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ENGLISH LANGUAGE EXAMINATIONS AND THINKING SKILLS

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ABSTRACT

There is a growing need in education today to produce students who are independent thinkers and effective problem-solvers. This is mainly due to the onslaught of new problems brought about by modernization in all human endeavours. The need to enhance creative and critical thinking skills as well as language competency through the various teaching and learning processes and through evaluation is becoming increasingly important. To what extent, have the various programmes and evaluations in the English Language currently carried out in schools achieved this objective? This paper will analyze current English Language Papers set by the Malaysian Examination Board for the *Sijil Pelajaran Malaysia* (SPM) to evaluate the thinking skills that are directly or indirectly evaluated apart from testing the students' competency in the language. This will give English Language examiners some insights into the type of thinking skills that are examined or not examined by these public examinations. English Language teachers will be able to structure their questions to incorporate the dual aims of English Language education, that is, teaching and testing for language competency as well as enhancing thinking skills.

Introduction

'Communication is primarily an exercise in thinking'

-Pitt and Leavenworth (1968, p.viii)

Communication, be it oral, written or non-verbal, requires cognitive processing of information. It is almost impossible to initiate meaningful communication without proper thinking and sequencing of thoughts. Research has also shown that creative and critical thinking play a vital role in logical, clear and intelligent communication. Apart from the core language skills pertaining to speaking, listening, reading and writing in language, thinking skills are required for effective and intelligent social communication. Studies have shown that students are not able to communicate well, not only because of their poor language skills but because of poor thinking skills as well. At least two reports in the United States, namely, that conducted by The National Assessment of Educational Progress (NAEP) (1981) and the report submitted by the National Commission on Excellence in Education (1983), entitled "A Nation at Risk: the imperative for educational reform", have found that students lack competencies like logical and rational thinking that are essential for reading and

writing. These reports have indicated that students lack cognitive structures that are required for clear writing, such as analysis of facts, organization of thoughts and coherence in the flow of ideas. As such, educators have begun to design curriculum that not only enhances students' language skills but also thinking skills like rational thinking, drawing inferences and solving problems.

On the other hand, assessments play a vital role in what is taught or emphasized in the classroom. Studies have indicated that teachers tend to teach what is assessed or examined (Forgarty & Bellanca, 1990). Thus, public examinations actually determine what gets emphasized in the classrooms not the curriculum, the so-called washback phenomenon. The curriculum may be designed to achieve the ideals and visions of the country but it is the examination that determines what teachers emphasize and promote in the classroom. Hence, even if the curriculum states explicitly the types of thinking skills that need to be taught in the classroom, teachers tend to pay more attention to what is actually being tested in the examinations and spend more time teaching these items. Thus, it will be interesting to see to what extent the objectives of the curriculum in relation to enhancing the various thinking skills among students have been actually emphasized in the examinations.

This paper intends to see to what extent the English Language examination at the SPM level supports the curriculum designed to promote thinking skills among students. Generally, English Language examinations have been subjected to many criticisms. While some educators feel that English grades do not accurately reflect students' competency in the areas tested, some say that English language results also do not reflect students' competency in the area of information processing, problem-solving and effective decision making as required by the KBSM curriculum. The second area of concern is the focus of this paper. The questions this paper will address are: Do English language examinations assess students' thinking abilities and if so, to what extent? How can teachers use specific questioning techniques to enhance students' thinking competencies?

Rationale

There is a growing need to instill thinking skills among students as the volume and diversity of information available to the students is becoming more and more overwhelming. Students are constantly being bombarded with information via a multitude of media especially the Internet which sometimes create confusing and perplexing issues which students are required to comprehend and make thoughtful decisions. This has prompted the Ministry of Education to proactively initiate a curriculum that not only emphasizes mastery

of content but also on how to use the content in different or new contexts as well as to be able to generate new information in the process. This has resulted in various initiatives including training teachers on how to incorporate thinking skills in their classroom teaching and also evaluate students not only on content areas but also on the thinking processes that they require for solving problems and making decisions. Evaluation of both content and thinking skills will inevitably require teachers to emphasize both in the classroom. Hence, it is important to find out to what extent questions set in the major English examinations at the *Sijil Pelajaran Malaysia* (SPM) level assess the various components of thinking skills as suggested by the Ministry of Education.

