Uesaka, Y. (2012). Elucidating the Mechanism of Spontaneous Diagram use in Explanations: How Cognitive Processing of Text and Diagrammatic Representations are Influenced by Individual and Task-related Factors. In *International Conference on Theory and Application of Diagrams* (pp. 35–50). Springer.

Maros, M., Hua, T. K., & Salehuddin, K. (2007). Interference in learning English: Grammatical errors in English essay writing among rural Malay secondary school students in Malaysia. *Journal E-Bangi, 2*(2), 1–15

Mateos, M., & Solé, I. (2009). Synthesising Information from Various Texts: A Study of Procedures and Products at Different Educational Level. *European Journal of Psychology of Education*, *24*(4), 435–451.

Mawdsley, J. (2015). *What is Critical Reading ?*Teaching &Learning Center.

Mccarthy, B., & Hudson, M. G. (2000). *About teaching : 4MAT in the classroom*. Wauconda,IL: About Learning, Inc.

McGinley, W. (1992). The role of reading and writing while composing from sources. *Reading Research Quarterly*, *27*(3), 226–248.

McGregor, D. (ed.) (2007). *Developing thinking: developing learning: a guide to thinking skills in education*. Berkshire: Open University Press.

McGuinness, C. (1999). From Thinking Skills To Thinking Classrooms. *School of Psychology, Queens' University, Blefast*, (April), 1–4. Retrieved April 4, 2014, from http://www.qsm.ac.il/userfiles/ershad_tarbawi/general/Greenhouse Thinking/.pdf

McKeachie, W. J. (1970). *Research on College Teaching: A Review*. Washington, D.C: ERIC Clearinghouse on Higher Education.

Meyer, J. H. F., & Muller, M. W. (1990). Evaluating the Quality of Student Learning. I—An Unfolding Analysis of the Association between Perceptions of Learning Context and Approaches to Studying at an Individual Level. *Studies in Higher Education*, *15*(2), 131–154.

Ministry of Education Malaysia. (2015). *Malaysia Education Blueprint 2015-2025 (Higher Education)*. *Ministry of Education Malaysia* (Vol. 2025). Retrieved April 16, fromhttps://www.um.edu.my/docs/default-source/about-um_document/media-centre/um-magazine/4-executive-summary-pppm-2015-2025.pdf?sfvrsn=4

Ministry of Higher Education Malaysia. (2006). *Modul pembangunan kemahiran insaniah (soft skills) untuk Instutusi Pengajian Tinggi Malaysia*. Serdang: Universiti Putra Malaysia Publishers.

Miri, B., David, B., & Uri, Z. (2007). Purposely Teaching for the Promotion of Higher-order Thinking Skills : A Case of Critical Thinking. *Res Sci Educ*, *37*, 353–369. http://doi.org/10.1007/s11165-006-9029-2

Moffett, J., & Wagner, B. J. (1983). *Student-centered language arts and reading: A handbook for teachers. (5th ed.)*. Boston, Massachusetts: Houghton Mifflin.

Moghaddam, M. M., & Malekzadeh, S. (2011). Improving L2 Writing Ability in the Light of Critical Thinking. *Theory and Practice in Language Studies*, *1*(7), 789–797. http://doi.org/10.4304/tpls.1.7.789-797

Mohammadi, E. N., Heidari, F., & Niry, N. D. (2012). The Relationship between Critical Thinking Ability and Reading Strategies used by Iranian EFL Learners. *English Language Teaching*, *5*(10), 193–201.

Mohd, D. M. R. (1994). Infusing critical and creative thinking skills in teaching and learning Malay language KBSM. In *International Conference - Innovation in Education - Effective Teaching and Learning*. Penang, Malaysia: Universiti Sains Malaysia.

Mokhtari, K., & Reichard, C. A. (2002). Assessing Students' Metacognitive Awareness of Reading Strategies. *Journal of Educational Psychology*, *94*(2), 249–259. http://doi.org/10.1037//0022-0663.94.2.249

Moon, T. S., & Siew, H. O. (2004). A study on the factors that impact on the academic performance of the computer science and the information technology students in University of Malaya. *CMU Journal*, *3*(2), 169–184.

