

**STUDY ON TRAINEE TEACHERS USE OF HIGHER  
ORDER QUESTION DURING PRACTICUM**

**PARAMESWARY A/P S.GANAPTHI  
P20101000515**

**THIS PROJECT PAPER IS SUBMITTED IN PARTIAL  
FULFILMENT OF THE REQUIREMENT OF THE DEGREE  
PhD IN EDUCATION (TESL)**

**LANGUAGE FACULTY  
UNIVERSITY PENDIDIKAN SULTAN IDRIS  
TANJONG MALIM**

**2007**

## CHAPTER 1

### BACKGROUND OF THE STUDY

#### 1.1 Introduction

We can assume that the most important think that any education system in the world could offer to their students is to teach them how to think. This is not to say that technology does not play an important role in education but that it must go hand in hand with the ability to infuse thinking skills so that students can be critical thinkers.

In order to be able to compete in the new era, most countries in the world are gearing their educational system towards creating a learning society, as this will develop thinking citizen. The world's current focus on promoting critical thinking is a collective reaction to a problem that has been developing for some time. Up till now most of us assumed that critical thinking would automatically develop as students acquired knowledge. It would only develop when the correct form of questioning is practiced and asked because, looking at the use of questioning types, it became obvious that the level of critical thinking among our students be it in the higher learning institution or secondary schools, students' thinking skills were insufficient to the demands of modern society.

The Malaysian educational system acknowledged that producing students who are able to think critically is an important goal. Therefore efforts have been made towards creating a society which is progressive and innovative. These efforts can be seen in the

UNIVERSITI PENDIDIKAN SULTAN IDRIS      UNIVERSITI PENDIDIKAN SULTAN IDRIS      UNIVERSITI PENDIDIKAN SULTAN IDRIS

implementation of the creative and critical thinking skills in the Malaysian schools and teacher Training Colleges syllabuses. Both the syllabuses are planned in accordance with the National Philosophy of Education which has its concept of lifelong education geared towards the development of a morally upright person who is intellectually, spiritually, emotionally and physically integrated.

As a result of the NPE, both the Teacher training colleges and schools syllabuses emphasized that teachers and lecturers alike should provide opportunities for thinking operations to take place. This could take the forms of questions or class activities that require students to observe similarities and differences and classify the things according to given principles.

Brumfit (1985) states that second language learners start learning with an already developed ability to think. Therefore teachers should tap this potential or ability to think. Trainee teachers play an important role in teaching students how to think critically and not what to think. They need to construct questions which would require the students to think because to develop a thinking society we need the students to think critically. Therefore the questions posed by the trainees too should be able to provoke their pupils' thought which can eventually lead to more discussion and debates. Students trainees need to encourage pupils to think critically by guiding them to form concepts and generalizations. In order for this to take place they need to ask challenging questions to generate their pupils thinking. It should be noted that the nature of the questions posed to the trainees could make a difference in the pupils responses.

## 1.2 Need for the study

Teacher training institutions in Malaysia are currently producing qualified teachers by the thousands every year. If teacher education is to meet the challenges of producing teachers who are able to help realize the national education vision, the content of teacher education in particular the practicum experiences must be carefully examined.

The question arises : Is the preparation of pre-service teachers adequate in helping them face the realities in the classroom, in school and the education system they experience when they embark on their careers in the teaching profession. The KPLI teachers who are doing the one year diploma in education course are the best people to assess the shortcomings of practicum experiences. KPLI (*Kursus Perguruan Lepas Ijazah*) was introduced beginning January 2003 to train graduates in the field of education. They need to upgrade their pedagogical skills and experience based on Primary School needs. An important component on training programmes for language teachers where English is a second or a foreign language is the language improvement courses. For the KPLI (*Kursus Perguruan Lepas Ijazah*) trainees, English is offered as a minor subject. Students who take English as a minor are expected to acquire the requisite knowledge and skills for teaching English in Malaysian Primary Schools.

The introduction of this syllabus is in keeping with current developments in the education system in the country. Basically the approach of the syllabus endeavours to equip student trainees with pedagogical skills for English Language Teaching and at the same time to improve their competency in English.