Review of Literature

Many studies and writings have shown that thinking and language learning are inter-related. Piaget and Vygotsky may be considered to be among the more prominent psychologists whose research and writings have significantly influenced language instruction. Their thoughts have also drawn attention to the close relationship between language learning and thinking. They emphasized that the ability to think effectively contributes significantly to the rate of language acquisition and effective communication.

Subsequent research undertakings have attempted to relate different aspects of language learning to thinking. Writing, for example, has been described as a form of thinking (Hays, et al., 1983). Pearson and Tierney (1984) found reading as an active mental process constantly constructing meaning and visionizing. Students who are able to visualize what they read, tend to comprehend the text better. Marzano, et al. (1989) have described comprehension as a process involving the generation of meaning from various processes including reading and listening. They consider comprehension as involving the extracting of new information and integrating it with information already known to create new meaning. Some components of creative thinking, like the ability to see relationships between concepts, and idea generation tend to enhance reading comprehension further.

Composing is also considered as a thinking skill involving the active mental process of conceiving and developing a product (Marzano, et al., 1989). It consists of planning, translating and reviewing. At the planning stage, the writer forms an internal representation of the knowledge involving processes like selecting and retrieving relevant information from long-term memory. Information is also organized into relevant categories and new meanings are generated. At the translating stage of the writing process, another thinking skill comes into play - imagery. This is where ideas are put into visible language.

Next, the cognitive processes, evaluating and revising are used at the reviewing stage. Thus, thinking skills play an important role in effective writing and composition.

Thinking Skills

There are many definitions that attempt to describe thinking. Its multiple dimensions and functions have defied accurate definition. However, psychologists have somewhat agreed on certain common, generally accepted aspects of thinking. For example, thinking has been generally considered as an active, purposeful and organized cognitive process that we use every waking moment to make sense of the world and our lives (Chaffee, 1991). Thinking skills have also been defined as mental strategies used by individuals to organize and use previous learning experiences and perceptions in order to assimilate new knowledge, ideas and make intelligent judgements (McCabe & Rhodes, 1990).

There are many models that try to show the different types of thinking skills and processes and the relationships between them. Among the most commonly used are those relating to Bloom's Taxonomy of Educational Objectives (Bloom, 1971), Guilford's Structure of Intellect model (Guilford, 1967) and the Cluster Curriculum model (Forgarty & Bellanca, 1990).

Thinking competencies have been broadly categorized as creative and critical thinking processes, which comprise thinking skills (Marzano, *et al.* 1989). Other thinking processes, like problem solving and decision making involve these two main processes and skills. Critical thinking is also variously defined. Among the most commonly used definitions are those by Chaffee (1991) and Adam and Hamm (1994). Chaffee (1991) defines critical thinking as 'an active, purposeful, organized process we use to make sense of our world by carefully examining our thinking and the thinking of others, in order to clarify and improve our understanding'. Hamm (1994) says critical thinking occurs when students 'construct meaning by interpreting, analyzing and manipulating information in response to a problem or question that requires more than a direct, one-right answer application of previously learned knowledge' (p.16).

There is no universally accepted definition of creativity. The diverse interpretation by psychologists has left the understanding of what creativity is quite fragmented. However, Rhodes (1961) categorized these definitions into four categories, namely, Process, Person, Product and Press. For the purpose of this paper, the Process definition of Torrance (1974) will be used. Torrance defines creative thinking as *'a process of becoming sensitive to problems,*

deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficult, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting these hypotheses and possibly modifying and retesting them, and finally communicating the results' (p.8). This definition has found worldwide acceptance and is the basis on which the most popular creativity test, The Torrance Test of Creative Thinking, or TTCT, was designed.

