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**TEACHING HIGHER-ORDER THINKING SKILLS IN
LANGUAGE CLASSROOMS: THE NEED FOR
TRANSFORMATION OF TEACHING PRACTICE**

VOLUME I

By

Rajendran Nagappan

A DISSERTATION

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ABSTRACT

TEACHING OF HIGHER-ORDER THINKING SKILLS IN LANGUAGE CLASSROOMS: THE NEED FOR TRANSFORMATION OF TEACHING PRACTICE

By

Rajendran Nagappan

In Malaysia, there are on-going efforts to teach higher-order thinking skills in content instruction for the benefit of all students in elementary and secondary schools. Teachers are expected to infuse higher-order thinking skills in the school subjects they teach. This study investigates whether Form Two Malay and English Language teachers are prepared to make this innovation in their own classrooms. It involves two main aspects: whether teachers perceive that they are prepared in terms of their knowledge, skills and attitude to teach higher-order thinking skills; and how they actually teach higher-order thinking skills in their form two Malay and English Language classrooms.

Data collection was conducted in a selected school district during the first three months of the Malaysian 1997 school year. Sources of data include survey questionnaire, participant observations of classroom teaching, and interviews. The interviews were conducted with Malay and English Language teachers, four groups of students and ministry officials. Other data sources include analytic memos, teachers' weekly and daily plans, resource materials used, and students' writing assignments.

The contributions of the study to knowledge about teacher learning include:

1. Teachers perceive that they are not prepared to make this innovation in their own classrooms. Teachers also lack the attributes to construct the pedagogical content knowledge. The number of years teachers have been teaching significantly influenced their perceptions of their knowledge and skills.
2. Many factors such as teachers' own orientations towards teaching, curricular requirements, and myths about teaching thinking inhibit the teaching of higher-order thinking skills.
3. There is a dissonance between what teachers believe and carry out and the kind of teaching recommended by reformers. Their own orientations towards teaching are often not changed by their pre-service and in-service training.
4. All the four language components are underutilized in promoting higher-order thinking skills. There is a serious need for teachers to understand the importance of active student participation and encourage it in their own classrooms. Some strategies, such as the problem solving strategy, have the potential to promote higher-order thinking skills in language classrooms. Teachers are not adequately prepared to use the infusion approach.

Specially dedicated to

All Mighty Lord Murugan

and my beloved

Mom Saratha &

Dad Nagappan

who did not live to see

but are always there to guide

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Chapter 1

THE INQUIRY

Why Teach Higher-Order Thinking Skills?

Do we really need to teach students to think? Isn't thinking a natural consequence of teaching and learning in general? Do not people think spontaneously without being taught? These are some of the important questions which need to be addressed in the area of teaching thinking. We, indeed, do think without being taught how to think. We classify, analyze, generalize, analogize, deduce, induce, form and test hypotheses, make decisions, and solve problems. We do these things long before we encounter organized efforts to teach us how to think effectively.

It does not follow from the fact that we think spontaneously that we think as effectively as we might (Nickerson, 1988). And the evidence regarding our limitations as thinkers and the various ways in which our thinking commonly goes astray is well documented (Nisbett & Ross, 1980; Tversky & Kahneman, 1974; Wason, 1966). When we say we want to teach students to think, we really mean that we want to improve the quality of their thinking. We want to teach them to think more deeply, more consistently, more productively, more effectively than they otherwise might.

The last two decades have seen a growing educational interest in thinking and the ways it can be enhanced in the classroom (Marzano, 1991; Resnick & Klopfer, 1989). The current interest in teaching thinking skills has also been provoked by the onset of the Information Era, supported by recent advances in cognitive theory (Adams, 1989), and international comparisons of students' higher-order cognitive skills. However, the idea of teaching thinking has been in different forms in schools for a long time. The cultivation of critical reasoning ability has been an objective of teachers of philosophy, logic, and rhetoric, among other subjects, for a long time. Aiding students to use their minds more effectively is presumably a major reason for teaching literacy, numeracy, and other basic skills.

In the United States, for example, there were attempts to make explicit attempts to teach thinking as early as in the 1920s and 1930s. Cuban (1984) points out that during the 1920s and 1930s considerable energy was devoted, largely as a result of Dewey's influence, to making the development of reasoning ability a fundamental goal of primary and secondary schooling in America. Also, the earliest reference Presseisen (1986) cites critical thinking as an important aspect of schooling is in a 1938 report issued by the National Education Association entitled "The Purposes of Education in American Democracy" (Metcalf, DeBoer, & Kaulfers, 1966). However, Cuban notes that in spite of these efforts educational practice did not change much, or at least for very long.

Current evidence on the question of how well the public schools in the United States are developing students' thinking abilities comes from national assessments of educational progress (e.g. NAEP, 1981, 1983). In Malaysia, for example, the need for students to learn to manipulate ideas and feelings that are contained in the text they read, for which, it is assumed they need thinking skills, is being given attention (Indramalar, 1997a, July 3). There has also been announcement by the Ministry of Education in Malaysia that, "the education system will be revamped to encourage rational and analytical thinking." (Indramalar, 1997a, September 3). The basic issue justifying the efforts to teaching thinking skills is that, be it in the United States or in Malaysia, there is a general understanding that after 12 or 13 years of public education, many students are unable to give evidence of a more than superficial understanding of concepts and relationships that are fundamental to the subjects they have studied, or an ability to apply the content knowledge they have acquired to real-world problems (Nickerson, 1988).

Most of the data that are available regarding the effects of general education on thinking ability involve comparisons of student performance against theoretical standards or against criteria that represent assumptions about what students at specific educational levels should know or be able to do. An exception is a study by Perkins and colleagues, who attempted to assess the impact of general education on informal reasoning ability (Perkins, 1985; Perkins, Allen, & Hafner, 1983). Perkins

(1985) defines informal reasoning as reasoning that involves attempting to resolve the truth or falsity of claims, and sees it as the most common type of reasoning that people do in everyday life and in academic life as well.

In one study, subjects drawn from the first and fourth years of high school, college, and graduate school were asked to consider specific public issues (e.g., Does violence on television significantly increase the likelihood of violence in real life?) and to develop a position and supporting arguments on the issues. Perkins characterizes his results as showing a tendency to underexplore issues, and notes that this is consistent with findings of Gettys (1983) and Gettys and Englemann (1983) that when subjects are asked to explain a situation or to generate plans of action, they typically do a less than thorough job of exploring possibilities. The evidence, once again, seems to suggest that general education, as a rule, does not change this tendency very much.

One reason for this state of public education could be because of the fact that thinking skills were not taught to all students until recently. As Resnick (1987) suggests,

Mass education was, from its inception, concerned with inculcating routine abilities: simple, computation, reading predictable texts, reciting religious or civic codes. It did not take as goals for its students the ability to interpret unfamiliar texts, create material others would want and need to read, construct convincing arguments, develop original solutions to technical or social problems (p.5).

It is important to note that, until recently, this has been the exclusive province of the elite education both in the industrialized and in the non-industrialized countries. When countries and governments democratized education, that is extended education beyond the elite, top priority was to educate as many citizens as possible. The aim of education then was to provide basic linguistic and mathematical skills required to perform everyday needs. Even today this is true to a large extent in countries where majority of the people lack these basic skills. In the United States, for example, schools had to cater for the influx of immigrants who came from Europe and Africa in the 19th century. They varied in terms of linguistic and mathematical abilities, and cultural capital. The situation at that time necessitated mass education. Inevitably, thinking, problem solving, and reasoning were thought as something which only the elite could acquire.

There is great interest among researchers and educators, at the present, in the teaching of thinking (Resnick, 1987; Nickerson, 1988). As Resnick (1987) suggests, there are attempts to include the teaching of thinking skills in all subjects to all students. That brings along the need to teach higher-order thinking skills in language classrooms. This question also seems very pertinent for this investigation. There are reasons why teachers should improve students' thinking as they build their language abilities. First, teaching strategies that strengthen thinking competencies increase language arts achievement (Collins, 1991). A myth exists that as

people mature, their thinking and reasoning naturally escalate.

Unfortunately, critical and creative thinking abilities do not develop automatically. Adults who were not taught to think critically and creatively exhibit cognitive abilities that are no more advanced than the thinking processes they used when they were in the sixth grade (Gardner & Hatch, 1989).

Therefore, it becomes important to also teach thinking skills explicitly besides the school subjects. In this respect, it seems important to review how we define and teach the respective school subjects in relation to whether we teach students to think critically and creatively. To be literate now, for example, seems to require that students know more about how to think; not just how to read.

Hiebert and Raphael (1996) reviewing different definitions of literacy suggest that it is the first step in the empowerment of mind, albeit a crucial one. In relation to that, Langer(1991) argues that literacy can be viewed in a broader and educationally more productive way, as the ability to think and reason like a literate person. In this respect, she proposes that, the schools need to understand the ways of thinking that are involved in a particular society's uses of literacy and to use approaches to literacy instruction that will ensure that these ways of thinking become an intrinsic part of the school's context. As such, the listening, speaking, reading, and writing components of the language instruction should aim to improve the higher-order thinking abilities of the students.

Students must learn to identify problems in, and reason effectively with printed information. For example, as Beck (1989) states,

Reading and language arts are the perfect vehicle for developing higher-order thinking because literature - perhaps more than any other source of information - provides powerful models of problem-solving processes. It is full of characters who engage in effective and ineffective attempts at solving problems, who use incisive or fuzzy reasoning, and who rely on adequate or inadequate evidence... What is needed is to move the activities that involve higher-order thinking into the core of our lessons, to move our concern toward developing higher level thinking into the mainstream of instruction (pp. 680, 682).

To help students develop higher-order thinking abilities, teachers need to relegate more time to instruction concerning high-quality thinking with printed and spoken material. Implications of these suggestions are that teaching in the language arts classrooms should go beyond the mere teaching of listening, speaking, reading and writing. Efforts should be made to acquire the critical and creative thinking skills, as Langer (1991) suggests, "the current era requires that students acquire the kinds of critical thinking skills that needed to use the communication devices and technologies we meet on a daily basis in our everyday living and in entry-level jobs" (p. 12).

It is not to suggest that teachers are not using any strategies or techniques which promote thinking among students. Teachers may be, consciously or otherwise, using many strategies to enhance the thinking of students. These strategies cut across a wide range of cognitive processes and can be employed in a wide range of situations. However,

as powerful as the strategies are, an even more powerful set of strategies may be underutilized (Marzano, 1993). It seems that educators have taken great strides in their efforts to enhance the thinking of students, yet the journey has only begun.

It seems interesting to note that, as Nickerson (1988) suggests, in spite of numerous vigorous attempts by various reformers to make thinking a primary focus of education and to effect whatever changes in educational practice would be in the interest of doing so, the educational system, as a whole, has been remarkably resistant to these efforts. There seems to be a legitimate question as to whether the educational system, as a whole, or society in general, has ever really accepted the idea that helping students to become independent thinkers should be a primary educational goal (Paul, 1985). At least until there is a general consensus among educators on the need to make teaching thinking skills as a primary educational goal, all efforts to teach thinking skills will only bring limited success.

Teaching thinking: Its roots

Teaching thinking seems to have its base in various traditions, and theories of learning. There are at least two main traditions which have dealt with the notion of teaching thinking for a long time. First, is the psychological tradition, and the second is the philosophical tradition. Due

to the current focus and relatively more sophisticated advancements, the psychological tradition will be discussed first.

For the behaviorists, the issue was not how new knowledge is acquired, instead it was: How is new behavior acquired? (Phillips and Soltis, 1985). In other words, to the behaviorists learning was a process of expanding the behavioral repertoire, not a matter of expanding the ideas in the learner's mind. For this reason, teaching thinking might not have been the focus in the behaviorist theory because behaviorist were of the contention that, "Mind, after all, was a subjective and nonpublicly observable entity, and thus had to be avoided by science" (Phillips and Soltis, 1985, p.23).

The Gestalt psychologists looked beyond behavior and the environment, and they tried to throw light on learning by investigating tendencies of the mind to pattern and structure experience. The Gestalt theory views learning as a process involving the attempt to think things out and then having "it all come together" suddenly in the mind. Gestalt psychologists certainly stressed a point that is important in understanding human learning: responding to meanings; and making intellectual connections.

Beginning with a hunch about the importance of firsthand experience to learning, John Dewey developed a "problem solving" theory of learning whose basic premise was that learning happens as a result of our "doing" and "experiencing" things in the world as we successfully

solve real problems that are genuinely meaningful to us. Dewey (1957) did not deny that human learners can be given information by their teachers. But unless the learner had struggled personally with an issue, the information was likely to be committed to memory in a rather lifeless or mechanical way. He called this “static, cold-storage knowledge” (p.186), and he asserted that unless the student had an opportunity to use the information in problem solving and action it was sterile, “information severed from thoughtful action is dead, a mind-crushing load” (p.179).

Taking a biological approach, Piaget viewed learning as an adaptive function of an organism. By means of learning, an organism develops “schemes” for dealing with and understanding its environment. For Piaget, learning is the individual’s construction and modification of structures for dealing successfully with the world. He also claimed that, there are stages of development that all human beings pass through as they learn universal schemes for structuring the world and as they learn certain aspects of logical reasoning. In Piaget’s (1970 cited in Becker and Varelas, 1995) view, “Each time one prematurely teaches a child something he could have discovered himself, the child is kept from inventing it and consequently from understanding it completely” (p.436).

Vygotsky, Dewey, and Bandura addressed the social dimension in learning. For example, Vygotsky viewed thinking not as a characteristic of the child only, but of the child-in-social-activities with others (Moll and

Whitmore, 1993). In terms of classroom learning, Vygotsky specifically emphasized the relation between thinking and what we would call the social organization of instruction. Central to Vygotsky's (1978) view of cognitive development is the notion that various kinds of complex thinking and reasoning first appear as interaction with others and then become internalized or appropriated as individual forms of thought (Putnam and Borko, In press). The quality of thinking, from this perspective, is determined not by some absolute external criteria of what constitutes good thinking, but rather by the norms and expectations of a particular community. .

It was not until the mid-nineteenth century that scholars viewed the human mind as a working mechanism with underlying operations that could be studied from a psychological perspective (Rowe, 1985). In contrast, the roots to the philosophical interest in thinking reach back to the classical period. Greene (1984) noted that in the Western World, philosophy preceded by at least 2,000 years the growth of what we now call psychology. Some of the Eastern traditions, of which philosophy is an integral part, date back to about 5,000 years. At the heart of the philosophic perspective of thinking is the use of reason to guide behavior.

Besides the philosophy and psychological fields, there is one other field of research which impacts the literature on teaching thinking. It is for this reason, at least, the debate about thinking and teaching thinking becomes more complex. Nevertheless, research findings from other fields

will help one to understand better the processes of thinking, and teaching and learning thinking. Research in the field of neuroscience, for example, suggests that

Brain research establishes and confirms that multiple complex and concrete experiences are essential for meaningful learning and teaching. Optimizing the use of the human brain means using the brain's infinite capacity to make connections - and understanding what conditions maximize this process. In essence, students learn from their entire ongoing experience.

(Caine, R.N. & Caine, G., 1994, p.5)

Whatever the theory or the field may be, it seems that more and more educators are beginning to agree that teaching and learning in schools should also include the development of thinking abilities of students as their explicit goals. This seems to be most important underlying assumption of the current thinking skills movement.

How are Higher-Order Thinking Skills defined?

Researchers and educators have advocated many conceptions in relation to "thinking": critical thinking, divergent or creative thinking, reasoning (moral, inductive, deductive, formal, informal), problem solving, and decision making. Literatures on these topics, while interrelated, are remarkably distinct and self-contained. Nickerson, in this respect, (1988) suggests that, "if there is one point on which most investigators agree, it is that thinking is complex and many faceted and, in spite of considerable productive research, not yet very well understood" (p.9).

Presseisen (1985) suggests, "Thinking is generally assumed to be a cognitive process, a mental act by which knowledge is acquired" (p.43). In a later work she defines thinking as "the mental manipulation of sensory input to formulate thoughts, reason about, or judge" (1987, p.98). For Sigel (1984), "Thinking is regarded as an active process involving a number of denotable mental operations" (p.18). Halpern's (1989) definition probably summarizes the many aspects of thinking, "Most people would agree that thinking is complex and that it guides our behavior. In addition, thinking is dynamic; it's something we do. Thinking involves going beyond the information given" (p.6).

These different conceptions can all be subsumed under the larger construct of higher-order thinking and made distinct from lower-order thinking (Onosko and Newmann, 1994, p.28). Resnick's (1987) discussion, for example, characterized higher order thinking as nonalgorithmic, complex, self-regulative, meaningful, effortful and providing multiple solutions, nuanced judgments, multiple criteria, and uncertainty, all defined in terms of cognitive traits and processes of individuals. Chipman (1986) characterized higher order thinking as a consensus among cognitive scientists that successful thinking depends on organization of cognitive activity with a hierarchy of goals and operations.

For the purpose of this study, higher-order thinking is defined broadly, as the expanded use of the mind to meet new challenges.

Expanded use of mind occurs when a person must interpret, analyze, or manipulate information, because a question to be answered or a problem to be solved cannot be resolved through the routine application of previously learned knowledge (Onosko and Newmann, 1994). In the classroom, it requires students to critically think about information, ideas, and opinions. Students draw conclusions, inferences or generalizations. Besides that, they produce original communications, make predictions, propose solutions, create, solve life-like problems, judge ideas, express opinions, and make choices and decisions.