At the end of the course the student teachers will be able to:

1. Use English confidently for communication in the primary school classroom and for general purposes
2. Interpret the English language syllabus for primary school for pedagogical purposes
3. Use the syllabus, curriculum specifications and other resource materials to plan English language teaching and learning in primary schools
4. Demonstrate the use of basic pedagogic principles in teaching English
5. Manage English language teaching and learning in primary school classes

The students are to attempt two main strands namely: proficiency and methodology. The proficiency component aims to develop the proficiency of the student teachers in the English language. In particular, it aims at improving their grammatical competence and developing a repertoire of English words. Besides this, the student teachers are also required to enhance their competency in listening, speaking, reading and writing skills in order for them to be confident and fluent in using English in a variety of context. The student teachers need also be effective in using higher order questioning in the classroom and encourage pupils to think critically.

Therefore this study is needed to ascertain what the trainees have learnt about the higher order questioning during their lessons in college is practiced during their practicum in schools. The findings will help the trainee teachers as well as the other trainee teachers in the college about the importance of the use of higher order questioning

### 1.3 Statement of problem

This current era is one of change, society and schools have continued to change much faster than the ability of institutions in charge of preparing teachers. Many teacher education programs are preparing teachers for the schools of the new era. However, much has been said and asked about the question types used by teachers.

There have been some concerns about the question types used by the teachers. It has been said that teachers are not that fond of using high order questions. Postman (1979):

Kissock & Iyortsuun(1982) have indicated in their findings that more low order questions are used in the classrooms as compared to the high order questions. In Malaysian context, the research done by Ghazali Mustapha (1997) indicates that more lower order questions are used in the classrooms as compared to the higher order questions. He found that more than 80% of the questions asked by the teachers are of the lower order type.

Therefore it is felt that it is appropriate for this study to be carried out in a teacher training college with the KPLI trainee teachers to provide an insight into the trainees perception on the use of higher order questions and their use of the higher order questions during the teaching practice. This will determine what the trainees actually learn in the college about the use of higher order questions is really practiced in the schools during their teaching practice.

#### 1.4 Purpose of the study

The main reason for carrying out this study is that there has been much emphasis on the importance of teaching creative and thinking skills among teachers. Teacher Education Division is given the degree or mandate to promote the use of higher order questions among trainee teachers in all the colleges in Malaysia. It was implemented in the hope that the lecturers will be able to inculcate higher order questioning in the trainee teachers. Whereby the trainees will then be ready to disseminate their knowledge of the higher order questions to the students. Besides the pre service courses, the in-service courses are also introduced to the use of higher order questioning

Despite all the efforts made to use the critical thinking skills to the trainee teachers, the trainee teachers still have some problems using high order questions in their practicum or actual teaching. The Ministry is concerned with the schools that have not been developing pupils who can make reflective decision on their own and the society at large.

The above problem greatly concerns the Ministry of Education, Malaysia. The main reason why teachers should use high order question in the classroom is emphasized by Kisko (1982) who states that too many teachers tend to focus on lower order questions, which only requires students to simply repeat the information or facts that they memorized earlier. Teachers tend to neglect high order questions that will encourage students to make inferences, analyse, create new ideas and so forth. Therefore one of the methods that will be used to overcome the problem mentioned is through teachers questions. The questions used should be able to enhance the pupils critical thinking. It is

found that even Socrates (470-390 B.C) is the pioneer in using questions to promote thinking skills in students to discover their own wisdom. Therefore in analyzing the types of teacher generated questions in an ESL classroom, this study would provide insights in the construction of higher order question by the trainee teacher and their applied knowledge of higher order questioning that they have learnt in the college.

### **1.5 Research Question**

The main purpose of this study is to investigate and find the answers to the questions below:

Do the trainee teachers use higher order question types in language classrooms in relation to what they have acquired in their college regarding the use of higher order questioning?