Moore, L. (2006). Four Steps to Teaching Evaluation Skills. *AGRICULTURAL EDUCATION MAGAZINE*, *78*(6), 16.

Moseley, D., Baumfield, V., Elliott, J., Gregson, M., Higgins, S., Miller, J., & Newton, D. P. (2005). *Frameworks for thinking: a handbook for teaching and learning.* Edinburgh: Cambridge University Press.

Mukundan, J. (2003). *Undesatnding Roles in English Language Teaching (ELT)*. (G. C. & salasiah C. L. Ambigapathy Pandian, Ed.) (English la). Serdang: UPM Publication.

Musa, N. C., Lie, K. Y., & Azman, H. (2012). Exploring English Language Learning And Teaching In Malaysia. *GEMA Online™ Journal of Language Studies*, *12*(January), 35–51.

Mushtaq, I., & Khan, S. N. (2012). Factors Affecting Students' Academic Performance. *Global Journal of Management and Business Research*, *12*(9), 17–22.

Myles, J. (2002). Second Language Writing and Research: The Writing Process and Rrror Analysis in Student Texts. *Tesl-Ej*, *6*(2), 1–20.

Nagappan, R. (2001). Language Teaching and the Enhancement of Higher-order Thinking Skills. *Anthology Series-Seameo Regional Language Centre*, 190–223.

Nagappan, R. (2001). The Teaching of Higher-Order Thinking Skills in Malaysia. *Journal of Southeast Asian Education*, *2*(1).

National commission on Excellence in Education. (1983). *A nation at risk: the imperative for educational reform*. Washington, D.C: U.S.Department of Education.

National Research Council. (1996). *National Science Education Standards-NSES*. Washington, DC: National Academy.

National Higher Education Research Institute. (2003). Psychological attributes of graduates. *Bulletin of Higher Education Research*, *1*, 3–5.

National Institute of Education. (1984). *Involvement in learning :realizeing the potential of American higher education*. Washington, D.C: U.S.Department of Education.

Nel, N. ., & Nel, M. (2012). English Language. In N. . Nel, M. Nel, & A. Hugo (Eds.), *Learner support in a diverse classroom: A guide for foundation, intermediate and senior phase teachers of language and mathematics.* Pretoria: Van Schaik Publishers.

Neuman, L. W. (2003). *Social research methods: Qualitative and quantitative approaches* (5th ed.). Boston: Pearson Education.

Newman, F. (1985). *Higher education and the American resurgence*. Princeton, N.J: Carnegie Foundation for the Advancement of Teaching.

Nicol, D. (2009). Assessment for Learner Self- regulation: Enhancing Achievement in the First Year Using Learning Technologies. *Assessment & Evaluation in Higher Education*, *34*(3), 335–352.

Norman, H. (2007). Bloom's Taxonomy. Retrieved November 23, 2016, from https://www.csun.edu/science/ref/reasoning/questions_blooms/blooms.html

Northcentral University Writing Center. (2007). Climbing the Ladder to Bloom's Taxonomy. Retrieved December 30, 2016, from http://learners.ncu.edu /writingprogram/writing_center.aspx?menu_id=84

O'malley, J. M., & Chamot, A. U. (1990). *Learning Strategies in Second Language Acquisition*. Cambridge university press.

Ogle, D. M. (1986). KWL: A teaching model that develops active reading of expository text. *The Reading Teacher*, *39*(6), 564–570.

Osborn, A. F. (1953). *Applied Imagination.*Scribner's.

Othman, J., & Nordin, A. B. (2013). MUET as a Predictor of Academic Achievement in ESL Teacher Education. *GEMA Online Journal of Language Studies*, *13*(1), 99–111.

Othman, N. (2003). *Thinking Skills – A Motivational Factor In English Language Teaching* (English La). Serdang: UPM Publication.