On the other hand, lower-order thinking represents routine, mechanistic application and limited use of the mind. This process generally involves repetitive operations such as listing information previously learned formulae, applying procedural rules, and other routinized or algorithmic mental activities. It requires students to recall or recognize information. Students are also required to describe, compare, contrast, summarize, relate, apply, provide an example, and solve.

This definition, however, poses an operational problem in the classroom. It is difficult to determine reliably the extent to which a person is involved in higher-order thinking. Teachers who interact with several students at once have little opportunity to diagnose students' individual mental states. Instead, they may have to make assumptions about the prior knowledge of a group of students and about the kinds of mental work that particular tasks are likely to stimulate. In this respect, Onosko and

Newmann (1994) suggest, "The teaching of thinking, therefore, is a rather imprecise enterprise. The best we can do is to engage in what we predict will be challenging problems, guide student manipulation of information to solve problems, and support students' efforts" (p.29).

It is important that a broad definition of thinking skills is adopted at least for two reasons. First, it is hard to specifically identify a skill being taught or learned in the classroom as either a critical, creative or an analytical skill. This is because these skills do not often represent distinctive categories, and often the activities prepared or skills taught are of more than one category. For example, when students are asked to find evidence for an assertion they are making, they may be using the analytical skill where they may be breaking something down into its component parts and then examining the parts and determining their relationship to each other and to the whole. At the same time, they may also be using the synthesis skills where they may have to combine or unify separate ideas or materials to create something new. The second reason is that the present effort to teach these individual skills is itself being challenged. In other words, what kind of skills, critical, creative, analytical, logic or reasoning, are stressed in classrooms. There seems to be a disagreement on the emphasis placed on specific thinking skills taught in classrooms. In this respect, Adams (1989) suggests, "The vast majority of the programs are directed toward developing students' analytical and logical acumen. But even here, there are ardently voiced

differences of opinion" (p.28). Given this situation, it seems more practical to adopt a larger definition of thinking skills in classrooms.

For the purpose of identifying whether the teaching higher-order thinking skills is present in the Malaysian classrooms, at least three sets of criteria were used for different purposes. It was the hope that these criteria will be able to address both the observable behavior and unobservable learning (mental work) related to thinking. First, the criteria was to investigate whether there were efforts to engage students in challenging problems, guide student manipulation of information to solve problems, and to support students' efforts. For this, Onosko and Newmann's (1994) definition of higher-order and lower-order thinking skills was used.

Second, is the Bloom's taxonomy (1956), with six cognitive levels: knowledge; comprehension; application; analysis; synthesis; and evaluation levels, for evaluating certain aspects of teaching like questioning skills. Bloom's taxonomy was used partly because of teachers' familiarity with this system. Third, since teachers in Malaysian classrooms are expected to infuse higher-order thinking skills in content instruction the components of the infusion lesson, which Swartz and Parks (1994) claim "Conducting a lesson using this four-step (five steps in the case of Malaysian classrooms) strategy to teach thinking is time well spent and will maximize our chances for real improvement in student thinking" (p.10). This strategy with five steps was used as a criteria to

determine whether teaching of higher-order thinking is present in the classrooms.

Swartz and Parks (1994) propose that infusion lessons are crafted to bring into content instruction an explicit emphasis on skillful thinking so that students can improve the way they think. Classroom time is spent on the thinking skill or process, as well as on the content. They further suggest that infusion lessons feature a variety of effective teaching practices that characterize the way thinking is explicitly emphasized in these lessons. Swartz and Parks suggest that there will be four teaching practices in these infusion lessons.

First, the teacher introduces students to the thinking skill or process by demonstrating the importance of doing such thinking "well." Second, the teacher uses explicit prompts to guide students through the skillful practice of the thinking as they learn concepts, facts, and skills in the content areas. Third, the teacher asks reflective questions which help students distance themselves from what they are thinking about, so that they can become aware of how they are thinking and develop a plan for doing it skillfully. Fourth, the teacher reinforces the thinking strategies by providing additional opportunities for students to engage in the same kind of thinking independently.

(1994, p.10)

A fifth step of the teacher attempting to associate the thinking skills and content being learned to an everyday situation has been included in the Malaysian version of the infusion lesson.

The teaching of Higher-Order thinking skills in Malaysia

Malaysia is a multiracial country with a population of 20 million consisting of three main races: Malays; Chinese; and Indians. The country has a centralized education system with almost all the funding for public schools coming from the Federal Government. The Ministry of Education, together with the State Education Departments and the District Education Offices, is responsible for administering the education system. The Ministry of Education has various professional and administrative divisions responsible for the numerous aspects of policy formulation and implementation. The State Education Departments, District Education Offices and schools help implement the policies formulated by the Ministry of Education.

The education system in Malaysia today is largely a product of a system rooted by the British. The system still maintains many characteristics of the British Education system, like the centralized system of education. It has to be noted that reform efforts started even before the country gained its independence in 1957. However, the most significant reform efforts in Malaysia (Malaya until 1965) were started in 1956 (Ahmad, 1993). The Razak Report which was implemented in 1956 laid the foundation for a new education system reflecting the characteristics of a new independent and multiracial Malaysia.

Reform efforts to further improve the education system are ongoing efforts in Malaysia. In 1979, for example, the Cabinet Committee to Review the Implementation of Education Policy presented a comprehensive report on the various aspects of the education system of the country (Curriculum Development Center, 1989, p.1). Based on the recommendations of this Committee, the Ministry of Education undertook to review the existing curricula for both the primary and secondary schools. Subsequently, the Teacher Education Programs were also modified to accommodate the new requirements. The New Primary School Curriculum which was later named as the Integrated Primary School Curriculum was implemented in 1982, whereas the Integrated Curriculum for Secondary Schools was implemented in 1988 (Curriculum Development Center, 1989, p.1).

At the same time, in order to clarify and give further direction to education in Malaysia with a view to creating good citizens and good human beings, concerted efforts were undertaken to define the National Philosophy of Education (NPE), which was documented in 1987. The National Philosophy of Education states,

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion in God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-

being as well as being able to contribute to the betterment of the society and the nation at large.

(Educational Planning and Research Division, 1994, p. vii)

Reform efforts of the 1980s were based on the principles of the National Philosophy of Education to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious.

However, in the 1990s, reform efforts were focused on, besides the principles of the National Philosophy of Education, on the demands of the Vision 2020 of the government. The goal of Vision 2020 is to make Malaysia a 'Developed Country', not only in the economic sense, but a nation that is fully developed along the dimensions: economically, politically, socially, spiritually, psychologically, and culturally (Mohamed, 1991).

One of the outcomes of these reform efforts was the introduction of a more serious and explicit attempt to teaching thinking skills in schools. A more explicit attempt to teach thinking skills was started in schools in 1993 and in teacher education colleges in 1994. However, it has to be noted that various attempts to improve students' thinking abilities have taken place even before this period. In order to prepare teachers and teacher college lecturers to teach these skills, there were one-day short courses and one week workshops on teaching thinking skills. Such workshops and seminars have been conducted on 'Accelerated Learning', 'Optimal Learning', 'Critical and Creative Thinking' and De Bono's 'CoRT Thinking Tools' since the 1980s in Malaysia.

Teaching of Higher-Order Thinking Skills in Schools

One of the objectives of secondary school education in Malaysia is to "Develop and enhance their (students) intellectual capacity with respect to rational, critical and creative thinking" (Curriculum Development Center, 1989, p.2). Although there are other objectives like "to acquire knowledge and to a mastery of skills and to use them in daily life," the explicit mention of developing students' rational, critical and creative thinking in the curriculum has necessitated the teaching of thinking skills in the schools. To further emphasize the importance of teaching thinking skills, the curriculum states, "The contents of the curriculum promote the development of thinking abilities to enable students to analyze, synthesize, explain, draw conclusions, and produce ideas that are both constructive and useful" (Curriculum Development Center, 1989, p.6).

The Integrated Curriculum for Secondary Schools (ICSS) also states that,

Another primary consideration in the ICSS is the development of thinking abilities. Every teacher is required to use teaching-learning methods and techniques which will stimulate, encourage, and develop the thinking abilities of students. This strategy is closely linked with the aims of the ICSS which emphasize the development of the human intellect (p.27).

Although the emphasis on teaching thinking skills has been stated in the ICSS which was formulated in 1988 and has been emphasized ever since, in a recent statement to the English Language teachers, the Director-General of Education Datuk Matnor Daim stressed again the

need for teachers to teach thinking skills. He suggested that, "They (students) have to learn to manipulate ideas and feelings that are contained in the text they read, and that needs thinking skills" (Indramalar, 1997a). He also stressed that, "teachers should make it their responsibility to mold students into thinking leaders." He believes that by developing these skills in students, they will be able to critically examine, select and organize the information they receive.

Although there are already programs to teach thinking skills in schools, the Minister of Education has recently suggested that, "The education system will be revamped to encourage rational and analytical thinking" (Indramalar, 1997b). He also suggested that modern skills like the capacity for precise and rational thought, training in basic logic, reasoning and critical thinking are essential for all students. All this clearly indicates the Ministry of Education's commitment to promote the teaching of thinking skills in Malaysian schools.

The Ministry of Education, in 1993, when implementing the thinking skills program in schools in a more systematic manner and to streamline the existing thinking skills programs, identified four models which could be used in the classrooms (Curriculum Development Center, 1993,). The first model is by Robert Swartz and Sandra Parks and this model was prepared by the National Center for Teaching Thinking in Boston. This model is popularly known in Malaysia as the 'Boston Model'. The second model in the 'KWHL Model', where 'K' is for 'knowledge', 'W' is for 'what',

'H' is for 'how', and 'L' is for 'learnt'. The third model consists of CoRT 1 (Widening the Perception) and CoRT 4 (Creative and Lateral Thinking), which were both developed by Edward de Bono. The last model is called 'Programmed Instruction in the Learning of Thinking Skills (PILTS)' which were developed by two local academics, John Arul Phillips and Fatimah Hashim. The guidelines from the Ministry of Education proposes various strategies, techniques, and activities which could be used by teachers to teach thinking skills in the classrooms.

Selected teachers from various districts who are called 'key-personnel' were exposed to the new curriculum for teaching thinking, as is usually done in other curriculum implementation processes. All four models seem to have been exposed to the key-personnel. These key-personnel were required to impart their knowledge and experience with at least one teacher from each school in their districts. These teachers in turn are supposed to share their knowledge and experiences with all teachers in their respective schools.

Besides the curriculum and the guidelines consisting of the four models, strategies, techniques, and activities, model lesson plans showing how thinking skills could be taught together with subject matter using the 'infusion approach' were prepared and distributed to teachers. These model lesson plans are based on various subjects and teachers are encouraged to use them as models to plan their own lessons. Text book writers were also encouraged to include thinking skills in their

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materials. Other supporting materials like 'Teaching and Learning Styles with Left/Right Brain Techniques' (Curriculum Development Center, 1991) were prepared and distributed to key-personnel from time to time to be shared with teachers in schools.

The Ministry of Education seems to have a specific aim of teaching thinking skills in schools. In view of fulfilling the principles of the National Philosophy of Education and to meet the demands of the challenges of Vision 2020, the Ministry of Education announced a policy in 1994 that by the year 2000, a minimum of 60 per cent of the public examination questions will be testing the creative and analytical thinking skills of the students.

The curriculum, guidelines, text books, and resource materials have been prepared, and at least some training has been provided, as will be discussed below, to the teachers. But the question is how are teachers accepting yet another innovation to the existing curricula, how much of knowledge and skills do teachers possess to teach thinking skills in the classrooms, how are the thinking skills taught, and how are the students learning are many questions which need to be addressed if teaching of higher-order thinking skills is to be effective and students are to be ready to face examinations in the year 2000.

Teaching of Higher-Order Thinking Skills in the Teacher Education Colleges

The Teacher Education Division made changes to its Five Semester Basic Teacher Education Program and the Two Semester Post-Degree Education Programs to accommodate the necessary changes to teach higher-order thinking skills explicitly in 1993. These changes were implemented in the teacher education colleges in June 1994. The Teacher Education Division basically adopted the 'Boston Model' to train teacher educators to teach prospective teachers. Almost all adjustments to the existing curricula for various subjects were based on this model. Special guidelines and resource books for teacher educators in the teacher education colleges were developed in late 1993 and in early 1994 (Teacher Education Division, 1994).

The 'Boston Model', or the infusion model advocates integrating teaching critical thinking in all content areas and at all grade levels rather than using a pre-packaged program or curriculum. This program provides examples for a variety of grade levels and content areas, as well as life situations. The main contention of the authors of this program is that the same skill can be taught, reinforced, and elaborated in many other contexts, subject areas, and at other grade levels. (Swartz and Parks, 1994). This program proposes the 'Infusion Approach' to teach thinking skills. Infusing critical and creative thinking into content instruction blends features of two contrasting instructional approaches that educators have

taken to teach thinking: (1) direct instruction of thinking in noncurricular texts and (2) the use of methods which promote thinking in the content lessons (Swartz and Parks, 1994). Infusion lessons are similar to, but contrast with, both of these types of instruction.

Teacher Education College lecturers were exposed to the 'Boston Model', CoRT Thinking Tools, the ways to incorporate the teaching of thinking skills using the 'infusion approach' in the various content areas, and teaching and learning strategies during four-day workshops in their respective colleges in early 1994. Various materials on the program, strategies and techniques, and model lesson plans were distributed to the lecturers in these workshops. Specifically, model lessons showing how thinking skills could be taught using the infusion approach on various subjects like Malay Language, English Language, Math, Science and History were prepared by the Teacher Education Division and were used as important resource materials in these workshops.

It has to be noted that the Teacher Education Division made modifications to the 'Boston Model' before implementing it in the colleges to suit the local needs. One significant change is the components of the infusion lesson itself. Infusion lesson proposed by the 'Boston Model' has four components: introduction to content and process; thinking actively; thinking about thinking; and applying thinking (Swartz and Parks, 1994, p.22). The Teacher Education Division adopted a model which has five components in the infusion lessons: introduction to content and process;

thinking actively; thinking about thinking; consolidation or enrichment activities; and applying thinking (Teacher Education Division, 1994). One extra component of consolidation and enrichment was included to provide more opportunities for teachers and students in the classroom to reinforce their knowledge and skills about one or more of the thinking skills being learned.

It is the hope of the Teacher Education Division that the model to teach thinking skills effectively will be used by teacher education college lecturers in all the 32 teacher education colleges in the country. It is also the hope that the knowledge and skills will be shared with prospective teachers in the teacher education colleges, both elementary and secondary school teachers, who total about 12,000 to 15,000 at any given time. Ultimately, it is hoped that about four million students in the schools (Education Planning and Research Division, 1994) will benefit from their teachers' knowledge, and skills of teaching thinking skills.

Teaching Of Higher-Order Thinking Skills In The Malaysian Classrooms: Is There A Problem?

There are concerted efforts to teach higher-order thinking skills in Malaysia. The curricula have been formulated, teachers are being trained, and resource materials are produced to help achieve the aim of teaching higher-order thinking skills in Malaysian classrooms. There has been a good start to teaching thinking in content instruction. However, since this study aims to investigate the preparedness of teachers to carry out this

task, and how they actually teach higher-order thinking skills in their own classrooms, it seems important to discuss some of the potential problems related to the implementation of this reform which are directly related to this investigation. This will provide a wider perspective on the teaching of higher-order thinking skills in Malaysian schools, and help place the current investigation in the right perspective.

First, teachers are trained to teach higher-order thinking skills by two different institutions in Malaysia. They are the Teacher Education Division which focuses on the pre-service training, and the Curriculum Development Center which focuses on the in-service training. As stated earlier, in terms of the program, for example, the Teacher Education Division has almost adopted the 'Boston Model' with some emphasis on the CoRT Tools. Whereas, the Curriculum Development Center has adopted four different models, with the 'Boston Model' as one of the models. What this entails is that there will be two groups of teachers exposed to two different types of training models for teaching higher-order thinking in schools but are required to teach one specific curriculum for teaching higher-order thinking skills.

In terms of the approaches, the Teacher Education Division seems to have adopted a position to encourage teachers to use the five components of the infusion lesson to promote higher-order thinking in the classrooms. However, in the case of the Curriculum Development Center, there seems to be no specific emphasis on the approaches. Even in the

model lessons distributed to teachers by the Curriculum Development Center there are four pedagogical steps , introduction or induction, explanation of concept, exercise, and application. These four components seem generic components which could be used for teaching any subject, and not particularly applicable to the teaching of higher-order thinking skills.

The implication of these differing emphases and approaches seems to be that teachers are faced with more problems than just not knowing how to make pedagogical decisions to teach higher-order thinking skills in their classrooms. Basically, teachers could be in a situation as to wonder about what works and what doesn't. Even the question of whether teachers think they have the knowledge and skills to teach these skills in the classrooms, especially when they have only been exposed to short courses or workshops, is an important question here. Even if they think they have the knowledge and skills, whether they believe in teaching these skills seems to be another important question.

Second, a typical Malaysian classroom has students from three main races who come into the classroom with different cultural, religious and linguistic capabilities. The question is, have the teachers been prepared adequately to handle these differences in the classrooms effectively? At least how the teachers perceive their knowledge, skills and attitude to teach both the subject matter and higher-order thinking skills in such classrooms seems important.