To find the answers to the above research question, the researcher has to investigate through the use of questionnaires and observation as to find out what type of questions are used by trainees during their practicum. This investigation will also provide an insight on the different types of higher order questions used to enhance pupils critical and creative thinking skills. Trainees are encouraged to generate questions of different cognitive levels to facilitate thinking of new concept.

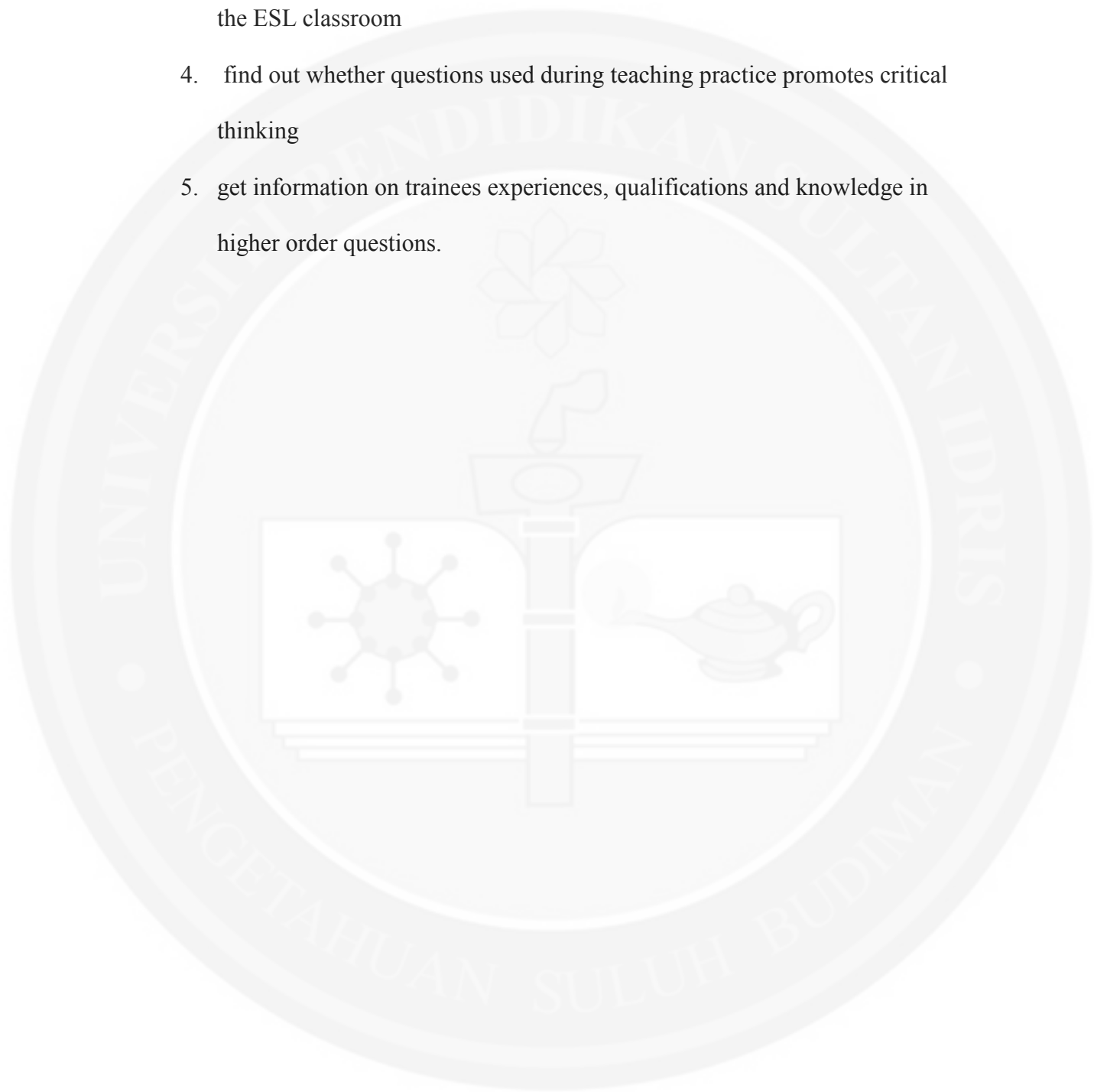
This study will enable the trainee teachers to:

1. construct high order questions so that they could upgrade their knowledge pertaining to the development of high order questions.
2. Make the trainees aware of the importance of all levels of questions in promoting thinking skills therefore reminding them not to focus only on



certain levels of questions only.