Oxford, R. L. (1997). Cooperative Learning, Collaborative Learning, and Interaction: Three Communicative Strands in the Language Classroom. *The Modern Language Journal*, *81*(4), 443–456.

Ozek, Y., & Civelek, M. (2006). A Study on the use of Cognitive Reading Strategies by ELT Students. *The Asian EFL Journal*, (August), 1–26. Retrieved April 21, 2014, from http://www.asian-efl-journal.com/PTA_August_06_ozec&civelek. pdf

Pallant, J. (2010). *SPSS Survival Manual*. Allen & Unwin Book Publishers.

Pandian, A. (2007). Literacy skills in higher education: A comparative study between public and private university students. In S. Kaur, M. Sirat, & A. Norzaini (Eds.), *Globalisation and internationalisation of Higher Education in Malaysia*. Penang: University of Science Malaysia Press.

Pannells, T. C., & Claxton, A. F. (2008). Happiness, Creative Ideation, and Locus of Control. *Creativity Research Journal*, *20*(1), 67–71.

Park, H. M. (2005). *Comparing Group Means : The T-test and One-way ANOVA Using STATA, SAS, and SPSS*. Retrieved 20 May, 2015 from, http://stat.smmu.edu.cn/DOWNLOAD/ebook/statistics_course.pdf

Paul，Richard. (1990). Bloom's Taxonomy and Critical Thinking Instruction: Recall is not Knowledge. In A. Jane Willsen & J. A. Binker (Eds.), *Critical Thinking: What Every Person Needs To Survive in a Rapidly Changing World*. Foundation for Critical Thinking.

Paul, R. (2005). The state of critical thinking today. *New Directions for Community Colleges*, *2005*(130), 27–38.

Paul, R., & Elder, L. (2006). *The International Critical Thinking Reading & Writing Test: How to Assess Close Reading and Substantive Writing* (Vol. 525). Foundation Critical Thinking.

Paul, R., & Linda, E. (2006). *Critical Thinking Reading & Writing Test.*California: Sonomata State University, Centre for Critical Thinking.

Paul, R. W. (2004). *Critical thinking: what every person needs to survive in a rapidly changing world.* California: Sonomata State University, Centre for Critical Thinking.

Paul, R. W. (1992). Critical thinking: What, why, and how? *New Directions for Community Colleges*, *1997*(77), 3–24.

Paul, R. W., & Binker, A. J. A. (1990). *Critical thinking: What every person needs to survive in a rapidly changing world.* ERIC.

Pearson, P. D. (1982). *A Context for Instructional Research on Reading Comprehension.*ERIC.

Peen, T. Y., & Arshad, M. Y. (2014). Teacher and Student Questions : A Case Study in Malaysian Secondary School Problem-Based Learning. *Asian Social Science*, *10*(4), 174–182. http://doi.org/10.5539/ass.v10n4p174

Peirce, W. (2006). Designing rubrics for assessing higher order thinking. *Columiba,MD*.

Peker, B. (1998). Enjoying Predicting: Let it all Hang out, MAN! In *The Second Inged-Gazi International ELT Conference Proceedings.* (pp. 240–250).

Peñuelas, A. B. C. (2012). The Writing Strategies of American University Students : Focusing on Memory , Compensation , Social. *ELIA*, *12*, 77–113.

Pepe, K. (2012). Study skills of students studying at different departments. *Procedia - Social and Behavioral Sciences*, *47*, 1040–1047. http://doi.org/10.1016/j.sbspro.2012.06.776

Pepe, K. (2013). Researching the foreign language learning styles of students in different departments. In *Procedia - Social and Behavioral Sciences* (Vol. 70, pp. 260–266). Elsevier B.V. http://doi.org/10.1016/j.sbspro.2013.01.063

Perin, D., Keselman, A., & Monopoli, M. (2003). The Academic Writing of Community College Remedial Students: Text and Learner Variables. *Higher Education*, *45*(1), 19–42.