Teachers have already been burdened with a lot of challenges to teach the language arts itself. For example, the proportion of students who learn the national language, that is the Malay Language, is about 55 percent native speakers, and about 45 percent non-native speakers. English Language, on the other hand, is accorded the status of second language, but in reality is the third or fourth language to non-Malay speakers who have languages of their own. It becomes even more complex when teachers are expected to teach higher-order thinking skills using the infusion approach, which in itself they may not be sure about. This becomes particularly problematic when teachers are required to teach both subject matter and thinking skills in one single lesson.

In this respect, one could expect teachers to face difficulties in employing specific techniques in their language arts classrooms to promote higher-order thinking abilities of the students. Questioning technique, for example, could be an important strategy to promote higher-order thinking among students. Although the congruency of the thought level of teachers' questions to students' responses is not 100%, teachers still have considerable impact in their ability to control the thought levels of students in the classroom (Kindsvatter, R, et al., 1992).

In my investigation in an US classroom, for example, I found that to be an issue. An analysis of a classroom discourse was conducted where there was a discussion between the teacher and students. I found,

An analysis of teacher's questions shows that out of the 34 questions posed by the teacher, 25 of them are of category one, that is the low order convergent type questions. The rest, 9 out of 34 are of the second category, the high order convergent type questions. This pattern suggests that the teacher's questions were aimed at requiring students to recall or recognize information and to demonstrate understanding and apply information. It is important to note that the responses were all something which could be anticipated since they were all meant to recall or reorganize information. The students also did not have the opportunities to speculate responses which may have provided them the opportunities to think critically about issues at hand. There was not even one question which required students either to critically think about information, ideas, and opinions or to perform original, creative, and evaluative thinking.

(Rajendran, N. 1996a, p.28)

Third, when teachers make explicit and concerted efforts to teach higher-order thinking skills in content instruction in the Malaysian classrooms, they may have to make concessions in their own classrooms. There are two possibilities here. One is that, when teachers are accommodating new innovations such as this into their content instruction, they may have to make concessions on their time they spend on teaching content to accommodate the new component, that is the higher-order thinking skills which they are expected to teach together with content. Second, even within the content they teach they may be using some of the components with which they are comfortable and leaving out others to accommodate the changes. In the Malay or English Language classrooms, for example, teachers may be making some concessions on using the four language components, listening, speaking, reading and

writing, to accommodate the teaching of higher-order thinking skills in their classrooms.

Even if teachers are committed to make concerted efforts to accommodate the teaching of higher-order thinking skills in their content instruction, they may not be prepared to do such an innovation in their own classrooms. For example, a national evaluation study was conducted by the Teacher Education Division of the Ministry of Education in Malaysia in 1995 to investigate how prepared are graduates of the Post-Graduate Pre-service Teacher Education Program to carry out the various teaching and learning tasks. One of the findings of the investigation is that, "79.2 percent of the graduates studied suggested that the most difficult task to be carried out, among other pedagogical tasks, is infusing thinking skills in content instruction" (Teacher Education Division, 1995, p.85).

Fourth, teachers in Malaysia come from a largely transmission approach of teaching themselves. The teaching of higher-order thinking skills calls for more of a student-centered approach to teaching where students are given the opportunities to play an active part in the classrooms. However, serious efforts have been undertaken since the 1980s to have more of student-centered approach to teaching in classrooms. Even so, the large class size, and traditionally passive and timid students may make it hard for teachers to adopt more of the student-centered approach to teaching. Be it in the schools or in the teacher

education colleges, teachers seem to be still using more of the lecture method (Teacher Education Division, 1995).

Fifth, even if teachers are of the opinion that they possess the knowledge, skills and attitude to teach higher-order thinking skills in classrooms, one cannot be sure that the teaching of higher-order thinking together with subject matter will take place efficiently. There are at least two possibilities. One is that teachers may be thinking that they are making explicit attempts to teach higher-order thinking skills but are unaware of the fact that they are not doing it. In my investigation in an US classroom, for example, I found that there was a clear dissonance between what the teacher believed in terms of exploiting all four language components to promote higher-order thinking and what was being taught in the classroom (Rajendran, N., 1996a). There could be dissonance on other aspects as well.

The other possibility is that, even if teachers are very committed to teaching higher-order thinking skills they may not be able to handle many issues, especially the pedagogical issues, which confront them. They may have difficulties in implementing the innovations in their own classrooms. Langer (1991), for example, found that , "Even teachers who are deeply committed to using writing for broader purposes, who have sought to learn new instructional approaches, and who are committed to using writing as a way to help their students think and learn, have great difficulty in carrying out their goals" (p.14).

Sixth, focus on school and national examinations, the availability of resource materials, on-going research to improve the teaching of higher-order thinking skills, support for teachers to help overcome problems in the Malaysian classrooms, and opportunities for teachers to continue to learn to teach higher-order thinking skills are some of the important issues which have influence on achieving the goals of teaching higher-order thinking skills in Malaysian classrooms. Lack of outside support, for example, may be compelling teachers to make adjustments which might be detrimental to the teaching of subject matter and thinking skills. It is important to investigate whether these issues have been addressed and are made available to teachers.

What all these suggest is that, teachers are often left on their own to handle problems which arise in their classrooms, and these problems could very often be beyond their jurisdiction. The result is that they make adjustments within their means which in some ways work against the very aim of teaching itself. In this respect, teachers in Malaysia may be making many other pedagogical decisions given the situation that teachers may not be exposed adequately to the teaching of higher-order thinking skills in the pre-service or in-service training, and also very little is actually provided to them on an on-going basis. How teachers perceive their knowledge and pedagogical skills to teach higher-order thinking skills in content instruction, and how they actually carry out the teaching seem to warrant in-depth investigation.

The aim of this study

The aim of this study, given the situation in the Malaysian classrooms, is to investigate how do teachers perceive their preparedness to teach higher-order thinking skills and actually teach higher-order thinking skills in English and Malay Language classrooms. Two related questions will be investigated.

Research Questions.

My primary research question is: How are teachers teaching Higher-Order Thinking Skills in Form Two Malay and English Language Classrooms in Malaysia? Embedded in this question are the following subsidiary questions:

Subsidiary Question 1:

To what extent are teachers prepared to teach higher-order thinking skills in Malay and English Language classrooms?

- a. What are teachers' perceptions about their knowledge, pedagogical skills and attitude towards teaching Malay or English Language and higher-order thinking skills?
- b. Is there a difference between the Malay and English Language teachers' perceptions of their knowledge, pedagogical skills and

attitude towards teaching Malay or English Language and higher-order thinking skills?

- c. What are some of the factors which influence teachers' knowledge, skills and attitude to teach Malay or English Language, and higher-order thinking skills?
- d. How much of the class time do teachers allocate for the teaching of higher-order thinking skills.

Subsidiary Question 2:

How are the Malay and English Language teachers teaching Higher-Order Thinking skills in their classrooms?

- a. How are higher-order thinking skills conceived in Form Two Malay and English Language classrooms?
- b. How are the four language components used to promote the acquisition of higher-order thinking skills in the Malay or English Language classrooms?
- c. How do teachers use different strategies and techniques to promote the acquisition of higher-order thinking skills in their Malay or English Language classrooms?
- d. How extensive is student participation and how does it influence the acquisition of higher-order thinking skills by students in the Malay and English Language classrooms?

Limitations of this investigation

This study will make contributions towards a better understanding of the teaching of higher-order thinking skills in content instruction, and more specifically in Malay and English Language classrooms. However, there are inherent limitations in this study, as often found in other investigations as well. It seems important to spell out the major limitations of this investigation so that the findings of this investigation will be interpreted and used in the most appropriate ways.

It has to be noted that the specific program to teach higher-order thinking skills in the Malaysian classrooms was only started in 1993. It has been only four full years after the attempts to teach higher-order thinking skills started. Given the centralized system of education in Malaysia, and more than 250,000 teachers who teach in public schools who need to be trained for this purpose, this period of four years is not a long time by any standards.

The system of training teachers to accommodate innovations in their classrooms, which is usually a linear model, which goes down from the Ministry of Education officials, state education department officials, and district education department or key-personnel at the district level, makes the dissemination of information a problematic area. This often only provides the 'sit and get' opportunities for teachers. Furthermore, there is hardly any follow-up on any of these staff development initiatives.

This study discusses much about the preparedness of teachers to teach higher-order thinking skills in content instruction in their classrooms. This makes it imperative to discuss the pre-service and in-service training provided to teachers to teach higher-order thinking skills in their Malay or English Language classrooms. However, it is beyond the scope of this study to evaluate the relevant pre-service and in-service training received by the teachers who are teaching in schools, in terms of their effectiveness in preparing these teachers to carry out their responsibilities.

A school district which represents the majority of other school districts in the country was selected for the purpose of the administration of the survey questionnaire. The main reason was to increase the possibilities of finding practices which are also found in most of other schools. However, the qualitative study of classroom observations and teacher and student interviews had to be conducted in a public boys school. The reason for this, as explained elsewhere in detail, was that it was important to identify at least one pair of teachers, one for Malay Language and the other for English Language, who had received some form of training to teach higher-order thinking skills at the form two level, who think they are teaching higher-order thinking skills in their content instruction, and more importantly were willing to participate in this investigation. Among the 22 secondary schools in the Perdana School District where this investigation was carried out, this pair of teachers who

fulfilled this criteria was only available at the Pustaka Secondary school.

The ideal situation would have been to conduct the qualitative data collection in a public co-ed school which represents majority of the schools in the country.

Chapter 2

TEACHERS, AND THE TEACHING OF HIGHER-ORDER THINKING SKILLS IN LANGUAGE CLASSROOMS: A LITERATURE REVIEW

This study aims to investigate how teachers perceive their preparedness to teach higher-order thinking skills in their form two Malay and English Language classrooms in Malaysia. It is also the aim of this study to investigate how teachers actually teach higher-order thinking skills in their Malay and English Language classrooms. This chapter will present the pertinent literature to suggest what needs to be the practices in the classrooms, especially in language classrooms, to encourage students' higher-order thinking abilities. This review is relevant in order to understand how teachers in this study perceive their preparedness to teach higher-order thinking skills in content instruction, and actually teach in their own classrooms.

It has to be noted, however, that most of the literature cited here come out of research to improve the teaching and learning processes in general, and not particularly the teaching of higher-order thinking skills. Nevertheless, the literature cited here is, as much as possible, situated in the context of teaching higher-order thinking skills in language instruction. The reason for the lack of literature in the area of teaching thinking is that in the past 20 years, there has been major scientific progress in the psychology of thinking concerned with performance on specific tasks, and

much less in the psychology of critical, productive, higher order, and creative thinking (Greeno, 1989). Greeno suggests that, research on the topics of productive, higher order, critical, and creative thinking has not been an integral part of the major success of cognitive and developmental psychology.

The first part of this chapter will focus on the relationship between language and thinking, and developing students' thinking processes in language classrooms. The second part will discuss teachers' knowledge, pedagogical skills, and attitude to teach higher-order thinking skills. The following section will present literature on how teachers' beliefs about teaching, learning, and students affect the teaching of higher-order thinking skills. The fourth section will address the issue of teaching higher-order thinking skills in language classrooms. Finally, there will be a discussion on the findings on different approaches, strategies, and techniques which could be used by teachers to promote higher-order thinking in language classrooms.

Developing Students' Thinking Processes In Language Classrooms

Since this study attempts to investigate the teaching of higher-order thinking skills in language classrooms, it seems important to explore how does the teaching of higher-order thinking skills relate to the teaching of language arts. Some psychologists suggest that thinking development

should precede language instruction. A leader of this position is Jean Piaget (1886-1980), a Swiss psychologist (Duckworth, 1987; Piaget, 1963). Piaget professed that students learn language by translating thoughts (notions, natural inclinations, and tendencies) into words. He emphasized the need for teachers to deliver instruction that was rapidly paced; students were to explore materials and discover labels and names for concepts they found (Duckworth, 1987)

Piaget (1963) supported this theoretical framework with evidence that young children learn to talk through their own initiative and curiosity, without formal instruction if they are immersed in a language-rich environment. In a period of only three or four years, for example, children acquire a vocabulary of 5,000 words, and internalize major grammatical rules of their spoken language. Piaget proposed that schools should use immersion and exploration as learning tools throughout the high-school years.

On the other hand, some psychologists believe that thinking processes should be developed as the language labels of a concept are presented. Leaders in this research are Bruner (1986), Kozulin (1990), and Vygotsky (1978). Vygotsky theorized that through the use of specific words and language patterns, thinking is shaped. He and other psychologists reason that the degree and direction of thinking will be related to the breadth of one's language development. Thus, if teachers teach language arts from this perspective, teachers will develop thinking

simultaneously with language. Teachers will assist students to translate ideas, feelings, and experiences into words, as soon as a mental image appears. At the same time, the accuracy and specificity of this translation will be determined by the depth and precision of thinking.

When students state their thoughts aloud, for example, they may realize that their thinking is not clear. As a result, they may call upon a novel example to state the point in a slightly better way, and thus evolve a deeper sense of it for themselves. When students have to convince their classmates, they will provide themselves with the reasons for the thinking they did. Likewise, when classmates misunderstand parts of an argument, they may think through it again, which improves and advances their understanding and communication.

In this respect, one of the important debates is whether thinking is the same across disciplines. Whether all thinking abilities are specific to disciplines, or whether the truth lies somewhere in between. McPeck (1981) contends that generalizable thinking skills do not exist. He holds that thinking is always about a subject, so general thinking ability detached from a subject cannot conceptually exist. This is the conceptual version of the subject-specific view.

McPeck concludes that critical thinking must, therefore, vary from subject area to subject area. The empirical version of the subject-specificity view is held by many contemporary cognitive psychologists (e.g., Glaser, 1984). They hold that it is empirically unlikely that general

critical thinking skills can be taught and transferred to other domains, or in other words, critical thinking is domain-specific. However, there seems to be no general consensus among scholars in the area of teaching thinking on this matter.

The same seems to go for the approaches to teaching thinking. Partly due to the reason stated above, there are at least three general approaches which could be used to teach thinking skills (Swartz and Parks, 1994). First, we have the direct instruction of thinking in noncurricular contexts, which is often called the teaching of thinking. Teaching thinking by direct instruction means that, in a time period designated for thinking instruction, students learn how to use explicit thinking strategies, commonly guided by the teacher. Such lessons employ the language of the thinking task and procedures for doing it skillfully.

The second approach is called teaching for thinking. This approach involves employing methods to promote students' deep understanding of the content. Such methods, include using cooperative learning, graphic organizers, higher order questioning, Socratic dialog, manipulatives, and inquiry learning. While students may respond thoughtfully to the content, no thinking strategy is taught explicitly.

The third approach is the teaching of thinking skills using the infusion approach (Swartz and Parks, 1994). Infusion lessons are crafted to bring into content instruction an explicit emphasis on skillful thinking so

that students can improve the way they think. Classroom time is spent on the thinking skill or process, as well as on the content. Infusion lessons feature a variety of effective teaching practices that characterizes the way thinking is explicitly emphasized in these lessons which are categorized under four-step strategy as discussed earlier.

Whatever the approach maybe, it is important to understand the relationships between teaching knowledge, that is the language content, and teaching thinking. It is generally thought that teaching knowledge is sufficient for understanding (Perkins, 1993), and thinking. Thinking, no doubt, seems to be enhanced by the deeper understanding of knowledge. But knowledge alone is not sufficient. As Perkins (1992) argues, a deeper understanding of the knowledge forms the basis for the active use of knowledge and skills, and that should be the aim of education.

One of the ways of teaching for deeper understanding and thinking is to allow students to play an active part in the teaching and learning processes. This is also in line with what Onosko and Newmann (1994) suggest, "The best we can do is to engage in what we predict will be challenging problems, guide student manipulation of information to solve problems, and support students' efforts" (p.29).

Classroom activities that employ collaborative problem solving seem to have the potential for teaching children how to deal with complex tasks and to work with and learn from each other (Johnson, Johnson &

Holubec, 1990). One would expect that exposure to a rich array of collaborative problem-solving activities in the classrooms would help students become problem solvers as adults. For this to happen in the classrooms, the traditional telling-listening relationship between teacher and student should be replaced by one that is more complex and interactive (Prawat, 1992, pp.357).

Teachers' Knowledge, Skills And Attitude For Teaching Higher-Order Thinking Skills

There is a general agreement in the literature that teachers need to be trained in critical thinking dispositions and skills in order to be able to teach thinking effectively (Idol, L. & Jones, B. F. 1990; Lipman, 1985; Nickerson, 1987; Swartz, 1987; Winocur, 1985). There is some anecdotal evidence to support this view. Ulmer (1939), in a study of teaching high school geometry to enhance reflective thinking, noted that the two teachers in the experimental condition whose classes had the highest scores, had themselves participated in a course on teaching logic in geometry just prior to the study. In addition, the teacher in the experimental condition whose class scored lowest, had joined the study late and had not had the full training.

George (1967), in a study of student teachers, compared the critical thinking abilities of science education majors with non-science education majors. He found that the science education majors scored

significantly higher on the Watson-Glaser Critical Thinking Test than did all the other education students with the exception of the mathematics education students. It was concluded that the disciplines of science and mathematics foster the development of critical thinking more than other subject areas. An alternative interpretation, however, is that better critical thinkers tend to go into mathematics and science teaching. Whether the critical thinking scores of the science and mathematics teachers will carry over into the classroom and improve their teaching was not investigated.