3. seek the perception of trainees regarding the use of higher order questions in the ESL classroom
4. find out whether questions used during teaching practice promotes critical thinking
5. get information on trainees experiences, qualifications and knowledge in higher order questions.



## CHAPTER 2

### REVIEW OF RELATED LITERATURE

#### 2.1 Introduction

The movement to the information age has focused the attention on good thinking as an important element of life success. The Ministry of Education Malaysia realizes the importance of good thinking skills, therefore they have inculcated it in the syllabus, a component of critical thinking. They have also encouraged critical thinking activities to be carried out in schools all over Malaysia. This is because the government wants its citizens to be able to evaluate and solve problems, to be open to new ideas that may not necessarily agree with the previous thought on a topic, able to base their judgments on ideas and evidence and also willing to take a critical stance on issues.

For the above aim to be realized, all schools and colleges in the country have been directed to infuse critical thinking skills in the students and trainee teachers regardless of the subjects taught. So the teaching of critical thinking using higher order questions is practiced across the curriculum and not just confined to a particular subject. Realizing the importance all teachers and lecturers throughout the country have started infusing and developing critical thinking skills using higher order questions among their students.

There are many ways and techniques to teach and infuse thinking skills to the students. The use of different approaches, methods, strategies and techniques decides the effectiveness of teaching critical thinking skills in the classroom.

The use of different question types and questioning strategies is one way of getting the students to be actively involve in the thinking and learning process. Taba, Levin and Elzey cited in Perrott (1982) have shown that different types of questions stimulate different kinds of thinking. Therefore it is important for the teachers especially trainee teachers to be aware of the purpose of their questions.

## **2.2 Theoretical Background**

The study on the use of higher order questions amongst the trainee teacher in theory as well as their use during their practicum is therefore necessary and deemed to be a worthy area to investigate. It is important to know what higher order questions are and how it relates to our critical thinking.

Critical thinking refers to a way of reasoning that demands adequate support for ones belief and willingness to be persuaded unless the support is forthcoming. In other words thinking critically involves our recognizing the assumptions underlying our beliefs and behaviours and that we can give justifications for our ideas and actions thereby making us think before we make our decisions and this will make us more reflective.

One thing that we should remember is that critical thinking is not the same as intelligence. It is a skill that may be improved in everyone. However it is not something that necessarily develops with maturity and so should be taught in all ages.

So as not to confuse, Brookfield (1991)has suggested nine characters which should be able to provide adequate understanding of what critical thinking using higher order questions really is;

2.2.1 Critical thinking using HOQ is a productive and positive activity. Here it means that critical thinkers are actively engaged with life and when we think critically, we become aware of the diversity of values, behaviours, social structures, and artistic forms in the world.

2.2.2 Critical thinking is a process and not an outcome Here being critical thinkers bring about a continual questioning of assumptions. We can never be in the state of complete critical development because by its nature critical thinking can never be finished in some static manner.

2.2.3 Manifestations of critical thinking vary according to the context in which it occurs. The indicators reveal whether or not people are thinking critically vary greatly. For some people we can look for evidence of critical thinking in their writing or talking. For some, critical thinking will manifest itself directly and vividly in their actions.

2.2.4 Critical thinking is triggered by positive as well as negative events as we stated, critical thinking usually results from people having experienced tragedies in their lives and can also be triggered by a joyful or fulfilling event. Both of these experiences will cause people to question their previously trusted assumptions about how the world works or if their old assumptions about their roles, personalities and abilities were completely accurate.

2.2.5 Critical thinking is emotive as well as rational. Emotions are important to the critical thinking process because as we try to think critically and help others to do so, we cannot help but become aware of the importance of emotions to this activity. For example, as we realize we have the power to change aspects of our lives we are charged with excitement and as we realize these changes, we feel a

pleasing sense of self confidence.