Petty, R. E., & Cacioppo, J. T. (1984). The Effects of Involvement on Responses to Argument Quantity and Quality: Central and Peripheral Routes to Persuasion. *Journal of Personality and Social Psychology*, *46*(1), 69.

Phan, N. (2006). Effective reading. *Asian EFL Journal*, *15*(1). Retrieved from www.asian-efl-journal.com/pta_october_06_

Phillips, L. (2002). Making New and Making do: Epistemological, Normative and Pragmatic Bases of Literacy. In D. K. K. D. R. Olson & J. Brockmeier (Eds.), *Literacy and conceptions of language and mind* (pp. 283–300). Cambridge, UK: Cambridge University Press.

Piaget, J. (1971). *Genetic Epistemology*. New York: W. W. Norton & Company.

Pithers, R. T., & Soden, R. (2000). Critical Thinking in Education: A Review. *Educational Research*, *42*(3), 237–249. http://doi.org/10.1080/001318800440579

Prosser, M., & Trigwell, K. (1999). *Understanding learning and teaching: The experience in higher education*. McGraw-Hill Education (UK).

Quality Enhancement Plan. (2014). Improving students' higher-order thinking competencies, including critical evaluation, creative thinking, and reflection on their own thinking., (January).

Ranaweera, P. (2008). Importance of Information Literacy skills for an Information Literate Society. *NACLIS 2008, Colombo*, 1–13.

Rashid, R. A., & Hashim, R. A. (2008). The Relationship between Critical Thinking and Language Proficiency of Malaysian Undergraduates, (November), 19–21.

Regala-Flores, E. (2007). Thinking Skills Reflected in the Argumentative Essays of Freshman College Students: A Descriptive Analysis. *Asia-Pacific Education Researcher*, *16*(1), 33–44.

Reich, J. (2016). Climbing the Pyramid of Bloom's Taxonomy Through the Writing Process. *CBE—Life Sciences Education*, *6*, 140–154. Retrieved Novemeber 11, 2014 from http://wikifuse.pbworks.com/f/Increasing+Critical+Thinking+Through+Writing_Quitadamo.pdf

Renner, C. E. (1996). Enriching Learners' Language Production through Content-Based Instruction.In *National Conference on Lingua e Nuova Didattica, Modena, Italy*. ERIC.

Rigg, P. (1991). Whole Language in TESOL. *TESOL Quarterly*, *25*(3), 521–541.

Ritchhart, R., & Perkins, D. (2008). Making Thinking Visible. *Educational Leadership*, *65*(5), 57–61.

Rivers, W. M. (1981). *Teaching foreign-language skills. (2nd ed.)*. Chicago, IL: The University of Chicago Press.

Robbins, T. (2007). *Awaken the Giant within: How to Take Immediate Control of Your Mental, Emotional, Physical and Financial.* Simon and Schuster.

Rodzalan, S. ., & Saat, M. . (2015). The Perception of Critical Thinking and Problem Solving Skill among Malaysian Undergraduate Students The Perception of Critical Thinking and Problem Solving Skill. *Procedia - Social and Behavioral Sciences*, *172*, 725–732.http://doi.org/10.1061/j.sbspro. 2015.01.425

Rosma, O., Ghazali, M., Turiman, S., Ibrahim, N., & Bahaman, A. S. (2004). Teachers' Perception on Thinking Skills as an Innovation in English Language Teaching. In Z. A. M. Jayakaran, Dzeelfa, & S. R. S. Dulip (Eds.), *ELT matters 2: Development in English language learning and teaching* (pp. 177–185). Serdang: UPM Publication.

Rosnani, & Suhailah. (2003). Finishing School. *Vocational Education*, *62*(5), 29–31.

Sasaki, M. (2000). Toward an Empirical Model of EFL Writing Processes: An Exploratory Study. *Journal of Second Language Writing*, *9*(3), 259–291.