In a study involving teachers, department chairs, and principals Onosko and Newmann (1994) attempted to find out, among other things, their conceptions of and commitment to higher-order thinking as an educational goal, and the factors they perceived as necessary to accomplish it. They reported that academic departments committed to higher-order thinking as a fundamental instructional goal had teachers whose classrooms showed more thoughtfulness than departments not committed to this goal. Based on classroom observations, open-ended interviews with students, and survey questionnaire items, they reported that students were more likely to try, to concentrate, and to be interested in academic study when they are challenged to think.

Onosko and Newmann also identified the barriers or obstacles to the promotion of higher-order thinking skills in classrooms. One of the barriers, they suggest is that teachers perceive teaching as knowledge transmission. Cuban (1984), in the same respect, after researching the

pedagogical practices in American classrooms for a period of 90 years concluded that, the dominant forms of classroom “discourse” past and present are teacher lecture and teacher-led recitations. The overriding agenda is to transmit to students information and ideas, and then request that students reproduce them either orally or in writing.

Another barrier to the promotion of higher-order thinking in classrooms is the low expectations of students from teachers (Onosko and Newmann, 1994). They reported that, some teachers in their study assumed that students lacked the inherent mental capacity, the raw “brain power,” to engage in higher-order thinking, especially those students labeled low achievers or low ability. When students are perceived to lack thinking skills, many teachers are less likely to craft lessons that require higher-order challenges.

Teachers need subject matter knowledge, the necessary pedagogical skills, and the attitude to teach. Recent research has documented some of the important ways that teachers’ knowledge of the subjects they teach shapes their instructional practice. A number of studies have suggested that teachers with richer understanding of subject matter tend to emphasize conceptual, problem-solving, and inquiry aspects of their subjects, whereas less knowledgeable teachers tend to emphasize facts and procedures (Ball, 1988; Wilson, 1988; Ball and McDiarmid, 1990).

Cohen (1991) investigated a California classroom where there were ambitious efforts to revise mathematics and learning were taking place. He found that the teacher used a new mathematics curriculum, but used it in a way that conveyed a sense of mathematics as a fixed body of right answers, rather than as a field of inquiry in which people figure out quantitative relations. He also found that a didactic form of lesson in the classroom inhibited explanation or exploration of students' ideas. Cohen suggests that the teacher did not have a firm grip on the estimation aspect of mathematics she was teaching. As a result, he suggests, "She taught as though she lacked the mathematical and pedagogical infrastructure - the knowledge of mathematics, and of teaching and learning mathematics - that would have helped her to set the problem up so that the crucial mathematical data were available to students" (p.335).

In the teaching of language arts, Grossman (1990) conducted case studies of six teachers to explore the complex interrelationship among beliefs about teaching, subject matter knowledge, and teaching context in the development of conceptions about teaching English. The teachers' own experiences as students in English Language classes provided implicit models for the teaching of literature and writing. Grossman found that while subject matter knowledge and apprenticeships of observation were available to them as sources of knowledge, the teachers drew much more from their subject-specific teacher education coursework, like the methods courses contextualized in specific school subjects, intended to

provide strong subject-specific preparation in English, in constructing their conceptions of the purposes and appropriate practices for teaching English.

There are various ways researchers have defined the necessary components for teaching a school subject. In that respect, the four categories suggested by Grossman (1990) needed to construct the pedagogical content knowledge seem to be very useful for identifying what teachers need to teach a school subject. Four categories also seem to fit the requirement for the teaching of higher-order thinking skills in Malay or English Language classrooms.

First, the teachers' overarching conception of teaching a subject in his or her knowledge and beliefs about the nature of the subject and what is important for students to learn. The second component of the pedagogical content knowledge is knowledge of instructional strategies and representations for teaching particular topics, including the models, examples, metaphors, and so forth the teacher uses to foster students' understanding. The third component of pedagogical content knowledge is knowledge of students' understandings and potential misunderstandings in the subject area. The fourth component is the knowledge of curriculum and curriculum materials, which includes familiarity with the range of textbooks and other instructional materials available for teaching various topics.

Teachers' Beliefs About Teaching, Learning, And Students

Teachers' views of teaching and learning influence their classroom practice (Prawat, 1992). Prawat also suggests that currently, these beliefs support traditional practice, best characterized as a "transmission" approach to teaching and an "absorptionist" approach to learning. As a result, the dominant forms of classroom "discourse" past and present are teacher lecture and teacher-led recitations (Cuban, 1984; Sternberg and Martin, 1988). The overriding agenda is to transmit to students information and ideas, and then request that students reproduce them either orally or in writing.

Teachers' views of teaching and learning constitute an important obstacle in attempts to change normal patterns of classroom interaction (Cohen, et al. 1990; Putnam and Borko, In press). It is also true, for example, in the case of constructivist approach to teaching. While there are several interpretations of what this theory means, most agree that it involves a dramatic change in the 'focus' of teaching, putting the students' own efforts to understand at the center of the educational enterprise (Prawat, 1992). The adoption of such an approach to teaching and learning would result in major changes in the teacher's role. Thus, in all constructivist teaching-learning scenarios, the traditional telling-listening relationship between teacher and student is replaced by one that is more

complex and interactive. It is not surprising that constructivist teaching places greater demands on teachers and students. As Cohen (1988a) points out, "Teachers who take this path must work harder, concentrate more, and embrace larger pedagogical responsibilities than if they only assigned text chapters and seatwork" (p.255).

For thinking to take place in classrooms, it may be important for teachers to convey to students that the goal of instruction is thinking, that the responsibility for thinking is theirs, that is desirable to have more than one solution, that it is commendable when they take time to plan, that an answer can be changed with additional information. Much research has also shown that active learning has a positive effect on students' development of decision-making and problem solving skills (Thomas, 1980, cited in Costa, 1985a). When higher-level thinking, creativity, and problem solving are the objectives, students need to be in a classroom climate where they are in the decision making role (Costa, 1985b).

In order to achieve those goals, Bereiter and Scardamalia(1987) suggest that students be prepared to gradually take over all the goal-setting, context-creating, motivational, analytical, and inferential actions that in other models belong to the teacher. They call this 'high literacy.' Teaching strategies that begin with teacher modeling and that gradually turn more of the executive control over to children have been shown to be effective in both comprehension (Palincsar and Brown, 1984, cited in

Bereiter and Scardamalia, 1987) and in composition planning

(Scardamalia et al., 1984, cited in Bereiter and Scardamalia, 1987).

They also suggest that,

A more accurate characterization of the high literacy tradition would be that it presupposes high-order cognitive skills. Students have been expected to read the works of the greatest writers and thinkers, and their own writing has been expected to reflect in some measure the qualities found in those works. But the cognitive resources necessary for doing this have not been identified; much less have means been sought for developing them in students who did not already have them.

(Bereiter and Scardamalia, 1987, p.16)

It also seems important that teachers give importance to students' ability to contribute to the teaching and learning processes. Students' individual knowledge construction processes too may have to be taken into consideration in the teaching of thinking skills.

If learners are to come to know what their teachers know, therefore, more is required than the presentation of propositional knowledge through talk or text. ...there needs to be extended opportunity for discussion and problem-solving in the context of shared activities, in which meaning and action are collaboratively constructed and negotiated. In other words, education must be thought of in terms not of the transmission of knowledge but of transaction and transformation.

(Chang-Wells and Wells, 1993, p.59)

Because knowledge has to be individually constructed, it cannot be transmitted from one individual to another simply by uttering the appropriate propositions, despite what many educational theorists seem to believe (Heap, 1985, cited in Chang-Wells and Wells, 1993, p. 59).

Teaching of Higher-Order Thinking Skills In Language Classrooms

Aristotle believed that the depths of one's thinking governed the types of language one could use (Anderson, 1985). Language is fundamentally linked to thought by the manner in which information is stored (Marzano, 1991). In fact, some language philosophers (e.g., Fodor, 1975) postulate the existence of a deep level, linguistically-based abstract code that is at the root of all thinking and intention.

In fact, one cannot think in a content vacuum. Sophisticated understanding and mastery of higher-order challenges occur only through the use of knowledge in a subject or topic, whether it be consumer decision making, the design of a bridge, or critique of a theater performance (Onosko and Newmann, 1994). Of course, a subject can be taught in ways that fail to promote thinking, but thinking may not be taught apart from knowledge. Some would argue that the proper teaching of a subject, in this case the language arts, is equivalent to, or sufficient for, promoting higher-order thinking (Glaser, 1984; McPeck, 1981; Nickerson, 1988; Prawat, 1991), because it demands that students interpret, analyze, and manipulate knowledge to face new challenges within the subject and because it draws the student closer to the thinking of experts in the field. Beyond substantive knowledge of the topic, students need analytic knowledge (e.g., the structure of well-reasoned arguments, distinctions between empirical, conceptual and normative claims, criteria to judge

reliability of evidence) and metacognitive knowledge (i.e., awareness and self-monitoring of one's thought processes).

We now believe that language abilities and thinking competencies shape each other (Block, 1993). Both are of equal intensity in fostering learning. Through the power of language use, the quantity and quality of students' thoughts can be improved. Through reading, writing, speaking, and listening, transitory thoughts can be transformed into lasting principles. This transformation occurs because single ideas enter the mind as cognitive entries, capable of bonding with collective categories of former thoughts.

Block (1993), further suggests that, these categorical thoughts are then stored as a dense cognitive structure called schema. Each schema is the collection of learnings, experiences, emotions, and values one has about a topic. Nerve endings of schema in the brain expand in length and breadth as one discusses, writes, and reads about a concept. This depth and breadth eventually become wisdom as more and more dendrites (branches from nerve endings) are forced to intertwine (Rosenblatt, 1978; Smith, 1978). Thus, if adults and children fail to ignite students' thinking, writing, reading, speaking, and listening their wisdom is limited (Collins, 1992).

In relation to this, Gardner and Hatcher (1989) after having reviewed programs attempting to teach thinking skills state,

the relationship between language and thinking has been a topic of debate for a long time. However, nearly every program we have considered acknowledges the importance of language facility to effective thinking in one way or another....(Students) must become an adroit manipulator of language, logical forms, computer programs, or other symbol systems that, in effect, can serve as vehicles for thought (p.48).

Therefore, since students' thinking abilities and language development are of equal value and influence upon the depth of their communication, teachers should develop both competencies if students' potentials are to be reached. In light of this, it seems important to understand how the four main components of language instruction: listening; speaking; reading; and writing, relate to the development of thinking skills.

The importance of overt speech as a tool for enhancing thinking was evidenced in 1974 when the National Institute of Education identified overt speech in the classroom as one aspect of its research agenda. Cazden (1979) has shown that the use of oral language by both teachers and students serves to establish a classroom atmosphere that either elicits or discourages certain types of thinking. Cuing and questioning are two primary ways that teachers use overt speech to elicit specific types of thought.

Cuing involves teachers' use of overt speech to signal specific learning episodes. That is, teachers verbally signal the type of learning expected within a given period of time. Ideally students then retrieve appropriate mental scripts to match the learning episode. Elaborate

coding schemes have been developed to describe the different forms of teacher language used as cues for various episodes (Mehan, 1979; Sinclair & Coulthard, 1975). Cues such as verbal advanced organizers that signal the structure of content are among the most powerful. That is, when students learn new content, the structure that information takes in the long-term memory is greatly influenced by how the teacher talks about the content (Moore, 1977). A number of studies have shown that structure of content as stored in students' long-term memory corresponds more closely to the a priori structure of the content after verbal instruction (Johnson, 1967, 1969; Johnson, Cox & Curran, 1970; Shavelson & Geeslin, 1973).

Questioning is a second way that teachers use overt speech to elicit specific types of thought. Redfield and Rousseau (1981) suggest that higher-level questions appear to be instrumental in enhancing student thinking. A subset of the research on teacher questioning is the research on teacher use of "wait time." Expanding on Rowe's (1974) original definition of wait time as pausing for several seconds after asking a question to give students time to think before being called on to answer, Tobin (1987) identified a number of different types of wait time (e.g., the pause following any teacher utterance and any student utterance, the pause following any student utterance and preceding any teacher utterance). He concluded that extended teacher wait time after asking

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questions should be viewed as a necessary but insufficient condition for higher, cognitive-level achievement.

Results obtained by Granato (1983) and Knickerbocker (1984) suggest that a longer wait time after questions provides students with opportunities to get involved in verbal interactions. Similarly, extended wait time has been associated with more student discourse (Swift & Gooding, 1983), more student-to-student interactions (Fowler, 1975; Honea, 1982), decrease in student confusion (DeTure & Miller, 1985), higher achievement (Riley, 1986; Tobin, 1986) and in complexity and cognitive level of student responses (DeTure & Miller, 1985; Fagan, Hassler & Szabo, 1981).

In the case of reading, Rosenblatt's (1978) work on the transactional nature of reading has helped elevate reading to a process that, by definition, includes critical and creative thought. Perhaps the most comprehensive attempt to incorporate the high-literacy tradition, which emphasized critical and creative thinking under the general rubric of rhetorical invention, within the framework of the language arts is Moffett's "interaction" approach (1968; Moffett and Wagner, 1983). He conceptualized the "the universe of discourse" to encompass: the linguistic models of listening, speaking, reading and writing; the different forms of audience; and the egocentricity versus the exo-centricity (decentration) of the thought being experienced.

The ultimate goal of a language arts program in Moffett's scheme is to create flexible language user and thinkers, those capable of using different models of discourse for different audiences at differing levels of decentration. Instructionally, Moffett's model calls for a classroom laid out for simultaneous group and individual activities (e.g., games, the arts, drama) with no set curriculum. Rather, students progress through self-selected, and teacher-directed activities. Interaction among peers and teachers and students is the key to the curriculum. The high-literacy nature of Moffett's approach is evident in its emphasis on student's creation of new products (e.g., essays, plays, poems), which implicitly demand attention to invention, arrangement, style, delivery, synthesis, extension, and other activities associated with critical and creative thought. Although Moffett's approach has received some criticism for its lack of empirical testing (Nickerson et al., 1985), it has for years served as a model for those curricular and instructional changes that can, and perhaps should, occur when one tries to operationalize high literacy.

One of the powerful reading interventions is Palinscar and Brown's (1984) reciprocal teaching, which is fundamentally metacognitive in nature. Reciprocal teaching employs a process of cooperative question-asking between teacher and students to highlight many of the metacognition demands of reading. The teacher models the overt summarizing, questioning, clarifying, and predicting processes, which are assumed to be internal processes executed during reading, while

students comment on the quality of questions, and summaries, and try to construct better ones.

After an intervention period of several weeks in which reciprocal teaching was practiced daily, middle-school students who had received instruction had higher reading performance than control groups and maintained this higher performance even after an eight-week period without instruction (Palinscar and Brown, 1984). More strikingly, noted Resnick (1987), scores on science and social studies comprehension tests given in the classroom rather than in the reciprocal teaching laboratory also rose significantly for the experimental subjects.

In terms of the relationship of writing to thinking, Nickerson has stated that: "Writing is viewed not only as a medium of thought but also as a vehicle for developing it" (Nickerson, 1984, pp. 33). It is the robust nature of the difficulty of the writing task that renders it a powerful tool for enhancing thinking. By definition, the composing process is a highly-complex cognitive task. For example, in a study of writing performance within a number of disciplines, (Perkins, 1981) found that the ability to produce final copy easily and on the first draft is rare even among professionals.

In a series of studies Flower and Hayes (1980a, 1980b, 1981) developed a model for the writing process. Although it has been criticized (Cooper & Holzman, 1983), it is still the most widely cited. As Applebee (1984) noted, it is the "most thoroughly formalized model of the writing

process" (p.582). Flower and Hayes characterized writing as a set of iterative, recursive phases, which include planning, translating and reviewing, all of which are under the control of an executive monitor. Within each phase the writer is continually weighing the effects of current decisions on those previously made. The longer the process continues and the more the quantity of written discourse increases, the more interdependency is effected. Over time the process becomes one of making decisions based on increasingly more numerous and complex conditions.

From this perspective, writing is one of the most taxing of cognitive acts because it maximizes the load of information that must be maintained in working memory during its execution. Presumably, practice in writing should enhance performance in any cognitive process in which executive control over a number of variables is a factor (e.g., some forms of problem solving); however, not all forms of writing instruction will enhance such executive control. Specifically, in his meta-analysis of writing research, Hillocks (1986) concluded that it is only when teachers plan instructional activities that result in a high level of student autonomy and interaction about the problems faced in composing that writing instruction has a powerful effect on student thinking. Hillocks referred to this as the environmental mode of instruction.

Research in general seems to suggest that there is a strong relationship between the teaching of the four language components and

thinking skills. Thinking seems to be inherent in almost all activities encompassing the four language components. However, merely planning and teaching these four language components in classrooms do not seem to guarantee the development of student thinking. As Hillocks (1986) suggested, only deliberate attempts by teachers to provide high level of student autonomy and interaction seems to have an effect on students' thinking abilities.