Instruction and Thinking Skills

Many instructional models have been proposed that can be used in teaching thinking skills in the classroom. These models have been classified as either teaching **of** thinking, teaching **for** thinking, teaching **with** thinking and teaching **about** thinking. Teaching of thinking refers to teaching thinking skills explicitly without any inclusion of content material. Thinking is taught as a separate subject. A leading advocate of this type of instruction on thinking is Dr. Barry Beyer.

Teaching for thinking involves setting the right climate for the teaching and learning process. The teacher encourages thinking by not criticizing students' answers. Original, non-textbook answers are rewarded. Teaching with thinking refers to the incorporation of activities that promote thinking in the classroom. Co-operative group activities involving problem solving tasks to get shy and reserved students to participate and to give an opportunity to weaker students to model good students' thinking strategies is an example of teaching with thinking.

Teaching about thinking or metacognition, is the most important of all approaches as it is a combination of all the other three types of thinking instruction. In this approach, students reflect on what they have learnt and how they have understood what they have learnt. Essentially, it means thinking about thinking. It involves asking, first, "what", then "so what" and finally, "now what" in relation to what has been taught and learnt.

Studies have shown that metacognitive strategies enhance language proficiency. Heller (1986), for example, found that metacognition or thinking about thinking, does help improve students' reading comprehension. Hence, students who are able to understand the writer's thinking processes and their own thinking processes related to the material they are reading, tend to have a higher level of comprehension of the passage.

Assessing Thinking Skills

Thinking can be assessed using various methods. Verbal questioning in t classroom has been known to not only procure students' attention a participation but also enable the teacher to assess students' thinking. Writt answers can also be used to assess the various components of thinking skil Halpern (1997) proposed a series of generic question stems that can be used assess the various components of thinking skills (Table 1).

Table 1
Question Stems for Enhancing Thinking Skills

Generic Questions	Specific Thinking Skills Induced
What is a new example of	Application
How could ..... be used to ....?	Application
What would happen if ....?	Prediction / Hypothesizing
What are the implications of ....?	Analysis / Inference
What are the strengths and weaknesses of.?	Analysis / Inference
What is ... analogous to?	Identification and creation of analogies and metaphors
What do we already know about ...?	Activation of prior knowledge
How does ... affect ...?	Activation of relationship (cause – effect)
How does ... tie in with what we learned before?	Activation of prior knowledge
Explain why ...	Analysis
Explain how ...	Analysis
What is the difference between ... and ..?	Analysis
Why is .... important?	Analysis
What is the difference between ... and ...?	Analysis of significance
How are ... and ... similar?	Comparison - contrast
How does .. apply to everyday life?	Application – to the real world
What is the counter-argument for ...?	Rebuttal argument
What is the best ... and why?	Evaluation and provision of evidence
What are some possible solutions to the problem of ...?	Synthesis of ideas
Compare ... and .. with regard to ...	Comparison - contrast
What do you think causes ...? Why?	Analysis of relationship (cause-effect)
Do you agree or disagree with this statement: ...?	Evaluation and provision of evidence
What evidence is there to support your answer?	
How do you think ... would see the issue of ...?	Taking other perspectives

Taken from:
Halpern, D.F. (1997, p.69)

These question stems are useful in helping teachers design their lesson plans and also frame their questions in content areas. Students will need to use these thinking skills to answer the questions. Hence, teachers in their English tests can also use these question stems and examinations to assess to what extent students have mastered the various thinking skills.

Hence, formal examinations, which are important by nature of their being public examinations, may serve two purposes. One, curriculum developers may use them to assess the types of thinking skills that are assessed and two, teachers may be able to help students master the thinking skills that are actually needed to perform well in these examinations.

Definition of Terms

The SPM English Language examination questions will be assessed on two main thinking processes (Marzano, 1989), namely, Creative and Critical thinking processes.