Schumann, J. H. (1999). A Neurobiological Perspective on Affect and Methodology in Second Language Learning. *Affect in Language Learning*, 28–42.

Scriven, M., & Paul, R. (1987). Defining critical thinking. Retrieved April 20, 2015, from http://www.criticalthinking.org/aboutCT/define_critical_thinking.cfm.

Seif, A. Q. A. (2012). Evaluating the Higher Order Thinking Skills in Reading Exercises of English for Palestine Grade 8. *Asian Journal of Education and E-Learning*, *1*(1), 144–150.

Seymour, M., & Levin, H. M. (2015). *Educating for Humanity: Rethinking the Purposes of Education*. Routledge.

Shang, H.-F. (2010). Reading strategy use, self-efficacy and EFL reading comprehension. *Asian EFL Journal*, *12*(2), 18–42.

Shakir, R. (2009). Soft Skills at the Malaysian Institutes of Higher Learning. *Asia Pacific Education Review*, *10*(3),309-315.http://doi.org/10.1007/s12564-009009-9038-8

Sheha, S., Aziz, S., & Mustapha, G. (2010). Infusion of Thinking Skills in English Language Instructional Development at Tertiary Level. *Pertanika Journal of Social Science & Humanities*, *18*, 65–85.

Shihab, I. A. (2011). Reading as Critical Thinking. *Asian Social Science*, *7*(8), 209–219. http://doi.org/10.5539/ass.v7n8p209

Shirkhani, S., & Fahim, M. (2011). Enhancing Critical Thinking in Foreign Language Learners Servat. In *1st International Conference on Foreign Language Teaching and Applied Linguistics May5-7 2011 Sarajevo* (pp. 60–66).

Silva, T. (1990). Second Language Composition Instruction: Developments, Issues, and Directions in ESL. *Second Language Writing: Research Insights for the Classroom*, 11–23.

Singhal, M. (2001). Reading Proficiency, Reading Strategies, Metacognitive Awareness and L2 readers. *The Reading Matrix*, *1*(1). Retrieved April 6, 2015, from http://www.readingmatrix.com/articles/singhal/

Smith, F. (1982). *Understanding Reading (3rd ed).* New York: Holt, Rinehart, and Winston.

Smith, F. (2004). *Understanding Reading: a psycholinguistic analysis of reading and learning to read.6th ed.* Mahwah, N. J.: L. Erlbaum Associates.

Spear, K. (Ed.). (1984). *Rejuvenating introductory courses.* San Francisco, CA: Jossey-Bass Publishers.

Spiller, D., & Ferguson, P. B. (2009). *Teaching Strategies to Promote the Development of Students' Learning Skills.*The University of Waikato.

Spiro, R. (1977). Remembering Information from Text: The State of Schema Approach. In R. C. Anderson, J. R. Spiro, & W. E. Montague (Eds.), *Schooling and the Acquisition of knowledge.* (pp. 137–165). Hillsdale, NJ: Erlbaum.

Spivey, N. N. (1990). Transforming Texts: Constructive Processes In Reading and Writing. *Written Communication*, *7*(2), 256–287.

Stanford, G., & Roark, A. (1974). *Human interaction in education*. Boston, Massachusetts: Allyn and Bacon.

Staton, J. (1984). Thinking together: Language interaction in children's reasoning. In & C. S. C. Thaiss (Ed.), *Speaking and writing, K-12: Classroom strategies and the new research* (pp. 144–187). Urbana, Illinois: National Council of Teachers of English.

Stauffer, R. G. (1975). *Directing the Reading-thinking Process*. Harpercollins.

Stayer, J., Mauk, J., & Mauk, K. (2014). *Think About It: Critical Skills for Academic Writing*. Boston,MA: Wadsworth, Cengage Learning.

Stein, V. (1990). Elaboration: Using What You Know. In L. Flower, V. Stein, J. Ackerman, M. J. Kantz, K. McCormick, & W. Peck (Eds.), *Reading to Write: Exploring a Cognitive and Social Process*. New York: Oxford University Press.