The Approaches, Strategies, And Techniques Used

One reason teaching strategy is important in teaching is that, by adopting a certain strategy, the teacher models a certain role for students (Sternberg & Spear-Swerling, 1996). This role modeling conveys, sometimes unwittingly, implicit messages to students. If the messages are of the wrong kind, then the teaching may not only be ineffective, it may actually be harmful. In some instances, the explicit messages may even contradict an implicit one (e.g., as in our anecdote about the mathematical-methods course, or when a teacher encourages students to give their opinions on an issue and then shoots down opinion unlike his or her own).

Taking off from the contention that a major source of failure in teaching thinking could be the teaching style, Sternberg and Martin (1988) considered three different styles in which teaching can take place

in classrooms. The first style is a lecture-based or didactic style. The teacher presents the material to be learned, and the students are expected to absorb it. There is very little teacher-student interaction. The second style is a fact-based questioning approach. The teacher asks many questions of the students, but these questions are designed primarily to elicit facts, and feedback from the teacher tends to take the form of responses such as 'right,' 'wrong,' 'good,' and so on. In the second style, there is a great deal of teacher-student interaction, but the interaction is brief and there is very little follow-up to individual questions.

The third style is a thinking-based questioning approach, or what might be termed a dialogical approach. This approach encourages dialogue between teachers and students and between students and students. In this style, teachers ask questions to stimulate thought and discussion. There is generally no one right answer to these questions, and so feedback like 'right' or 'wrong' is not and generally could not be given. Instead, teachers tend to comment on or add to what students have said, and may even change stands on an issue or play the devil's advocate.

It has to be noted that each of these styles has a somewhat different purpose. The dialogical style (style 3) is useful for encouraging class discussion, but most importantly for present purposes, it is by far the most useful style for stimulating higher-order thinking (Sternberg and Martin, 1988, p.560). They concluded that,

Our observations of classrooms tell us that by far the greatest proportion of teaching takes place in Style 1, and most of the remainder of the teaching is in Style 2. Relatively little of the teaching that goes on in most classes takes place in Style 3. Hence, we would argue, relatively little of the teaching that goes on in the classroom directly encourages higher-order thinking. It would be easy merely to blame the teacher for dwelling on Styles 1 and 2 to the exclusion of Style 3, but the issue is not this simple (p. 560).

They concluded that, "Relatively little of the teaching that goes on in the classroom directly encourages higher-order thinking (p.560)."

Teachers who taught these classes, however, felt that they were actually teaching for thinking. This was also true with other audience in their research. They reported that, "Virtually all teachers believe that they teach for thinking" (p.555).

The problem here is that there seems to be a clear cognitive dissonance between what teachers believe about teaching thinking and what they are actually doing in their classrooms. Although, Spear and Sternberg (1987, cited in Sternberg and Martin, 1988, p.557) have contended that one major source of failure in teaching thinking relates to teaching style, the cognitive dissonance found among teachers may be the result of assuming that 'good' thinking is the by-product of effective teaching and learning.

The most frequently used classroom method of enhancing thinking is questioning, although it is only recently that we have developed a thorough understanding of the nature and use of classroom questions (Marzano, 1993). Specifically, we know that, in general, teachers ask far

more questions than they are aware of. To illustrate, elementary teachers who thought they were asking 12 to 20 questions every half hour were actually asking 45 to 150 questions (Nash & Shiman, 1974). For many researchers, the 'essential teaching exchange' is that sequence of moves describable as 'question-answer-comment/evaluation' or in more abstract form, 'initiation-response-evaluation/feedback (IRE, or IRF) (Edwards & Westgate, 1994).

There is some evidence that asking questions improves students' comprehension and retention of content (Yost, Avila & Vexler, 1977). When questions are given after content has been presented and students are required to construct answers rather than select from among themselves, the benefits tend to be the strongest (Christernbury & Kelly, 1983). Higher-Level questions also appear to be instrumental in enhancing student thinking (Redfield & Rousseau, 1981) although there is considerable disagreement as to what constitutes higher-level questions (Fairbrother, 1975; Wood, 1977). One powerful distinction is that between recitation questions (those requiring students to simply retrieve information previously learned) and construction questions (those requiring students to construct new ideas or conclusions relative to information in long term memory).

van Zee and Minstrell (1997) examined ways in which Minstrell, one of the researchers, used questions to guide student thinking during a class discussion about measurement. The interactional issues involved

ways of speaking that enabled Minstrell's students to develop shared understandings. They examined Minstrell's questioning during a discussion that involved complex changes in students' thinking. In analyzing Minstrell's questioning, they focused on a particular kind of question that the teacher used to try to give students responsibility for thinking, a reflective toss. A reflective toss sequence typically consisted of a student statement, teacher question, and additional student statements.

They found that the reflective tosses they used served three emergent goals. The first was the use of questions to help students make their meanings clear (e.g., clarifying the meaning of what had just been said, bringing student knowledge into public view, prompting articulation of the focal issue by a student, and emphasizing an explicit procedure). The second theme was the use of questions to help students consider a variety of views in a neutral manner (e.g., engaging students in evaluating a proposed method for themselves, providing multiple opportunities for student judgments, fostering a respectful environment for statement of beliefs, engaging students in comparing methods, asking students to validate an apparent consensus, fostering a respectful environment for statements of changes in beliefs, engaging students in evaluating alternative methods, and asking students to generate contexts for considering an issue).

The third theme was the use of questions to help students monitor the discussion and their own thinking (e.g., encouraging students to

monitor what was happening and encouraging students to monitor their understanding of a classmate's thinking). For example, when a student produced an example, the teacher, who was one of the researchers, asked the others (e.g., "Does that make sense?") to monitor whether they understood and accepted the argument offered by their classmate. Such questions seem to instantiate his belief that teachers should involve students in following actively whatever is being said, whether the speaker is a student or the teacher.

To make sure they are enhancing higher-order thinking, many teachers rely on classification systems or taxonomies that differentiate the levels of thought various questions elicit. By far the most popular system for classifying questions is Bloom, Engelhart, Furst, Hill, & Krathwohl's (1956) taxonomy. Most educators are aware of Bloom's six levels of cognitive processing: knowledge; comprehension; application; analysis; synthesis; and evaluation. Presumably, as one asks questions at the higher levels of the taxonomy, more sophisticated levels of thought are elicited. Unfortunately, this assumption is not supported by much of the research on the taxonomy. It has been shown that teachers have little success differentiating one level from another, specifically at the higher levels (Ennis, 1981; Wood, 1977). For example, when asked to determine whether a specific question was an example of an analysis question or an evaluation question, teachers disagreed more often than not.

Metacognitive approaches could also play an important role in enhancing thinking in language classroom. Metacognition as defined by Flavell (1976, 1977, 1978) refers to one's knowledge concerning one's own cognitive processes and products or anything related to them. Brown (1978) breaks metacognition into two components: awareness and control of the factual or declarative knowledge necessary to complete a specific task and awareness and control over the necessary processes or procedural knowledge to complete a task.

Hayes and Flower (1980) model of writing is the monitor that exerts executive or metacognitive control over the component processes. Key to this metacognitive control of the task is goal setting. Specifically, writers translate high-level goals into subgoals. The result is that subgoals tend to pile up creating a potential overload on working memory (Flower & Hayes, 1981). The writer, in turn, develops strategies for handling this "memory overload" condition taking advantage of situations where the creation of one subgoal generates an opportunity for the completion of another (Hayes-Roth & Hayes-Roth, 1979). Thus, the generation of subgoals in the writing process is dynamic rather than a priori (Matsuhashi, 1982). The result is that high-level goals are sometimes replaced by subgoals generated relatively late in the writing process. Thus, the end product of the composing process is often a surprise to the writer (Murray, 1978).

It is the metacognitive ability to monitor this highly complex process of juggling goals and subgoals that separates the writing of skilled versus novice writers and the writing of adults from that of children (Scardamalia, Bereiter & Steinbach, 1984). However, it has been shown that children's metacognitive control over goals can be improved by giving them verbal prompts about possible next steps in the writing process as they "think aloud" while engaged in the task (Bereiter & Scardamalia, 1982; Scardamalia & Bereiter, 1982, 1985).

The influence of the research and theory on metacognition in the language arts is also evidenced in the literature on reading (Paris, Lipson & Wixson, 1983). Parallels have been drawn between metacognition in reading and metacognitive behavior in other disciplines such as mathematics, memory and problem solving (Brown, 1975; Kail & Hagen, 1982; Resnick & Ford, 1981; Siegler, 1983). The strategic reader, like the strategic mathematician or problem solver, juggles goals and subgoals relative to the purpose of reading, the changing nature of the text, and the extent to which information is new or old (Clark & Haviland, 1977).

Research also seems to suggest the use of componential approaches in teaching thinking. Componential approaches to teaching thinking are those that attempt to develop specific cognitive operations. Although many componential approaches also enhance metacognition, it is not a necessary by-product of such approaches. That is, specific cognitive operations can be enhanced without enhancing a general

knowledge and control of self and task. Componential approaches stress learning tactics rather than learning strategies. There are many componential approaches to teaching thinking that can be classified as eclectic - they employ multiple tactics but draw their components from various models of learning and intelligence as opposed to a single model.

Included in such programs are Project Intelligence and BASICS. Begun in 1979, Project Intelligence was a joint effort by researchers at Harvard University, Bolt, Beranek & Newman, Inc., and the Venezuelan Ministry of Education to develop methods and materials that enhance the ability of students to perform a wide variety of cognitive operations including inferential use of information in long-term memory, hypothesis generation, predicting, classifying, problem solving, and decision making (Nickerson et al., 1985). The backbone of the program is approximately 100 lessons aimed at teaching and reinforcing these tactics.

The materials were initially tested using 12 experimental and 12 control classes. All participating classes were designated by Venezuelan authorities as being part of "Barrio" schools, indicating that students came from families of low-socioeconomic status and minimal parental education. A variety of tests were administered to both groups including a number of general-abilities tests and some special-abilities tests developed by researchers to measure specific skills within the program. As summarized by Nickerson et al., (1985), in the large majority of cases the gains shown by students in the experimental group were greater than

those shown by the control. The differences were both statistically significant and substantial in size especially for the special abilities tests.

A number of componential approaches emphasize a single cognitive operation which is directly or indirectly related to some model of intelligence or learning (Marzano, 1991). Mnemonic devices, for example, are learning tactics that enhance the recall of information (Belleza, 1981). A number of studies have shown rather dramatic effects on recall performance when using such mnemonic devices as the method of loci (Ross & Lawrence, 1968), the peg-word mnemonic (Bugelski, 1968), the link mnemonic (Delin, 1969), and the story mnemonic (Bower, 1972; Bower & Clark, 1969).

Comparing is another tactic which is identifying and articulating the similarities and differences between elements. It is basic to many other cognitive operations and one of the first steps in higher forms of analysis (Feuerstein et al., 1980). Although the difficulty of a comparison task is partially a function of the individual's knowledge of the content being compared (Mandler, 1983), skill at comparing can be improved. For example, Raphael and Kirschner (1985) found that students' comprehension, and their production of comparative written summaries, improved when they were taught specific types of comparison structures (e.g., whole/whole, part/part and mixed).

Classifying also is a central component of many theories of cognition and learning. For example, Nickerson et al., (1985) along with

others (Mervis, 1980; Smith & Medin, 1981) have asserted that the ability to form conceptual categories is so basic to human cognition that it can be considered a necessary condition of thinking. To classify, individuals must be able to identify the common features or attributes of various entities which form a group or groups. There is evidence that young children can categorize information with which they are very familiar but have difficulty using categorization as a tool for processing unfamiliar content unless they receive explicit instruction to do so (Moely, 1977). Jones, Amiran and Katims (1985) found that students' ability at categorizing can be improved with explicit instruction, yet extended practice and feedback is needed for transfer to occur.

Closely related to classifying is ordering, which is sequencing or ordering entities on selected characteristics or attributes. Although Piaget concluded that children do not usually master ordering until the concrete operational stage, usually about age 7 or 8 (Piaget & Szeminska, 1941), Feuerstein et al., (1980) found that low-achieving and very young children can develop competence in ordering tasks when specific tactics are reinforced. Similarly, matrix outlining strategies have proven to be effective tools for enhancing the ability to order.

One could also include the summarizing tactic in language teaching to enhance thinking. Brown, Campione and Day (1981) used a rule-based approach to summarizing which includes deleting trivial and redundant material, substituting superordinate terms for lists and

selecting or inventing a topic. Their research suggests that younger and low-achieving students have difficulty using these rules especially the last one, which requires them to select or invent a topic. Often, they will select what interests them rather than what is a good organizer for the information that is to be summarized. McNeil and Donant (1982) found that sixth graders could be taught to use summarization rules that significantly affected their comprehension scores.

Note taking is another tactic which could also be used by teachers. DiVesta and Gray (1972) found that note taking provides both encoding and storage functions. It aids the learner in creating a macro-structure for information and provides a form of external storage for later review. In general, results of note taking have shown better recall of information at a time proximal to the presentation of the information, but there have been mixed results at distal points (Peper & Meyer, 1978; Barnett, DiVesta & Rogozinski, 1981). More specifically for language arts, a number of studies have demonstrated its effect on recall for information in notes although instruction in note taking does not insure that students will identify important information on which to take notes (Einstein, Morris & Smith, 1985).

Finding the main idea is another cognitive process that includes the properties of analysis. Although main idea as a construct is not well-defined, Jones, Palincsar, Ogle, & Carr (1987) found that informal oral summarizing can be effectively elicited from students before, during, and

after reading text segments via teacher- and student-directed questions that focus attention on the subordinate and superordinate structure of the discourse.

Extending tactics are also considered to be effective in enabling the learner to go beyond what is explicitly stated in textual information (Marzano, 1991). In recent years, a number of types of information-shaping and extending tactics have been identified. Most of them fall within the general rubric of inference. For example, many typologies and thinking skills programs have defined various types of inductive and deductive tactics (Nickerson et al., 1985; Costa, 1985b). Many of these are based on inductive and deductive rules from syllogistic models. Instructionally, extending is commonly reinforced by presenting students with tactics for creating analogies and metaphors. They have been shown to be powerful cognitive tools in developing ideas in oral discourse, in composing, and in creative thinking (Bransford, Sherwood, Rieser & Vye, 1986; Mayer, 1984, Weinstein & Mayer, 1986).

A number of approaches to teaching thinking are heuristically based. Heuristics are general rules that, when followed, increase the likelihood of success at a given task. At their core, heuristic approaches provide the learner with actions that, when followed, increase the likelihood of successful completing specific cognitive operations. Heuristic approaches differ from componential approaches in that they are more

“macro” in nature; they deal with more global cognitive operations (Marzano, 1991).

Although heuristics have been developed for a number of cognitive operations (e.g., Beyer, 1988), problem solving and decision making are commonly the focus of heuristically-based approaches. Both problem solving and decision making have been identified as central to cognition of all types (Anderson, 1982, 1983; Rowe, 1985). Studies on expert versus novice approaches to problem solving indicate that experts differ from novice problem solvers in their knowledge and use of general problem-solving heuristics such as devising a plan, representing the problem, carrying out a plan, and checking results (Gick & Holyoak, 1980; Schoenfeld, 1980; Simon, 1980). Schoenfeld (1983a, 1983b) stressed that expert problem solvers are better than novice problem solvers even when dealing with problems outside of their domain of expertise, because they use their general problem-solving heuristics better.

Most programs that attempt to foster thinking use a problem-solving orientation (Marzano, 1991). For example, Wales and Stager (1977) have developed a heuristically-based approach to enhancing problem solving and decision making that they refer to as Guided Design. Guided Design has been offered in high schools and colleges as a course to accompany a wide variety of disciplines (e.g., the humanities, the social sciences, the physical sciences and engineering).

Using freshmen in engineering at West Virginia University, Wales (1979) found increases in grade point averages after four years even after controlling for grade inflation. As described by Resnick:

Before the introduction of Guided Design, engineering students' average freshman GPA's were well below the university average; after Guided Design, their GPA's were well above the average. Students who had participated in the Guided Design program as freshman also had higher four-year GPA's than students who had not participated (1987, p.21).

Many of the processes within the CoRT Thinking Program (de Bono, 1976, 1983, 1985) also can be classified as decision-making and problem-solving heuristics. The materials are content free as possible, reflecting de Bono's desire to develop heuristics for "real life" thinking versus artificial, academic situations. Although it is probably the most widely used program for teaching thinking, CoRT has not been extensively evaluated (Resnick, 1987). De Bono (1976), however, reported several experiments involving idea counts contrasting students who had received CoRT instruction with control groups. Results indicated that CoRT instruction leads to the production of more ideas and a more balanced and less egocentric view of problems.

The componential and heuristic approaches discussed so far are rooted in psychology and focus on fairly specific cognitive operations. There is also another important component in the area of teaching thinking, the critical thinking skills. Critical thinking approaches are rooted in philosophy and attempt to enhance use of formal logic and dispositions

of thought neither of which are easily reduced to a series of steps. Many nineteenth-century logicians regarded logic as providing the basis of everyday reasoning. That is, they assumed that one is always using logic to make decisions, solve problems, and complete tasks. However, in recent years a number of studies have shown that, in everyday thinking, highly intelligent individuals often fall prey to a variety of errors in logic (Perkins, Allen & Hafner, 1983).