#### 2.2.6 Identifying and challenging assumptions is central to thinking.

We ask questions about whether the taken for granted, common sense ideas about how we are supposed to organize our workplaces, act in our intimate relationships, become politically involved and view television fit the realities of our lives.

#### 2.2.7 Challenging the importance of context is crucial to critical thinking.

Critical thinkers are contextually aware of how hidden and uncritically assimilated assumptions are important to shaping our habitual perceptions, understanding and interpretations of the world and how it influences the behaviour, resulting from the above assumptions. Therefore as a result of the above, we become aware of how context influences thoughts and actions.

#### 2.2.8 Thinkers try to imagine and explore alternatives.

The core to critical thinking is the capacity or ability to imagine and explore alternatives to existing ways of thinking and living. Being aware of how context shapes our way of thinking and living, critical thinkers scrutinized these contexts for assumptions that might be adopted and integrated into their own lives.

#### 2.2.9 Imagining and exploring

When we realize that alternatives to supposedly fixed beliefs systems, habitual behaviours and entrenched social structures always exists, we become skeptical of claims to universal truths or to ultimate explanations. In short, we exhibit what might be called reflective skepticism.

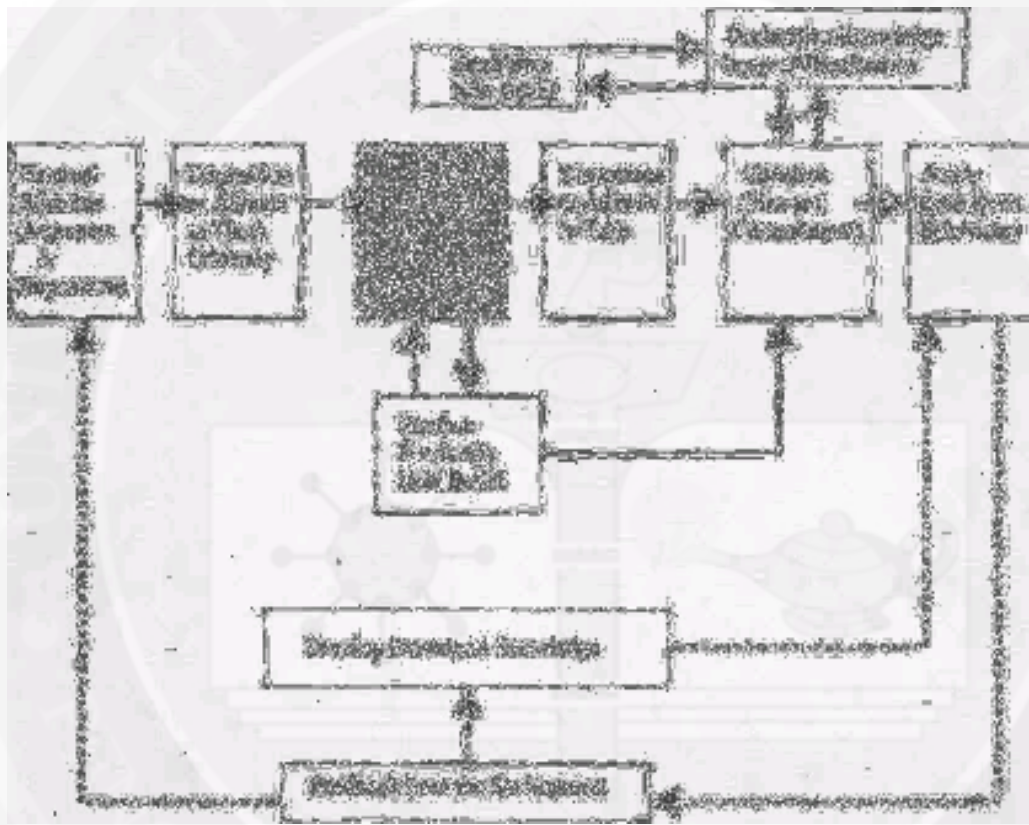
To sum up the above criteria, we can assume that higher order thinking always manifests itself in connection with some identifiable activity or subject area and never in isolation. McPeck (1981:19), states that critical thinking ‘involves a certain skepticism or suspicion of assent towards a given statement, established norm or mode of doing things as well as considering alternative hypotheses and possibilities’. In other words what he means in knowing how and when to use or apply this skepticism effectively requires among other things knowing something about the field on questions. McPeck in Beyer (1987) states that critical thinking involves not only knowing when to question something and what sort of questions to ask but an inclination to do so.