Sternberg, R. (1988). *The Triarchic Mind: A New Theory of Intelligence*. NY: Viking Press.

Stotsky, S. (1983). Research on Reading/Writing Relationships: A Synthesis and Suggested Directions. *Language Arts*, *60*(5), 627–642.

Stripling, B. (2010). Teaching Students to Think in the Digital Environment: Digital Literacy and Digital Inquiry. *School Library Monthly*, *26*(8), 16–19.

Swartz, R. J., Fischer, S. D., & Parks, S. (1998). *Infusing the Teaching of Critical and Creative Thinking into Secondary Science: A Lesson Design Handbook.* ERIC.

Swartz, R. J., & Parks, S. (1994). *Infusing the Teaching of Critical and Creative Thinking into Content Instruction: A Lesson Design Handbook for the Elementary Grades.* ERIC.

Swartz, R., & McGuinness, C. (2014). Developing and Assessing Thinking Skills The Internationl Baccalaureate Project 2014. *Final Report Part 1 Literature Review and Evaluation Framework*, (February), 1–14.

Taggart, G., Ridley, K., Rudd, P., & Benefield, P. (2005). *Thinking Skills in the Early Years: A Literature Review.* The Mere, Upton Park.

Takano, Y., & Noda, A. (1995). Interlanguage dissimilarity enhances the decline of thinking ability during foreign language processing. *Language Learning*, *45*(4), 657–681.

Teddlie, C., & Yu, F. (2007). Mixed Methods Sampling: A Typology With Examples. *Journal of Mixed Methods Research*, *1*(1), 77–100. http://doi.org/10.1177/2345678906292430

The Critical Thinking Community. (2007). Defining critical thinking. Retrieved March 7, 2017, from http://www.criticalthinking.org/pages/defining-critcal-thinking/766

The Malaysia Statisitics Department. (2011). Statistics Labour Force. Retrieved January 3, 2014, from https://www.dosm.gov.my/v1/

Therese, B., Caccavale, S., & Nnell, I. P. (1968). Through the Skylight with Foreign Languages : Providing All Students With Challenging Elementary School Curriculum.

Tierney, R. J., & Pearson, P. D. (1983). Toward a composing model of reading. *Language Arts*, *60*(5), 568–580.

Tooley, M. (2005). Big6 Turbotools and Synthesis. *Library Media Connection*, *24*(2), 30.

Toulmin, S. E. (2003). *The Uses of Argument*. Cambridge University Press.

Trochim, W. M. K., & Land, D. A. (1982). Designing designs for research. *The Researcher*, *1*, 1–6.

Turuk, M.C. (2010). *Developing Critical Thinking Skills Through Integrative Teaching of Reading and Writing in the L2 Writing Classroom*. PhD thesis. Newcastle, UK: Newcastle University.

Umbach, P. D., & Porter, S. R. (2002). How do academic departments impact student satisfaction? Understanding the contextual effects of departments. *Research in Higher Education*, *43*(2), 209–234. http://doi.org/10.1023/A:1014471708162

Ünal, E., & İŞERİ, K. (2012). Analysis of the Relationship between Reading and Writing Attitudes of Teacher Candidates and Their Academic Achievements through the Structural Equation Model. *Elementary Education Online*, *11*(4), 1066–1076.

UNESCO-IBE. (2006). Principles and general objectives of education. *World Data on Education*. Retrieved April 4, 2015, from http://www.ibe.unesco.org/fileadmin/user_upload/archive/Countries/WDE/2006/ASIA_and_the_PACIFIC/Malaysia/Malaysia.pdf

Urquhart, S., & Weir, C. J. (1998). *Reading in a Second Language: Process, Product and Practice*. Essex: Pearson Education Ltd.

Vacca, J. L., Vacca, R., & Gove, M. K. (1995). *Reading and Learning to Read*. New York: Harper Collins College Publisher.

Van Gelder, T. (2005). Teaching critical thinking: Some lessons from cognitive science. *College Teaching*, *53*(1), 41–48.