Some critical thinking programs have attempted to develop mental logic through the teaching of syllogistic rules of reasoning. For example, Instrumentation Enrichment (Feuerstein et al., 1980) contains instruments that deal with syllogisms. Similarly, Philosophy for Children (Lipman, Sharp & Oscanyan, 1980) includes exercises in syllogistic reasoning. More commonly, though, critical-thinking programs include practice in recognizing informal fallacies (e.g., the gambler's fallacy, equivocation) that purportedly introduce error into one's normally error-free system of mental logic (Negin, 1987).

The other approach to teaching critical thinking is dispositional in nature. Dispositions are habits of thought, cognitive "mental sets" for specific situations (Resnick, 1987). There have been a number of attempts to identify the dispositions of effective reasoning. For example, building on the work of Dewey (1983), Baron (1985) identified a number of dispositions for "good thinking." These include such mental habits as recognizing a sense of disequilibrium or doubt, identifying goals,

searching for evidence, and revising one's plans when appropriate.

Similarly, Ennis (1985) identified a set of critical thinking dispositions that include many of Baron's along with seeking precision, looking for alternatives, and seeing other's point of view.

One model for enhancing critical thinking dispositions is Philosophy for Children (Lipman et al., 1980). Relative to other programs, Philosophy for Children is one of the most thoroughly evaluated (Chance, 1986). For example, Haas (in Chance, 1986) studied the effects of Philosophy for Children on 200 fifth and sixth graders over a six-month period while 200 students from other schools acted as controls. A comparison of reading scores on the Metropolitan Achievement Test revealed that those who had studied Philosophy for Children gained an average of 8 months in reading ability, while the comparison subjects advanced 5 months in the same time. Two years after the study, the experimental group had significantly-higher reading scores in the Iowa Achievement Test even though the two groups were not significantly different at pretesting. The program also has produced positive effects on student participation in class, social behavior and motivation (Chance, 1986).

Closely related to critical thinking is creative thinking. Creative *thinking* is geared more toward the production of information whereas *critical* thinking is geared more toward the analysis of information. Many *approaches* to enhancing creativity focus on solving novel and sometimes

unstructured problems in new and unusual ways. For example, two international, interscholastic competitions, the Future Problem Solving Program (Crabbe, 1982; Torrance, 1980) and Olympics of the Mind (Gourley, 1981) use a problem-solving format to enhance creative thinking.

In a review of 166 experimental studies of teaching creativity skills at elementary and secondary levels since 1972, Torrance (1986) found that 17 percent used some type of creative problem-solving process similar to those used in Olympics of the Mind and Future Problem Solving. Torrance reported that other approaches included the use of media and reading, the creative arts, training in affective components, tactics to effect altered awareness, and packaged materials. Of these, the creative problem-solving approaches had a 77 percent success rate.

Critical and creative thinking are grounded in the language arts in a variety of ways. Language-arts teachers, for example, have traditionally used oral and written language as tools for enhancing critical and creative thought. Similarly, Socratic questions that induce thoughtful student response, large and small group discussions, in-depth analysis of text, the study of language in relation to nonprint media, propaganda, and persuasion, among others, have been means to this end. Indeed, critical and creative thought are at the very core of literacy (Marzano, 1991).

Defined in the "low" senses, literacy is the ability to read and write in a manner consistent with the adult norms in a society (Resnick, 1987).

However, defined in the “high” sense, literacy includes many of the critical and creative- thinking skills and dispositions (Resnick, 1987). The high literacy tradition has emphasized critical and creative thinking under the general rubric of rhetorical invention (Clanchy, 1983; Clifford, 1984). Kinneavy’s (1980) work on the invention process is of particular importance here. Also, included in the high literacy tradition are new theories of the nature and process of reading.

Strategies and techniques are important for teachers to create a conducive learning environment for the teaching of thinking (Costa, 1985c; Sternberg and Spear-Swerling, 1996). Only deliberate attempts by teachers to create a classroom discourse where there is increased student autonomy and interaction seem to promote the acquisition of higher-order thinking skills by the students (Barell, 1991; Bereiter and Scardamalia, 1987; and Hillocks, 1986). Discussion is often suggested as a preferred method (Eisner, 1983; Ennis, 1985; Paul, 1985; Perkins, 1987). Dillon (1984) distinguishes between recitation and discussion calling for higher cognitive skills than recitation. He states, however, that there is little empirical research on discussion. Bridges (1979) point out the necessity of dispositions such as openness and respect for others as necessary conditions for a discussion.

In order to stimulate true discussion in the classroom, researchers seem to recommend the following key characteristics be kept in mind when planning the discussion: students should speak half or more of the

time of matters higher-cognitive abilities; the predominant exchange pattern should be a mix of questions and statements by a mix of students and teacher; the sequence should be a mix of teacher-student, student-teacher, and student interactions; and the overall pace should be fewer, longer, and slower exchanges than in a recitation (Dillon, 1988). It also seems important that teachers plan to use primarily higher cognitive-level questions as the basis for encouraging student interaction and reflective thought.

One way to engage students in taking more responsibility for thinking is to ask more open questions and to acknowledge student contributions in a neutral rather than evaluative manner (van Zee and Minstrel, 1997). Group work, cooperation, and teacher questioning have all been proposed as important components of teaching thinking skills (Dillon, 1984; George, 1984). Smith (1977) studied college classroom environments and found critical thinking to be related to peer interaction, teacher support, and teacher questioning. In a review of studies of wait-time (i.e., the time that elapses between the teacher's asking and the student's answering of a question) in elementary, middle, and high school classrooms, Tobin (1987) reports that the teacher's increase in wait-time has been related to higher student achievement scores.

In a meta-analysis of teacher questioning, Redfield and Rousseau (1981) conclude that higher cognitive questioning yields higher student achievement. Questions, both from the teacher and students, encourage

active student participation. They define higher cognitive questions as those "requiring that students mentally manipulate bits of information previously learned to create or support an answer with logically reasoned evidence" (1981, p. 237). They looked at experiments of teacher training and the teaching of skills. In both, the positive effect of higher cognitive questioning on student achievement was evident.

Teachers can organize their classrooms in a variety of ways to facilitate students becoming actively - not passively - involved in thinking. This might include teacher led, Socratic-type discussions, individual manipulations, and cooperative small-group or total group investigations. These features of classroom organizations are prime factors in creating the kind of classroom atmosphere for thinking (Swartz and Perkins, 1989).

Of all the various patterns of classroom organization that a teacher might use, some achieve better results than others for certain students, at certain grade levels, and for certain goals of instruction. Group work, for example, is characterized by subdivision of the class into work groups or committees. Objectives for the group may be assigned, roles in the group (such as chairperson, recorder, process observer, etc.) may be clarified, and standards for harmonious group work may be set. While the groups are working, the teacher monitors their progress. This organizational pattern has great advantages for developing thinking skills. The Johnsons found that when students work cooperatively in groups, increased reasoning strategies and greater critical thinking competencies result than

in competitive or individualistic settings (Johnson, Johnson and Holubec, 1990).

What seems important is that teachers need to exploit the potential of these strategies and techniques to cater for student thinking. What this entails is that teachers are aware of the potential of the strategies and actually use them in their own classrooms. If teachers consciously make attempts even the simplest type of a strategy could be used for the promotion of higher-order thinking skills. Perkins (1992), for example, suggests that if teachers use the constructivist approach, even when the task is sheer memorization, the learner plays a very active role, struggling to understand, formulating tentative conceptions, testing those conceptions out on further instances.

Analytic Summary

Available evidence seems to support the argument that teachers need a deep understanding of the subject matter, i.e., English Language or the Malay Language, to be able to teach. There is also evidence to support the argument that teachers' own subject matter knowledge influences their efforts to help students learn the subject matter. Besides the subject matter knowledge, teachers also need pedagogical skills to teach the subject matter to the students. Teachers need to be able to

construct the pedagogical content knowledge to teach the subject matter to the students.

When it comes to the teaching of higher-order thinking skills in language classrooms, teachers need a deep understanding of the English Language or Malay Language, and higher-order thinking skills to be able to teach both of them in their classrooms. They also need to be able to construct the pedagogical content knowledge, not only for the teaching of English Language or Malay Language, but also for teaching higher-order thinking skills. Since higher-order thinking skills and Malay or English Language are both taught together (i.e., using the infusion approach) teachers need to be able to construct the specific pedagogical content knowledge necessary to teach higher-order thinking skills in their Malay or English Language classrooms. Although there is literature available on how teachers construct the pedagogical content knowledge to teach language arts, there seems to be no studies which have attempted to investigate how teachers construct pedagogical content knowledge to teach higher-order thinking skills. For that matter, no studies have so far seem to have attempted to investigate how teachers jointly construct pedagogical content knowledge for teaching language arts and higher-order thinking skills in their classrooms.

Available evidence also suggests that teachers need to possess the right attitude and beliefs necessary to teach higher-order thinking skills and Malay or English Language. This is because teachers' views of

teaching and learning influence their classroom practice. It has been shown that what teachers think of their students also influences their teaching, and in this case the teaching of higher-order thinking skills in language classrooms. There also seems to be a serious need for teachers to change their beliefs so that students could be prepared to gradually take over all the goal-setting, context-creating, motivational, analytical, and inferential actions which are usually done by the teachers.

The literature reviewed also suggest that the teaching of higher-order thinking skills and the teaching of language arts are very closely related. Some even argue that the proper teaching of Malay or English Language is equivalent to, or sufficient for, promoting higher-order thinking. There is also evidence to suggest that language abilities and thinking competencies shape each other. In relation to this, there seems to be a need for teachers to exploit the four language components, i.e., listening, speaking, reading, and writing, to promote thinking skills among students. Thinking seems to be inherent in almost all activities encompassing the four language components.

The literature reviewed provides various approaches, strategies and techniques which could be used by teachers through the four language components to promote higher-order thinking skills among students. It seems obvious that conscious efforts on the part of teachers to use various strategies and techniques to promote higher-order thinking skills among students have shown positive results. Conscious efforts by

teachers, especially by using some specific strategies and techniques, also seem to be one of the prerequisites to creating a conducive learning environment for the teaching and learning of higher-order thinking skills in Malay or English Language classrooms. Evidence also suggest that it is important to change the perceptions of students to the different teaching styles to promote their participation in the teaching and learning activities.

Chapter 3

METHODOLOGY AND RESEARCH PROCEDURES

Methodological Choice

There are clearly many advantages and shortcomings of both qualitative and quantitative methods. The main advantage of qualitative research is that it can provide a richer and deeper understanding of a situation. Moreover, many skills are executed in a very different way in context than in a sterile laboratory environment. However, qualitative methods usually suffer from subjective interpretation and nonreplicability. Quantitative methods, on the other hand, have the advantage of objectivity and replicability, but the shortcoming is that at best one can only make conclusions about the specific hypothesis at hand. Furthermore, the sterile laboratory environment of experimental studies limits the generalization of the results to a real-world context. Clearly, there is a need to blend the two methods in such a way as to remove each method's shortcomings (Chi, 1997).

I chose a research design which has both the quantitative and qualitative methods, to pay attention to both the depth and the breadth of *the* issue at hand. I needed to employ quantitative methods to cover also *the* breadth, in view of the policy implications the findings of this study *could* bring. At the same time, I employed qualitative methods, which *allowed* me to get closer to practice than has typically been the case to

date in order to witness what the practitioners do and to understand the choices they make and the personal meanings they attach to what they do. However, data from both these sources, in my opinion, will be inter-complimentary in offering rich explanations of the data.

Sources of Data Collection

Context

A school district in Malaysia which has both rural and urban schools was selected for the purpose of this study. This was done to ensure that the data collected do not only represent either the rural or urban schools. Both the rural and urban schools possess many distinct characteristics of their own. These characteristics include school's physical setting, resources, socio-economic status of students, and teachers' beliefs which may contribute very differently to the data. There is also a better possibility of this school district representing majority of the school districts in the country where there are both urban and rural schools.

The Perdana School District which has a total of 22 secondary schools, and is in the central part of the peninsula, was selected for this investigation. The schools were spread over an area of about 40 miles radius. These 22 schools have a mix of public normal co-ed schools, public boys or girls schools, public residential schools, public residential

religious schools, and public partial residential schools. In this array of schools, the most common schools are the public co-ed schools. This is followed by the public boys or girls schools. Students have equal access to all schools, except the residential and residential religious schools. Entry into these two types of schools are by selection.

However, all of these schools use the same Integrated Curriculum for Secondary Schools which has been formulated by the Curriculum Development Center of the Ministry of Education in Malaysia. There are individual syllabi for each of the school subjects, and there are also curriculum specifications for each of the subjects to help teachers better plan and teach their lessons. Students from the form two classes take a total of eight or nine school subjects. The Malay Language is the National Language and is a compulsory subject for all students. The English Language is taught as the second language and is also a compulsory subject.

People

All Malay and English Language teachers, a total of 135 of them, *teaching* form two classes in this Perdana School District were involved in *this* study. A total of 23 teachers, who represent 17 percent of all 135 form *two* Malay and English Language teachers in this school district were *involved* in the pilot study. The remainder of 112 teachers were involved *in responding* to a survey questionnaire. Among them, 62 (55 percent)

were Malay Language teachers, and the rest 50 (45 percent) were English Language teachers. I got back a total of 104 survey questionnaires from the teachers which represents 93 percent of all teachers given the questionnaires. Of this number, 57 or 54.8 percent were Malay Language teachers, and the rest 47 or 45.2 percent of the respondents were English Language teachers.

Two teachers, one each for Malay and English Language, from the pool of 135 teachers were selected for the purpose of qualitative study. Initially, during the pilot study of the questionnaire, and later during the administration of the survey questionnaire, profiles of all form two Malay and English Language teachers in the school district were collected from the schools. I was looking for a pair of teachers who had graduated in or after 1994 from any one of the teacher education colleges. The reason is, only teachers who studied preservice teacher education courses and graduated from teacher education colleges after this period would have been formally exposed to the teaching of higher-order thinking skills besides having been exposed to the teaching of school subjects. I wanted to investigate the teaching of higher-order thinking skills in Malay and English Language classrooms taught by teachers who have had formal training to teach them in their classes. Also, I wanted to look for a pair who admit that they are making efforts to teach higher-order thinking skills in their Malay or English Language classrooms.

From the profiles of teachers collected, it was found that there were no one pair of Malay and English Language teachers who fulfilled this criteria teaching form two classes in any one of these schools. It was particularly difficult to get English Language teachers who fulfill this specific criteria. Even if they were there in the schools they were teaching higher forms like form four or form five classes because of the high demands for English Language teachers.

Besides the criteria that the teachers should have received some kind of formal training in teaching higher-order thinking skills, I also needed a pair who admit that they are making attempts to teach higher-order thinking skills in their Malay or English Language classrooms. Also, I needed a pair who were willing to allow me to be in their classrooms and conduct participant observations, interview them, and interview selected students from their four classes. I talked to teachers from different schools who had received some sort of formal training to teach higher-order thinking skills and were teaching Malay or English Language at form two classes.

Finally, the pair which I selected consisted of one Malay and one English Language teacher who are teaching form two classes at the *Pustaka* Secondary school, which is one of the 22 schools in the *Perdana School* District. Aishah, the Malay Language teacher graduated from one of the teacher education colleges in 1994, and has been exposed to the

teaching of higher-order thinking skills during her pre-service teacher education course. Although Ambiga, the English Language teacher, did not receive any formal training during her pre-service training in one of the local universities, she did attend a staff development training workshop conducted at her school for teachers to teach higher-order thinking skills in their classrooms. Both of them admitted that they were making attempts to teach higher-order thinking skills in their classrooms, besides teaching Malay and English Language. Both of these teachers were willing, without any form of pressure from any source, to allow me to be in their classes and conduct all the things I needed to do for my investigation.

Two classes for each of the teachers were also selected. I wanted to select one higher level and another lower level class for each of the teachers. The aim of this criteria was to investigate whether there were qualitative differences in how teachers plan, teach, and handle students from these classes. In total, I had four form two classes, two each for Malay and English Language, for the purpose of conducting participant observations. Eight to nine students were selected at random from each of these classes for the purpose of interviewing them.

Besides 112 form two Malay and English Language teachers in the **P**erdana School district, the two Malay and English Language teachers, **the** four classes, and the 32 students from the Pustaka Secondary **S**chool, four Ministry of Education and District Education officials who

were involved in the implementation of the higher-order thinking skills program were also involved in this study. The first officer is Bakar, who is the special project's officer in-charge of thinking skills program at the Curriculum Development Center of the Ministry of Education.

The second person is Lim, the officer in-charge of thinking skills program at the pre-service teacher education unit of the Teacher Education Division of the Ministry of Education. The third person is Saleha, the officer in-charge of thinking skills program at the in-service teacher education unit of the Teacher Education Division of the Ministry of Education. The fourth person is Zaiton, who is the key-personnel in-charge of providing training to teachers in the Perdana School District to teach higher-order thinking skills in their respective classrooms. She herself is the head of the social studies department of one of the secondary schools in this Perdana School District.

Data Collection

The data for this study were collected between December 1996 and March 1997. I arrived in Malaysia at the end of December 1996 and started doing all the necessary ground work to be able to visit schools when schools reopen on the first week of January 1997. However, all the paperwork to obtain access to schools and subjects in the Perdana School District in Malaysia started soon after my dissertation proposal

was approved by my Academic Guidance Committee at Michigan State University in June 1996.