Irvin (1991) states that critical thinking is closely related to higher level thinking processes. For example, analyzing the reasoning used by the author, making judgment about what is being read. These are all higher order thinking processes. Fisher (1990) is in agreement with Irvin, in that he says the ability to evaluate is fundamental to critical thinking. The above statements can be related to Bloom’s Taxonomy, which is known as ‘The taxonomy of the Cognitive Domain, which has six levels. They are : Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation.

Huitt (1998) in his article agrees that evaluation might be considered as equivalent to critical thinking because it focuses on making assessment or judgement based on an analysis of a statement or proposition. Whereas synthesis requires an individual to look at parts and relationships and then put these

together in a new and original way. He also thinks that critical thinking is the disciplined mental activity of evaluating arguments or propositions and making judgements that can guide the development of beliefs and taking action.

Figure 1: Model of Critical Thinking & its Modification which enhances higher order thinking



Source : Huitt, W. (1998)

According to Huitt (1998), there are four aspects of critical thinking that needs to be considered. They are the affective, cognitive, behaviour and connative. The model supports the definitions of critical thinking by Mertes (1991) which states that a conscious and deliberate process which is used to interpret or evaluate information and experiences with a set of reflective attitudes and abilities that guide thoughtful beliefs and

actions. Huitt (1998:2) states that 'to use critical thinking one must activate the critical thinking processes and as a result of this, a previously held belief is confirmed or a new belief is established.' Ennis cited in Fisher (1990) has identified twelve aspects that can be linked with the process of higher order thinking, that is;

1. Grasping the meaning of a statement.
2. Judgement whether there is ambiguity in reasoning.
3. Judgement whether statements contradict each other.
4. Judgement whether a conclusion follows necessarily.
5. Judgement whether a statement is specific enough.
6. Judgement whether a statement applies a principle.
7. Judgement whether an observation statement is reliable.
8. Judgement whether an inductive conclusion is warranted.
9. Judging whether the problem has been identified.
10. Judging whether something is an assumption.
11. Judging a definition is adequate.
12. Judging whether a statement taken on authority is acceptable.

As we can see, the whole process of critical thinking involves the ability in an individual to see matters from a broader perspective. In other words critical thinking is a mode of systematic and self directed inquiry, which requires students to take in account more than just content, more than just their own experience, more than just the wisdom of the world



and the experience of others . It involves seeking alternatives, making inferences, posing questions and solving problems in order to reconceptualize one's own perspectives. On the whole critical thinking is essentially evaluative in nature. It involves precise, persistent, and objective analysis of any claim, source or belief to judge its accuracy, validity or worth.

### **2.3 The Importance of Critical Thinking**

Critical thinking is an eminently practical goal and value. It is focused on an ancient Greek ideal of 'living an examined life.' It is based on the skills, the insights and the values essential to that end. It is a way of going about living and learning that empowers our students and us in quite practical ways. Critical thinking is important in everyday life because we can accumulate information and evaluate the right and wrong of an idea. As such we are able to use the information effectively and make rational considerations.

In today's academic environment, students and teachers alike must process an immense amount of information. Because it is virtually impossible to teach this entire critical mass of knowledge, students need to learn critical thinking skills to cope with the constant flow of incoming information. Therefore critical thinking skills should be among the most important contemporary academic skills for students to master . And as Norris cited in Stewart and Stoller states, as a consequence, the teaching of critical thinking skills should not be viewed as an educational option, but as an indispensable part of education.