The creative thinking skills that will be examined are defined as follows:

i) **Fluency**
Is the ability of the question to prompt students to come up with many alternatives, possibilities, consequences, products or answers.

ii) **Flexibility**
Is the ability of the question to elicit responses that are different and varied.

iii) **Elaboration**
Is the ability of the question to get students to expand or embellish on a certain idea, object or situation.

iv) **Originality**
Is the ability of the question to elicit unique and unusual answers from students.

v) **Visualizing**
Is the ability to assess students' capacity to create a mental imagery of something.

vi) **Inventing**
Is the ability to prompt students to come up with ideas that may solve a problem posed in the question.

vii) **Associating Relationship**
Is the ability of the question to assess students' competency in seeing relationships between two concepts, objects or situations.

viii) **Inferring**
Is the ability to assess students' competence to draw possible conclusions, consequences or implications from a set of facts or premises.

ix) **Generalizing**
Refers to assessing students' ability to reason from the specific to the general to produce a concept.

x) **Predicting**
Refers to the ability to assess students' skill in forecasting outcomes based on the consideration of possible causes and / or effects of a given situation.

xi) **Creating Analogies**
Is the ability of the question to assess students' competency in creating new objects or ideas based on some relationships or common characteristics.

xii) **Problem Solving**
Is the ability of the question to assess students' capacity to generate alternatives to a situation / problem.

The critical thinking skills that will be assessed are defined as follows:

i) **Attributing**
The ability of the question to assess students' competency in analyzing characteristics, qualities, elements or traits of a concept or item.

ii) **Comparing and Contrasting**
The ability of the question to assess students' capacity to find similarities and differences by analyzing characteristics of objects or situations.

iii) **Classifying**
The ability of the question to assess students' skill in sorting into groups on the basis of common characteristics or attributes.

iv) **Sequencing**
The ability of the question to assess students' capacity to arrange items in order by distinguishing attributes, size, time or color.

v) **Prioritizing**
The ability of the question to assess students' capacity to rank order according to a determined value.

vi) **Drawing Conclusions**
The ability of the question to assess students' competency in drawing conclusions from given facts.

vii) **Determining Causes and Effects**
The ability of the question to assess students' skill in determining possible causes and effects of a certain action or situation.

viii) **Analyzing for Bias**
The ability of the question to assess students' competency in analyzing elements of bias.

ix) **Analyzing for Assumption**
The ability of the question to assess students' skill in examining material for point-of-view and possible misrepresentation.

x) **Solving Analogies**
Refers to the ability of the question to assess students' competency in inferring a relationship and mapping similar relationships to converge on the best answer.

xi) **Evaluating**
Refers to the ability of the question to assess students' competency in judging the worth of something.

xii) **Decision Making**
Is the ability of the question to assess students' capacity to make a choice based on reasoned judgment.

Methodology

This paper intends to study the thinking skills that are assessed by the 1997, 1998 and 1999 SPM English Examinations. Both Papers 1 and 2 will be evaluated on the thinking skills defined above.

The thinking skills assessed are based on the model adapted from Fogarty an Bellanca (1990). This model comprises thinking skills that are similar to thos proposed by the Ministry of Education for the teacher training colleg curriculum.

Paper 1 of the examination comprises 4 sections. Section A consists of 1 multiple choice questions; Section B comprises 10 'Fill in the blanks' questions, followed by Section C which consists of short answer structured questions anc Section D is the comprehension section which comprises 15 open-endec questions.

Paper 2 comprises 3 sections. Section A is directed writing; Section B requires students to summarize a passage and Section C is Continuous Writing which requires students to write a composition of 350 – 500 words.

All questions posed to students in both papers were evaluated on the type of thinking skills that are required to answer correctly. The total number of questions that assess each type of thinking skill is computed. This gave a measure of the emphasis placed on that thinking skill in that particular English examination.

Data Analysis, Results and Discussion

Table 2 shows the results of the analysis. The numbers indicate the frequency of the various thinking skills that are assessed by the three SPM English examinations.

It can be seen that, generally, most of the thinking skills assessed are critical thinking skills. Very few creative thinking skills were assessed for all the three years. Among the critical thinking skills that are commonly assessed are Attribution, Compare and Contrast, Interpretation and Drawing Conclusion, Determining Cause and Effect and Decision Making. Another trend that can be observed is that these thinking skills assessed appear to be on the decline from 1997 onwards. This is especially clear for the thinking skills Attribution, Compare and Contrast, Classifying and Determining Cause and Effect.