Veeravagu, J., Muthusamy, C., Marimuthu, R., & Subrayan, A. (2010). Using Bloom ' s Taxonomy to Gauge Students ' Reading Comprehension Performance. *Canadian Social Science*, *6*(3), 205–212.

Vermunt, J. D. (2005). Relations between student learning patterns and personal and contextual factors and academic performance. *Higher Education*, *49*(3), 205–234. http://doi.org/10.1007/s10734-004-6664-2

Vygotsky, L. (1962). *Thought and language*. Cambridge, Massachusetts: The MIT Press.

Vygotsky, L. S. (2012). *Thought and Language*. Cambridge: The MIT Press.

Wang, P. (2009). The Inter-rater Reliability in Scoring Composition. *English Language Teaching*, *2*(3), 39–43. Retrieved August 25, 2014, from http://www.ccsenet.org/journal/index.php/elt/article/view/3694

Waters, A. (2006). Thinking and language learning. *ELT Journal*, *60*, 237–319.

Wei-hua, L., & Chiou-lan, C. (2010). Using Revised Bloom's Taxonomy to Analyze Reading Comprehension questions on the SAET and the DRET.pdf. *Contemporary Educational Research Quarterly*, *18*(3), 165–206.

Wellington, J. (2003). *Getting Published: a guide for lectures and researchers*. London, New York: RoutledgeFalmer.

Wen, Qiufang.,& Liu, R. (2006). An exploratory on features in English majors' abstract thinking in English argumentative compositions. *Journal of Foreign Language*, *162*.

Wesche, M. (1985). Introduction. In R. P. C. Hauptman, LeBlanc, & M. B. Wesche (Eds.), *Second language performance testing*. Ottawa: University of Ottawa Press.

Wikipedia. (2016). Rhetorical modes. Retrieved June 16, 2014, fromhttp://en. wikipedia.org/wiki/Rhetorical_modes

Willingham, D. (2006). The usefulness of brief instruction in reading comprehension strategies. *American Educator Journal*, *25*(1), 42–43.

Wilson, N. S., & Smetana, L. (2011). Questioning as thinking: A metacognitive framework to improve comprehension of expository text. *Literacy*, *45*(2), 84–90.

Windschitl, M. (2002). Framing constructivism in practice as the negotiation of dilemmas: An analysis of the conceptual, pedagogical, cultural, and political challenges facing teachers. *Review of Educational Research*, *72*(2), 131–175.

Yee, L. M. (2012). Effects of Teaching Paraphrasing Skills to Students Learning Summary Writing in ESL. *JOURNAL OF TEACHING AND LEARNING*, 8(Windschitl 2002), 71–77.

Yu, C. H. (2006). *Philosophical foundations of quantitative research methodology*. Lanham: University Press of America, Inc.

Yunus, A. S., Hamzah, R., Tarmizi, R. A., Abu, R., & Nor, S. (2006). Problem Solving Abilities of Malaysian University Students. *International Journal of Teaching and Learning in Higher Education*, *17*(2), 86–96.

Zamel, V. (1982). Writing: The process of discovering meaning. *TESOL Quarterly*, *16*(2), 195–209.

Zoe-s-wiki - Bloom's taxonomy. (2017). Retrieved March 5, 2017, from https://zoe-s-wiki.wikispaces.com/Bloom%27s+taxonomy

Zohar, A. (1999). Teachers' metacognitive knowledge and the instruction of higher order thinking. *Teaching and Teacher Education*, *15*(4), 413–429.

Zohar, A., & Dori, Y. J. (2003). Higher order thinking skills and low achieving students: Are they mutually exclusive? *Journal of the Learning Sciences*, *12*(2), 145–183.

Zoller, U. (2001). Alternative assessment as (critical) means of facilitating HOCS-promoting teaching and 368 Res Sci Educ (2007) 37:353–369 learning in chemistry education. *Chemical Education Research and Practice in Europe*, *2*(1), 9–17.