Meyers (1986) reiterates that through critical thinking we can develop a systematic pattern in the individuals thought and this will encourage students to become involved in a variety of reasoning, questioning, problem solving activities which than would develop

the skills and attitudes needed for self directed inquiry. This is quite important because the ability to analyse problems and think critically will serve the students well in today's complex world.

This is because people who are not critical enough would become only spectators and followers of the passing political, economic and ideological seasons. These people would just accept anything that is thrown or given to them without any questions. If all people were to behave like that, no changes or progress can take place in any country. And as according to Fisher (1990) critical thinking is important for individuals to make connections between concepts, to build structures of understanding and thereby provide them with opportunities to shape future experiences.

The issue of critical thinking is being addressed at all levels of education throughout the world. 'Deep seated problems of environmental damage, human relations, overpopulation, rising expectations, diminishing resources, global competition, personal goals and ideological conflict' will need to be addressed by individuals capable of reflective and critical thought. [Paul cited in Hirose (1992:1)]. Therefore teachers, lecturers and administrators should emphasize critical thinking to their students by infusing the critical thinking skills in their lessons and as well as the syllabuses in order to prepare students to function effectively in today's workforce. Whereby the modern working environment requiring more thinking and problem solving than the jobs of the past.

There are five reasons why the higher order questions are being infused in schools and teacher training colleges. They are;

1. to achieve the national goals and to realize the aims of Vision 2020.
2. to inculcate effective and good thinking in students.
3. to avoid mistakes in thinking.
4. to upgrade the quality of thinking among students.
5. to practice the culture of thinking critically and creatively

The above statements and reasons aptly summarizes the importance of critical thinking and the need to infuse them among Malaysian students.

We know that questions are important for our understanding. Questions are also part and parcel of the classroom life, we either questioned ourselves or others question us. According to Brown and Edmonson (1984) questions are as old as speech itself, and the use of questions in teaching is at least as old as classrooms.

Educational research has seen questions as a tool to enhance students' thinking. That is, for thousands of years teachers have known that it is possible to transfer factual knowledge and conceptual understanding through the process of asking questions.

Apart from the above reasons, we often ask questions of our students, not to obtain new knowledge for ourselves but to find out what students already know. The principle is expressed in more precise language by Ausubel cited in Brown and Wragg (1993:3) which states that ' the most important single factor influencing learning is what the learner already knows. Ascertain this and teach him/her accordingly.'

Apart from the purpose mentioned earlier teachers ask questions for several other reasons. According to Morgan and Saxton in Brualdi (1998);

1. the act of asking questions help teachers keep students actively involved in lessons.
- 2 while answering questions, students have the opportunity to openly express their ideas and thoughts.
- 3 questioning students enables other students to hear different explanations of the material by their peers.
- 4 asking questions help teachers to pace their lessons and moderate students' behaviour.
- 5 questioning students help teachers to evaluate students learning and revise their lessons as necessary.

No matter how many purposes a-teacher may achieved, the most important purpose for a teacher's question is to get the students actively involved in the thinking and learning processes. It is quite interesting to note that in the studies done about why teachers ask questions, all the teachers indicated that they asked questions to gain information and also to test knowledge or to maintain control. Only 10% stressed the use of questions to encourage students to think. [Pate and Bremer, and Thanarrootoo cited in Brown and Edmonson (1984)]

One of the main objectives of the National Philosophy of Education is to produce students who are intellectually, spiritually and physically well balanced. The KBSM syllabus, in line with the National Education Policy is geared towards producing students who are able to think rationally, critically and creatively. The emphasis on thinking skills in education is not something new altogether. It has long been practiced in the teaching

and learning process. However there is a need for more emphasis and efforts to enhance student's thinking. This is not to say that thinking skills should be taught to students separately. Thinking skills should be incorporated or infused in the course of the teaching and learning process. In this manner students will not be merely recalling or memorizing something that they have learnt but are able to exercise critical judgment and creative thinking to gather, analyze, evaluate and use information for effective problem solving.