Process of obtaining access

Soon after my dissertation proposal was approved I started doing all the paper work to obtain approval from the University Committee on Research Involving Human Subjects (UCRIHS) at Michigan State University. Although I was going to conduct my data collection in Malaysia, I needed to obtain approval from UCRIHS to ensure that issues pertaining to human subjects, like anonymity and confidentiality, are adequately addressed. I received the approval to conduct this research from the UCRIHS on September 24, 1996 (Refer to Appendix F).

The subjects, the officers, teachers, and students, were provided with pseudonyms and any identifying information (e.g., name of schools, teachers, students in classrooms) about the subjects were deleted or protected with pseudonyms. Reports and presentations of research findings do not permit associating subjects with specific responses or findings. The identities of the officers, teachers and students' that are discussed as part of the data collection have been kept confidential.

With the approval from the UCRIHS and my dissertation proposal I **applied** to the Educational Planning and Research Division of the Ministry **of Education** in Malaysia to conduct research in Malaysia. The Ministry of **Education** did not have any objections to my study and granted

permission through a letter dated August 16, 1996 (Refer to Appendix F). Soon after I arrived in Malaysia, I also needed to go to the relevant state education department where Perdana School District was situated to obtain their permission to have access to the 22 secondary schools, teachers and students (Refer to Appendix F). I had to also go to the Perdana School District Education Office to meet with the District Education Officer to obtain her permission to conduct this study. I needed to meet and obtain permission from the principals of the 22 schools in the district before distributing the questionnaires to the teachers, and also to obtain special permission from the principal of the Pustaka Secondary School to conduct participant observations of selected classrooms, and interviews with teachers and students in that school. I also made such arrangements with the four ministry officials identified for this investigation.

Methods

As stated earlier, a combination of quantitative and qualitative methods were used to collect data for this study. A survey questionnaire (See appendix A) was used to collect data from the form two Malay and English Language teachers in the Perdana School District to investigate their perceptions of their knowledge, skills, and attitude to teach Malay or English Language and higher-order thinking skills. Participant

observations of classroom teachings, interviews with teachers, students and education officials were conducted to collect qualitative data.

Survey Questionnaire

The survey questionnaire (Refer to Appendix A) has four sections and a total of 80 items. The first section has 7 items to gather background information of the teachers involved in this investigation. The second section has 10 items based on three hypothetical lessons in three different form two English Language classes. The main objective of the lessons was to have the students write an essay on the topic, "Ways of addressing the problem of juvenile crimes."

The third section has a total of 56 items covering three sub-sections, knowledge (16 items), skills (18 items), and attitude (22 items). The items are divided equally for both the teaching Malay or English Language and higher-order thinking skills. The fourth section has a total of 7 items requiring teachers to state the percentage of the class time in a selected classroom they allocate for teaching various aspects, including the teaching of higher-order thinking skills.

Pilot study.

A pilot study of the survey questionnaire was conducted at the beginning of this study. The aim of the pilot study was to test the survey questionnaire for cultural and linguistic biases. Prior to this pilot study, the

survey questionnaire, which was originally prepared in English, was translated into Malay Language, and later translated back into English Language using the Malay Language version. Both the translations were done by two different individuals who know and use both the languages. The aim of this procedure was to minimize the possibilities of the two versions of the questionnaire providing different meanings to their items.

When the pilot study questionnaires were distributed to the teachers, I requested them to mark, in whatever ways they preferred on the questionnaires, any words, phrases, or concepts which created any doubts to them. Besides obtaining feedback from teachers by asking them to mark the questionnaires, I also talked to majority of the teachers who were involved in the pilot study after they have responded to the questionnaires to obtain first-hand feedback. This information was very useful to me in refining the survey questionnaire to obtain the final version of it.

A total of 23 teachers from four schools were involved in this pilot study. Of this number, 12 were Malay Language teachers, and the rest, 11 were English Language teachers. These teachers came from four schools which were: public normal boys school; public normal girls school; public normal co-ed school; and public partial residential school. The pilot study was conducted during the first two weeks of January 1997.

Administration of survey questionnaire.

The survey questionnaire was distributed to the rest of the schools. I personally went to all the schools, met with the school principals, and the respective heads of department for Malay or English Language to distribute the instrument. I explained briefly the aim of the study, and also the teachers' rights and responsibilities in responding to the questionnaire. It was explicitly stated that the teachers have the right to decline to participate in this study. There was also mention of this statement on the front page of the survey questionnaire (Refer to Appendix A). Teachers were also assured that all information collected through the survey questionnaire would only be used for the purpose of the study, and would not in any way affect them.

I told the contact persons in each school that I would come back to the schools at least two weeks after distributing the questionnaires to collect them. This was to allow ample time for the teachers to respond to the questionnaires. I did not want to add any form of pressure to their routine responsibilities. I wanted the teachers to take their time to read and ponder over the items and provide responses which best represent their practice in their respective classrooms. I also requested that teachers be allowed to respond to this questionnaire individually, and not to entertain any request to have all teachers in one school gather to respond to the questionnaire as a group.

I started contacting the schools, mostly through phones, after two weeks to ask whether the teachers have completed and returned the questionnaires to the contact persons. Most of the time I was assured that the questionnaires will be ready when I reach the schools. However, I ended up making an average of 4 visits to each school to collect these questionnaires. This was one of the things which I realized did not go as planned. Initially, I planned to make only two trips to each school, that is to send and later collect the completed questionnaires. Although, the teachers were given a minimum of two weeks, I found that not all of them had returned the questionnaires to the contact persons when I arrived at the schools. I had to make plans to go again and again to make sure that I got back the questionnaires.

I did not in any way suggest that I was upset and expressed my sincere hopes to have their responses back even if I needed to come back a few more times. I think I succeeded in persuading the teachers by giving them extra time. I ended up getting 93 percent of the survey questionnaires distributed. On the whole, I found everyone providing full cooperation in responding to the questionnaire, except for one school. Only in one of the schools, when I contacted after two weeks, I was told by the assistant principal of the school that the teachers were too busy with their routine responsibilities, and were not interested in participating in the study. Another reason why the teachers in this school suggested that they were not interested in participating in this study is, as suggested

by the assistant principal, the close proximity of this school to a university where the teachers are often involved in various investigations.

Participant Observations

Participant observations were conducted in four classes taught by the two teachers at the Pustaka Secondary schools. This school only has boys in classes up to the form five level. Only at the form six (pre-university) level there are boys and girls in the classes. There were two form two Malay Language classes: Form 2B, the second best class in form two; and Form 2E, one of the lower level classes. Likewise, there were two form two English Language classes: Form 2A, the best class in form two; and Form 2I, one of the lower level classes. These classes had an average of 40 students in each of them.

I conducted participant observations of the two English Language classes before conducting the same for the Malay Language classrooms. I deliberately planned it this way to focus on the teaching of English Language in the two classes, and try to understand the nature of practice in these classes before moving on to the Malay Language classes. For each of the classes, I planned to follow at least one unit of study which usually takes a week to observe the full coverage of all aspects planned and taught in a week. However, I managed to observe two units of study, that lasted for two weeks, for each of these classes. The Malay Language classes had a total of six teaching periods per class per week. Whereas,

the English Language classes had a total of five teaching periods per class per week.

I also conducted pre- and post teaching conferences with the teachers for every class they taught. The pre-teaching conference was to better understand their weekly, and daily plans for their classes. The post-teaching conferences helped me to discuss with the teachers some of the activities they conducted in their classes with particular focus on the teaching of higher-order thinking skills. The teachers were very cooperative in giving me the time to have this brief pre- and post teaching conferences with them.

I sat at the back of the classes while conducting the observations. I took field notes of all those which caught my attention in those classes. I categorized the field notes into two categories: one the verbatim quotes; and the other what I observed in the classes. The first was basically what the teacher and students said. The second was all other things which I observed in the classes, like how many of the students were paying attention, how many were talking to their friends while their teacher was teaching, and also how many were doing other things. My writing pad had two columns to capture as much as possible for both the categories while I was in those classes.

I also made audiotape recordings of all observations of the classes. The audiotape was placed at a strategic place in the class where it could capture the teacher's talk and most of students' talk during the

class level teaching and learning. The audiotape was placed randomly among students in groups whenever there were small group discussions. The students were initially a little self conscious about the tape recorder placed near them. I found this not to be a problem starting the second or third days in each of these classes.

Interviews

There were a total of 17 interviews conducted for the purpose of this study (Table 1). Interviews with the Ministry of Education officials (3 out of the 4) were carried while I was conducting my pilot study of my survey questionnaire and was gathering information about the teachers who were teaching form two Malay and English Language in Perdana School District. Two of these officials work at the Teacher Education Division: one at the Pre-service Unit; and the other at the In-service Unit, of the Ministry of Education. The third ministry official worked at the Curriculum Development Center and was one of the coordinators of thinking skills program.

Table 1: Total number of Interviews conducted

The source	No. of interviews
1. Ministry/District Officials	4
2 Teacher 1 (English Lang.)	3
3. Teacher 2 (Malay Lang.)	2
4. Student Group 1 (Eng. Lang.)	2
5. Student Group 2 (Eng. Lang.)	2
6. Student Group 3 (Malay Lang.)	2
7. Student Group 4 (Malay Lang.)	2
Total	17

The interview with the Key-personnel of the Perdana School District was conducted midway through the data collection process, that is after I had conducted participant observations of the two English Language classrooms, and before I started with the two Malay Language classrooms. The semi-structured interviews with the ministry officials and the key-personnel focused on the pre-service and in-service training programs accorded to teacher educators and teachers to teach higher-order thinking skills. The interview also focused on teachers' preparedness to teach higher-order thinking skills in language classrooms.

Interviews with teachers and students were conducted during the time I conducted participant observations of the classes. The three interviews with the English Language teacher, and the two interviews with the Malay Language teacher were spread over the period during which I

observed their classes. The first interview was conducted a few days after I started being in their classes, the second one midway along the period, and the last one at the end of the observation period. However, due to time constraint faced by the Malay Language teacher, her second and third interviews were combined.

The semi-structured teacher interviews focused on their preparedness in terms of knowledge and pedagogical skills to teach higher-order thinking skills in their language classrooms. The first one had a specific focus on their pre-service and in-service training to teach higher-order thinking skills. The second interview focused specifically on activities which they carried out in their classes and their relationships to promoting higher-order thinking skills among students. This interview also focused on various problems they faced in trying to teach both the higher-order thinking skills and Malay or English language in their classrooms.

The third interview focused on their overall perceptions of their teaching and learning in the classes involved in the investigation in relation to the teaching of higher-order thinking skills and Malay or English Language. This also included their recommendations to train teachers to teach higher-order thinking skills. Interviews with the English Language teacher were conducted in English Language because the teacher felt comfortable talking in English Language. However, the Malay Language teacher preferred to use Malay Language.

There were a total of eight interviews conducted with the four student groups (Table 1). Each of these student groups consisted of 8 to 9 students selected at random from each of the four classes. There were two interviews with each of the groups. The first interview focused on students' views on the teaching and learning processes in their Malay or English Language classrooms in relation to acquiring higher-order thinking, including the opportunities to participate and share ideas.

The second interview focused on whether the students were capable of engaging in higher-order thinking, and whether or not they get such opportunities in their classrooms. General discussion topics were used for this purpose. Only the interviews with Student Group 1, who come from a very good class, were conducted in English Language. The interviews with Student Group 2, from a poor English Language class, had to be conducted in Malay Language because of the low proficiency level of students which seemed to discourage their participation in the group interviews. The interviews with Student Groups 3 and 4 were also conducted in Malay Language because students felt more confident talking in Malay Language about their Malay Language classes.

Data management and analysis

I came back from my fieldwork with an huge amount of quantitative and qualitative data. The next thing I had to do was to draw out a comprehensive plan to organize my data. My plan needed to include how

I was going to organize both my quantitative and qualitative data. My quantitative data, for example, needed to be coded and entered into a statistical program for the purpose of running different statistical tests. For the qualitative data, for example, I needed to find the means to transcribe the interviews, and classroom observations. I also needed to find ways to code my data. All this and other related procedures needed an elaborate planning.

Quantitative data

I had a total of 104 survey questionnaires with responses from the Malay and English Language teachers. I started to code each of the items in the questionnaire. The survey questionnaire had a total of 80 variables which include the background information, and responses for all the items in five different sections (Refer to Appendix A). The variable number seven, that is the training to teach higher-order thinking skills, for example, had four items: diploma in education; post-graduate preservice teacher education; staff development course; and no training. Each of the items were coded using numbers from one to four, that is "diploma in education" getting number 1, and "no training" getting number 4.

Once the coding procedures were complete, I started entering the data into the Statistical Package for Social Sciences (SPSS). Using the coding guide which I developed, I made the entries for each of the 104 questionnaires. I personally made the entries which totaled 8320. While I

was making the entries, I cross-checked the entries after every five questionnaires in order to be sure that the entries were correct. Even after all the data entry had been completed, I picked 10 questionnaires at random to compare the entries. In my opinion, all necessary measures were taken to ensure the correct representation of the data at all stages of the data entry.

Once the data entry was complete, I started to run basic statistical tests, like frequencies, percentages, and standard deviation for each of the variables. This provided me with the information to have a better understanding of the data, and a better understanding of the characteristics of the subjects involved in this study. After studying the basic data in detail, I started to investigate the further statistical tests I could run to answer my various research questions.

I noted all possible statistical tests which could be run to answer each of my research questions. This test results were to complement the qualitative data which I was analyzing at the same time. Based on the need for each of the research questions, I conducted further statistical tests such as Analysis of Variance (ANOVA), correlation of coefficient, and multiple regression. The ANOVA tests helped me to establish whether there were statistically significant differences among groups, like the Malay and English Language teachers, for example, in responding to the items. The correlation of coefficient tests provided the data to establish whether there were relationships between how the subjects

responded to different items. The multiple regression tests, for example, were useful in determining whether different aspects which were under investigation had any significant influence on aspects like teachers' perceptions of their knowledge, and skills.

Qualitative data

The first thing I did with my qualitative data was to attempt to transcribe the interviews and the classroom observations. As stated earlier, I had a total of 17 interviews with teachers, students, and ministry and district officials. I transcribed in full a total of 9 interviews that were conducted with teachers (5), and the ministry and district education officials (4). However, I only transcribed parts directly relevant to my study from interviews conducted with student groups (8). These segments to be transcribed were carefully selected through careful listening of the audio-recording of the interviews with students, the interview protocol, and the field notes.

The same was done for the classroom observations. I had detailed field notes of each of the classroom sessions. Based on the field notes, careful listening of the audio-recording of the classrooms sessions, and various research questions, relevant segments from these classroom observations were identified to be transcribed. There was a need to select relevant sections to be transcribed as there were long durations of silence when students were doing their writing assignments. There were almost

no recordings of interactions during these periods. In total, I ended up having a total of 280 pages of transcripts. The transcription of the interviews and classroom observations were conducted in the same languages as were used in the interviews and in classrooms. The English or Malay Language used was maintained in order to maintain the authenticity of the verbatims. However, all verbatim quotes used in the reporting are translated into English Language.

Once the transcribing was complete, I started coding the data using the research questions as a guide. I, initially, started coding the data using four major themes: teachers' perceptions about knowledge, skills, and attitude; preparedness to teach; teaching of higher-order thinking skills; and student participation. However, I realized the importance to be more specific in my coding in order to use the data effectively and exhaustively in my reporting. I, ultimately, enlisted nine themes (Table 2) which could be used for the coding. These nine themes were in line with my research questions. The reporting of the findings of this investigation is also based on these nine themes.

Table 2 : The nine themes used for coding qualitative data

1. Teachers' knowledge, skills and attitude
2. Teachers' beliefs about teaching and learning
3. Teachers' perception of their students
4. How are higher-order thinking skills conceived?
5. Different strategies and techniques used
6. Questioning technique
7. Four language components
8. Student participation
9. Problems and prospects of teaching HOT Skills

I read very carefully all the transcripts and conducted the coding using the nine themes stated above. Different codes were used to mark the transcripts in order to make it easier for me to identify the relevant segments when I was reporting the findings. For example, a code '1T1A1' may appear on the data (Table 3). This code was devised to provide information to me to understand the data whenever I looked at it. This seemed very necessary when I was handling 280 pages of transcripts.

Table 3: The coding of the qualitative data

- | | |
|---|--|
| 1 | - the first of the nine questions |
| T | - teacher |
| 1 | - teacher one of the two teachers |
| A | - first of the two or three interviews |
| 1 | - page number of the transcript |

Different codes were made on all of the 280 pages of transcripts. However, for the purpose of simplifying the process of reporting, a

summary for each of the nine themes was also produced. This summary for each of the nine themes contained a brief description of the issue being discussed, either in the interview or in the classroom observations followed by the codes. To make it easier to identify the source of the data on the summary, different colors were used to indicate the different sources of the data. For example, 'green' was used for data from ministry and district education officials, and red color was used for data from classroom observations. These summaries for each of the nine themes were very useful in organizing and writing the findings chapters of this investigation.

Besides the field notes, and the transcripts of interviews and classroom observations, memos I wrote during my field work were also used while reporting the findings of this study. I wrote these memos while I was conducting my data collection on a daily basis. For example, I wrote a few memos while waiting to meet the school principals. These memos involved aspects which were interesting in my data and were relevant to my study. I also made it a point to write memos at the end of each day on various aspects which relate to my study, like teachers' comments in the staff room, my communication with school teachers who were answering my questionnaire, and the problems I encountered in my data collection on that particular day.