Attribution is a basic critical thinking skill that is required for several other thinking skills like Comparing and Contrasting and Classifying. It is very easily assessed. In 1997, most of the questions in Section C in Paper 1 assessed this skill. However, in 1999, there were only 2 questions assessing Attribution. More effort needs to be taken to instill the importance of this skill since it is a basic skill for a number of other skills.

Similarly, there were more questions requiring students to Compare and Contrast in 1997 and 1998 than in 1999. Most of these questions are in Section C of Paper 1, which is the Short Answer Structured Questions section. Although these types of questions are amenable for testing thinking skills, Compare and Contrast can also be tested via the other types of questions like Graphics and Text (Section A, Paper 1). But this is seldom the case for all three years. More questions can be designed in the other sections, especially in Section A: Graphics and Text that not only assess language proficiency but also the ability to compare and contrast.

The only thinking skill that is assessed consistently in all three years is Interpretation and Drawing Conclusion. In fact there appears to be an increase in the number of questions assessing this skill. This is an encouraging trend in the incorporation of thinking skills in English assessment.

There appears to be a general decline in the number of questions assessing the skill, Determining Cause and Effect. This is another important skill that can be easily assessed in English language examinations. More effort must be put into designing questions that assess this thinking skill.

Another important thinking skill that is also on the decline is Decision-Making. While there were 2 questions in 1997 there were none in 1998 and only one question in 1999 that assessed this skill. It is also quite easy to assess students' language proficiency as well as decision-making skill. For example, in Section C of Paper 1: Short Answer and Structure Questions, students may be given many choices and then asked to select one that best fits a certain set of criteria.

Table 2

Frequency of the thinking skills assessed in the SPM English Language Examinations

		1997		1998		1999	
CRITICAL THINKING SKILLS		P1	P2	P1	P2	P1	P2
1	Attribution	9	1	5	1	1	1
2	Compare and contrast	8	1	5	1	2	1
3	Classifying	6	0	5	0	1	0
4	Sequencing	1	0	0	0	0	0
5	Prioritizing	0	1	0	1	0	1
6	Interpretation & drawing conclusion	6	0	7	0	8	0
7	Determining cause & effect	8	0	3	0	6	0
8	Analyzing for bias	0	0	0	0	0	0
9	Analyzing for assumptions	0	0	2	0	1	0
10	Solving Analogies	0	0	0	0	1	0
11	Evaluating	1	0	0	0	0	0
12	Decision Making	2	0	0	0	1	0
CREATIVE THINKING SKILLS							
1	Fluency	0	0	0	0	1	0
2	Flexibility	0	0	0	0	0	0
3	Elaboration	0	2	0	2	0	1
4	Originality	0	2	0	1	1	1
5	Visionizing	2	1	2	0	0	0
6	Inventing	0	0	0	0	0	0
7	Assessing Relationship	0	0	0	0	0	0
8	Inferring	5	0	5	0	5	0
9	Generalizing	0	0	0	0	0	0
10	Prediction	0	0	0	0	0	0
11	Hypothesizing	1	0	0	0	1	0
12	Making Analogy	1	0	0	0	0	0
13	Problem Solving	0	1	0	1	1	1

There are several critical thinking skills required by the Ministry of Education that are seldom assessed in the three examinations. These are Sequencing and Analyses for Bias and Assumptions. While there are questions requiring

analyses of issues, there are hardly any questions requiring students to analyze for bias or assumptions.

The most frequently assessed creative thinking skill is Inferring and this skill has been assessed consistently over the three years in the comprehension section of Paper 1.

The other creative thinking skills assessed less sparingly are Elaboration, Originality and Visionizing. Elaboration skills are commonly assessed in the Directed Writing section and the Continuous Writing section. For example, questions like 'Describe the last day in your old house' requires students to be elaborative and descriptive. However, since this skill is dependent on the students' language proficiency (in other words, this skill will not be observed if the students' language proficiency is low), it may be quite difficult to assess this component of creativity.