Higher order questioning requires one to think critically, and creatively. They are all interrelated and are viewed as crucial for educated persons to cope with a rapidly changing world. Questions that require thinking and creative responding are critical questioning, creative questioning, convergent questioning, divergent questioning, inductive questioning, deductive questioning, closed questions and open questions. Convergent thinking assesses the worth and validity of something existent. It involves precise, persistent, objective analysis. When teachers try to get several learners to think convergently, they try to help them develop common understanding. Creative questions is divergent thinking questions. It generates something new or different. It involves having a different idea that words as well or better than previous ideas. Convergent questions is cognitive processing of information around a common point, an attempt to bring thoughts from different directions into a union or common conclusion. Divergent questions involves questions that starts from a common point and moves outward into a variety of perspectives. When fostering divergent questioning, teachers use the content as a vehicle to prompt diverse or unique thinking among students rather than a common view. Inductive questions is the process of reasoning from parts to

a whole, from examples to generalizations. Deductive questions on the other hand is a type of questioning which moves from the whole to its parts, from generalizations to underlying concepts to examples. Closed questions are questions asked by teachers that have predictable responses. Closed questions almost always require factual recall rather than higher levels of thinking. Open questions are questions that do not have predictable answers. Open questions almost always require higher order thinking.

How do I use higher order questions in my classroom? This question can be answered by setting up a classroom environment which is conducive to higher level thinking by using multi level materials, flexible grouping, accepting and celebrating diversity, create rich environment, high expectation, teacher as a co learner and risk taking.

1. Engage students in activities in which students can communicate with others in a variety of ways such as problem-solving activities that require more than routine calculations, open ended activities which has more than one 'right' answer, activities which accommodate multiple intelligences and activities in which both genders participate freely.
2. Construct questions that call for high level thinking by asking yourself, 'do I always know the answer to my questions?', Use a variety of assessment methods that match teaching strategies. For example use a project for assessment instead of an end of unit test.

### 2.3.1 Taxonomy of Socratic Questioning

Teacher uses a variety of probing questions with provision of time for student responses.

Use of higher order activities ( cooperative learning, critique of other's process, products,

activities or ideas) . higher order questioning is not restricted to older learners only. It is helpful to recognize that there are identifiable categories of questions for the Socratic questioning to dip into:

1. Questions of clarification, - what do you mean by .....
2. Questions that probe assumptions – what are you assuming?
3. Questions that probe reasons and evidence -
4. Questions about viewpoints and perspectives
5. Questions that probe implications and consequences and
6. Questions about the question.

#### 2.3.2 Bloom's taxonomy

Questioning requires much more brain power and a more extensive and elaborate answer.

The six categories as defined by Bloom are:

- 1 Knowledge
- 2 Comprehension
- 3 Application
- 4 Analysis
- 5 Synthesis
- 6 Evaluation

#### 2.3.3. Whorfian Hypothesis – Language and Thought

- 1 Language influences what and how we think
- 2 Structuring language will structure thinking
- 3 Controlling what you say, 'controls' what you think
- 4 Altering what you hear and use will alter what you think

#### 2.3.4 Chomskys – Theory of cognitivity

- 1 The intellectual processes through which information is obtained, transformed, stored, retrieved and used
- 2 An active process that is affected by an individual's cognitive abilities and skills
- 3 The basic unit of thinking is concept
- 4 Concepts are categories of things, events or qualities which despite differences are linked

#### 2.3.5 Vygotsky's theory – Thinking is a mental tool. Humans use 'tools' that uses language to mediate their social environment

- 1 The prime symbolic tool available for the mediation of mental activity is language
- 2 Through language, we can direct our own attention to significant features in the environment, formulate a plan or articulate the steps to be taken in solving a problem

Instruction should involve students in manipulating information and ideas by synthesizing, generalizing, explaining, hypothesizing or arriving at conclusions that produce new meanings and understandings for them. When students engage in the construction of knowledge, an element of uncertainty is introduced, the outcomes are not always predictable, the teacher is not certain what the learners will produce. In helping learners become producers of knowledge, the teachers main instructional task is to create activities and environment that allow them opportunities to engage in higher order thinking.