Visionizing, an important creative thinking skill which involves the right brain, is assessed in decreasing frequency. In 1997, this skill was assessed three times, twice in 1998, and not at all in 1999. For example, in 1997, Question 44 in Paper 1 requires candidates to visualize the situation 'strangely slow'. Students need to visualize this situation to answer how this description emphasizes the effect. In the same paper, Question 49, candidates are required to visualize Nirad's father's state of anxiety and find a word or phrase in paragraph 9, which describes it. This is an example of a creative question. It would have been better if students were required to give their own words and not choose from the paragraph.

Another important creativity skill that is assessed, albeit sparingly, is Originality. This skill is commonly assessed in the Continuous Writing section where students are required to come up with original themes or story lines. More questions that require originality must be designed for the other sections since originality is the core of creative thinking.

There are creative thinking skills that are required by the new secondary school curriculum (KBSM) that are not assessed by the examinations. There are no questions that even come close to assessing Flexibility, Inventing, Predicting, Creating Analogy and Problem Solving.

These findings confirm what has been lamented over the years that creative and critical thinking are seldom given due emphasis. In fact, creative thinking is seldom emphasized in the teaching, learning and assessment although the Ministry has said much about their importance in the media. In fact, many

creative thinking skills and activities have also been incorporated in the curriculum and textbooks for the convenience of English teachers.

Implication and Conclusion

Analyses of the various thinking skills in the three English language examinations indicate a serious lack of emphasis on the assessment of these skills as required by the new secondary school curriculum (KBSM). Given the growing importance of incorporating thinking skills in classroom instruction to produce thinking students, more concerted effort needs to be taken to accomplish this. Since it cannot be denied that the washback effect will continue to influence what is taught in the classroom, more needs to be done in the area of teaching, learning and testing of and for thinking skills. Teachers need to be trained on how to incorporate thinking skills in classroom activities, questioning strategies and assessment. Curriculum developers need to work with examiners to ensure that the objectives relating to the integration and assessment of thinking skills are achieved in line with the nation's vision to create a thinking citizenry capable of facing future challenges with confidence.

References

Adams, D. and Hamm, M. 1994. *New designs for teaching and learning.* San Francisco: Jossey-Bass Publishers.

Beyer, B.K. 1987. *Practical strategies for the teaching of thinking.* Boston: Allyn & Bacon.

Bloom, B. S. et al. 1971. *Taxonomy of educational objectives.* Handbook I: Cognitive Domain. London: Longman Group Ltd.

Chaffee, J. 1991. *Thinking critically.* 3rd Edition, Boston: Houghton Mifflin.

Fogarty, R. and Bellanca, J. 1990. *Teach them thinking: Mental menus for 24 thinking skills.* Australia: Hawker Brownlow Education.

Guilford, J. P. 1967. The nature of human intelligence. New York: McGraw-Hill.

Halpern, D. F. 1997. *Critical thinking across the curriculum: A brief edition of thought and knowledge.* Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Hays. et al. 1983. *The writer's mind.* Urbana, IL: National Council of Teachers of English.

Heller, M. F. 1986. Modeling critical thinking in the English classroom. *Highway-One, 9* (2): 87-90.

McCabe, M. E. & Rhodes, J. 1990. *The nurturing classroom.* California: ITA Publications Willits.

Marzano, R. J., et *al.* 1989. *Dimensions of thinking: A framework for curriculum and instruction.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

National Assessment of Educational Progress. 1981. *Reading, Thinking and Writing.* Denver, CO: NAEP.

National Commission on Excellence in Education. 1983. *A Nation at Risk: The imperative for educational reform.* Washington, DC: US Government Printing.

Pearson, P.D. & Tierney, R. 1984. On becoming a thoughtful reader: Learning to read like a writer. In Becoming Readers in a Complex Society, A. Purves & O. Niles (eds). Part I of Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press.

Pitt, J., & Leavenworth, R. 1968. *Logic for Argument.* New York: Random House.

Rhodes, J. M. 1961. An analysis of creativity. *Phi Delta Kappan.* 42: 305-310.

Torrance, E. P. 1974. *Torrance Tests of Creative Thinking: Norms-technical Manual.* Bensenville, IL: Scholastic Testing Service.