Validity and Reliability of the Data

Respondent validation, which represents one kind of triangulation (Hammersley and Atkinson, 1995), was used to validate the data. This involved the checking of inferences drawn from one set of data sources by comparing with other sources of data. More specifically, data source triangulation involves the comparison of data relating to the same phenomenon but deriving from different phases of the fieldwork, different points in the temporal cycles occurring in the setting, or as in respondent validation, the accounts of different participants differently located in the setting.

The basic contention of the validation process is that data should not be taken at face value. In this study, validation was conducted largely in the form of cross reference between the different sources of data. There are at least five major sources of data in this study, namely, the quantitative data from the survey questionnaire, observation of classroom teachings, teacher interviews, student interviews, and interviews with ministry and district education officials. Each of the qualitative data sources have sub-categories, like observation of classroom teachings (4 classrooms), teacher interviews (2 teachers), student interviews (4 groups), and ministry and district education officials (4 of them). It needs to be noted that, in total, there are 15 different sources of data which could be used for the purpose of cross-reference.

Besides this, there are also analytic memos, records of teachers' weekly and daily lesson plans, and collection of all materials distributed to students in the four classes. These documents could also provide the necessary information to make cross-references of the inferences. For example, when inference is made from any one of the teachers' interview data, cross-reference of the inference from the interview may be made with interview data from another teacher, from the classroom teaching, the ministry or district education officials' data source, or with the responses of teachers in the school district from the survey questionnaire.

Measures were also taken to ensure that the data collected were reliable. For the quantitative data, a pilot study was conducted to treat the instrument for the linguistic and cultural biases. A total of 23 teachers who represent 17 percent of all teachers teaching Malay and English Language in form two classes in the school district were requested to respond to the pilot study questionnaire. Feedback obtained from this teachers were used to improve the survey instrument in terms of the items and language to ensure that if the instrument were to be used repeatedly would produce similar results. This procedure was conducted for both the Malay and English Language questionnaires.

The 56 items in the third section of the survey questionnaire (Refer to Appendix A) provided the core data for this investigation. These items which are in three different sub-sections, knowledge, skills, and attitude were tested for reliability and had an Alpha level of .95 on the reliability

analysis. The 16 items on the knowledge sub-section had an Alpha of .92 on the reliability analysis. Whereas, the 18 items on the skills sub-section had an Alpha of .95, and the 22 items in the sub-section on attitude had an Alpha of .80 on the reliability analysis.

As for the qualitative data, the interviews which are self-reported accounts, and classroom observations needed to be treated for reliability too. Studies based on mainly on self-reported accounts, which is not the case in this investigation, have sometimes been questioned regarding their claim to represent reality (Little, 1990). In self-reported data people sometimes create justifications for actions retrospectively, they add and subtract critical details. This could have been a problem in this investigation if there were only self-reported data. Besides the interviews, there were classroom observations, analytic memos, teachers' weekly and daily plans, and quantitative data.

With the various sources of data at my disposal, I could test the analytical linkages I made between the self-reported data vis-à-vis other sources of data using the different sources of information. What I gathered from teachers' on their perceptions of their practices in classrooms from the interviews, for example, I was able to cross-check the data with what I observed in classrooms taught by these teachers. Furthermore, my relationships with the subjects, the teachers, students, and the officers, give me a reason to believe that in the interviews they said what they wanted to, without entirely distorting their own ideas to fit

what they thought I wanted to hear. Also for the classroom observations, the duration of time I spent in each of these classes provided me the opportunity to identify the most consistent type of practices in these classes.

Generalizability

As in any social science research, when characteristics of individuals or events are comprehensively documented, and the research procedures carefully described, readers can critically evaluate a study for its generalizability and build an “inferential bridge” to illuminate their own particular situations (Shulman, 1988). Readers of this study are expected to do so, too. The four classrooms, the teachers, teaching and learning processes, and the students in those classrooms have been adequately represented in the data. The data obtained from other sources like the ministry and district education officials which relate to the above aspects were also used in relevant contexts. All this, I hope, provide the readers to build the inferential bridge.

Where the aim is generalization to some finite set of cases, it may be possible to assess the typicality of the case or cases studied by comparing their relevant characteristics with information about the target population, if this is available in official statistics (Hammersley and Atkinson, 1995). Comparisons of teachers’ perceptions of their knowledge, skills and attitude, and their practice in classrooms were

compared whenever necessary with the quantitative data obtained from the teachers of the school district. Likewise, whenever necessary the responses of the district teachers through the survey questionnaire were compared with teachers' perceptions of their practices obtained through the interviews and practices observed in classrooms.

The real strength of this research design, in my opinion, is the combination of qualitative and quantitative data, including for the purpose of generalizability. This design has demonstrated quite clearly that each of the data, qualitative or quantitative data, could complement the other and make the findings more meaningful, and also show the typicality. As has been suggested by Chi (1997) there is a need to blend the two methods in such a way as to remove each method's shortcomings. This research design has certainly been an attempt in that direction.

Chapter 4

TEACHING HIGHER-ORDER THINKING SKILLS IN LANGUAGE CLASSROOMS: JOURNEY INTO AN MAPPED TERRITORY?

Teachers' knowledge, skills and attitude for teaching Malay or English Language and higher-order thinking skills

Teachers need a deep understanding of the subject matter they are teaching. Ball and McDiarmid (1990) suggest that teachers' own subject matter knowledge influences their efforts to help students learn subject matter. Teachers teaching Malay or English Language need to possess such a deep understanding in those languages. Teachers need the pedagogical skills to be able to share the knowledge of the subject matter with their students. Both the subject matter knowledge and pedagogical skills are important to teach the subject. They are not an 'either or' issue (Shulman, 1986).

Shulman (1986) suggests that teachers should be professionals who are capable of acting and enacting. Shulman (1987) also suggests that teachers need to be able to construct pedagogical content knowledge to teach subject matter in their classrooms. Pedagogical content knowledge includes "the ways of representing and formulating the subject that make it comprehensible to others" and "an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with

them to the learning of those most frequently taught topics and lessons”
(p.9).

In the same respect, a relatively simpler categorization of pedagogical content knowledge has been presented by Grossman (1990): first, overarching conception of teaching of a subject, including teachers’ knowledge and beliefs about the nature of the subject and what is important for students to learn; second, knowledge of instructional strategies and representations, including models, examples, metaphors, and so forth that a teacher uses to foster students’ understandings; third, knowledge of students’ understandings, thinking and learning in a subject, including students’ potential misunderstandings in a subject area. This domain differs from the more general knowledge and beliefs about learners and learning in that is specific to particular content domains; and finally, knowledge of curriculum and curricular materials, which includes familiarity with the range of textbooks and other instructional materials available for teaching various topics.

Implications of Shulman and Grossman’s suggestions for any teaching, and more specifically for the teaching of Malay or English Language and higher-order thinking skills are that teachers need to possess the necessary knowledge and pedagogical skills of the subjects they are teaching, in this case Malay or English Language and higher-order thinking skills. In other words, teachers need to fulfill the requirements of the four categories for both Malay or English Language

and higher-order thinking skills to be able to construct the pedagogical content knowledge to teach them in their classrooms. The important point here is that teachers do not only construct pedagogical content knowledge to teach one school subject as is usually done, like Malay or English Language, but one school subject and higher-order thinking skills together in their classrooms. This obviously makes the task more complex.

At this point, it seems important to reconsider what constitutes the knowledge component of higher-order thinking skills. As discussed earlier, if there is one point on which most investigators agree, it is that thinking is complex and many faceted and, in spite of considerable productive research, not yet very well understood (Nickerson, 1988). As such, researchers and educators have advocated many conceptions in relation to "thinking": critical thinking, divergent or creative thinking, reasoning (moral, inductive, deductive, formal, informal), problem solving, and decision making.

In the thinking skills program used in Malaysia, thinking skills are divided into two categories, thinking processes and thinking skills categories. The thinking processes category has decision making and problem solving in it. The thinking skills category has three sub-categories, generating ideas (2), clarifying ideas (6), and assessing the reasonableness of ideas (6). Each of these categories have specific skills in them as indicated by the numbers in parenthesis.

In Malaysian classrooms, teachers are expected to infuse thinking skills in their content instruction. In infusion lessons, direct instruction in thinking is blended into content lessons (Swartz and Parks, 1994). Infusion lessons are crafted to bring into content instruction an explicit emphasis on skillful thinking so that students can improve the way they think. Classroom time is spent on the thinking skill or process, as well as on the content. There are five steps in the infusion approach adopted in Malaysian classrooms: introduction to content and process; thinking actively; thinking about thinking; consolidation or enrichment activities; and applying thinking (Teacher Education Division, 1993). .

In this study, besides using the categories in the pedagogical content knowledge to investigate whether teachers possess the necessary knowledge and skills to teach both Malay or English Language and higher-order thinking skills, Bloom' Taxonomy (1956), and Onosko and Newmann's (1994) definition of higher-order thinking skills will be used to evaluate how teachers actually teach in their classrooms. Bloom's taxonomy has six cognitive levels: knowledge; comprehension; application; analysis; synthesis; and evaluation levels. In this first two levels are accepted as lower order and the rest of the four levels are taken as representing higher order cognitive operations. Onosko and Newmann's definition makes a distinctive difference between lower-order thinking and higher-order thinking. In their opinion, higher-order thinking occurs when a person must interpret, analyze, or manipulate information.

In the classroom, it requires students to critically think about information, ideas, and opinions. Students draw conclusions, inferences or generalizations. They also produce original communications, make predictions, propose solutions, create, solve life-like problems, judge ideas, express opinions, and make choices and decisions.

This section will focus on the investigation carried out on two teachers, one Malay Language and the other English Language teacher, and four classes, two Malay Language and two English Language classes, taught by them in Perdana School District. The focus of the investigation will be on how these teachers perceive their preparedness to teach and how they actually teach Malay or English Language and higher-order thinking skills in their form two Malay and English Language classrooms. This chapter will be divided into five sections. First, there will be a discussion of the context in which these teachers are teaching, including discussion about the curriculum, testing requirements, and the pre-service and in-service training they have received. This section will also include discussion about their preparedness to teach higher-order thinking skills in content instruction, and common practices in the four classes taught by these teachers. Second, there will be a discussion about how these teachers and students in their four classes conceive higher-order thinking skills and how that influences the teaching of higher-order thinking skills in these classrooms. Third, the discussion will focus on how these teachers use or do not use the four language components

for the purpose of promoting higher-order thinking skills in their Malay or English Language classrooms.

Fourth, the discussion will focus on how these teachers use different strategies and techniques in relation to the promotion of higher-order thinking skills in their classrooms, including whether these teachers are able to use the infusion approach which is encouraged to be used in Malaysian classrooms. The final section will focus on student participation in the teaching and learning processes in these classrooms. What promotes or inhibits student participation which is an important aspect in promoting higher-order thinking skills will be discussed.

Teaching in Malaysian secondary school classrooms

Malaysia has a centralized education system. The Ministry of Education is responsible for formulating, implementing and monitoring the implementation of a national curriculum in all public schools. The State Departments of Education and the District Departments of Education function as agencies of the ministry in carrying out these tasks. At the primary school level, emphasis is on the acquisition of basic skills of reading, writing and arithmetic; the provision of basic knowledge that will ensure the holistic development of potential; and the inculcation of values (Curriculum Development Center, 1989). These basic skills are further developed and reinforced at the secondary school level. At the same time knowledge is further increased and broadened.

There is a specific curriculum for secondary schools called, "The Integrated Curriculum for Secondary School (ICSS)," which contains an individual syllabus for eleven core school subjects, and two additional subjects for the lower secondary level (Form 1 to 3). Besides the individual syllabus, there are curriculum specifications for each subject for each year. That is, the English Language, for example, will have a curriculum specifications of English Language skills for each form. The textbooks used in schools need to be approved by the Ministry of Education and need to be in line with the objectives of the national curriculum and in line with the requirements of each curriculum specifications for each form.

Teachers use these documents, that is the overall curriculum, curriculum specifications, and textbooks in planning and teaching their lessons in classes. They need to make sure that they are following the skills spelled out in the curriculum specifications and also be sure to complete these skills on time before the students sit for their various examinations. At the secondary school level, there are monthly tests, end of semester examinations, and the end of year examinations. The students also need to sit for the National Level Lower Secondary Assessment Examination at the end of Form Three. In this examination, Malay Language, for example, has two papers. Paper one consists of 60 multiple choice questions of which an average of 20 questions will be reading and comprehension type of questions, and the rest of 40

questions will be on Malay Language grammar. Paper two consists of three sections: writing a composition; writing a précis, and completing a text with 10 filling in the blank questions. Students also need to sit for their much more important Malaysian Certificate of Education Examination, which is the last and most important examination at the secondary school, at the end of Form Five. Results in this examination is often used for entry to universities, and various technical and professional colleges.

The case of Aishah, Ambiga and their classes

Ms. Aishah: Background. Aishah teaches Form Two Malay Language classes at Pustaka Secondary school. She graduated with a Bachelor of Arts from one of the nine universities in Malaysia. Her major subject was Malay Literature and her minor was Geography. Since her four year bachelors program did not contain courses on pre-service education, she received her one-year Post-Graduate Pre-service Teaching Education at one of the teacher education colleges. She had Malay Language and Malay Literature as double major subjects in her pre-service teacher education course. She taught Form Six (Grade 12) Malay Language and History at a private secondary school for six months in her hometown after graduating from the university, but before pursuing her pre-service teacher education course. She started teaching at Pustaka Secondary School in July 1994.

She is the head of the Malay Language Panel in the Afternoon Session of Pustaka Secondary School. She coordinates academic activities such as the preparation of term examination questions, and preparing students for debates, among teachers of Malay Language in the afternoon session. Besides this, she also takes on many other responsibilities like participating in various sub-committees in the school. She also provides her service as a mentor to interns who come over to her school to do their practical training in teaching Malay Language.

She was introduced to the teaching of higher-order thinking skills in her pre-service teacher education course in the teacher education college. Besides this, she also attended a two half-day workshop on teaching higher-order thinking skills in her school. This workshop was conducted by one of her colleagues who attended a workshop on teaching thinking skills conducted by the state department of education. This workshop was not based on teaching thinking skills in specific school subjects, rather on the generic skills which could be used by teachers of various school subjects in their classrooms. The generic skills introduced in the workshop included problem solving and decision making skills without being grounded in any particular school subject. She, like other teachers in the school, was expected to incorporate the teaching of thinking skills in her teaching of Malay Language.

Aishah teaches two form two Malay Language classes. She teaches Form 2B which is the second best class among 10 form two

classes in the school. At Pustaka Secondary School, students are streamed every year based on their academic performance, and sent to classes starting with Form 2A. She also teaches Form 2E which is one of the lower level classes in the school. She has a total of six periods of 40 minutes weekly in these classes. Some of these periods are paired so that she can plan longer activities for her students. Her Form 2B class has 42 students, of which 17 of them (40.1 percent) are Malays, 15 of them (35.7 percent) are Chinese, and 10 of them (23.8 percent) are Indians. She has a total of 44 students in her Form 2E class, of which 21 of them (47.7 percent) are Malays, 11 of them (25 percent) are Chinese, and 12 of them (27.3 percent) are Indians. The ethnic composition in these classes seems to be in line with the ethnic composition of the country's population. That is, the major ethnic groups are represented proportionately in these two Malay Language classes.

Ms. Ambiga: Background. Ambiga teaches Form Two English Language classes at Pustaka Secondary school. She received her four year bachelors course which has the pre-service teacher education component at one of the nine universities in Malaysia. She graduated with a Bachelor of Education in TOEFL (Teaching of English as a Foreign Language). Her major was Teaching of English as a Second Language, and her minor was teaching of English Literature. Her pre-service teacher education included three months of internship (practical training), where she was observed and given feedback six times by a faculty (Teacher

interview, 1T1A1). She graduated in August 1993, and taught in two different schools before starting to teach at Pustaka Secondary School from the end of 1994.

She is the head of the English Language Panel in the Afternoon Session of Pustaka Secondary School. She coordinates academic activities such as in the preparation of term examination questions, and preparing students for oratory contests, among teachers of English in the afternoon session. She is asked, although very rarely, by her colleagues about grading English Language compositions, teaching students to read, and making students interested in English Language (Teacher interview, 1T1A9). Besides this, she also takes on many other responsibilities like participating in various sub-committees in the school. She also provides her service as a mentor to interns who come over to her school to do their practical training.

She did not receive any formal training in the teaching of higher-order thinking skills in her pre-service teacher education course. However, she attended two half-day workshops on teaching thinking skills in her school. Teachers who attended this workshop, including Ambiga was expected to incorporate the teaching of higher-order thinking skills in her English Language classes (Teacher Interview 1T1A2).

Ambiga teaches two form two English Language classes. She teaches Form 2A which is the best class among all form two classes in Pustaka Secondary School. She also teaches Form 2I which is one of the

lower level classes in the school. She has a total of five periods of 40 minutes each every week in these classes. Some of these periods are paired so that she can plan longer activities for her students. Her Form 2A class has 44 students, of which 18 of them (40.9 percent) are Malays, 14 of them (31.8 percent) are Chinese, and 12 of them (27.3 percent) are Indians. The ethnic composition of students in this class also represents the overall ethnic composition of the country. She has a total of 41 students in her Form 2I class and all of them are Malay students. Among the four classes under investigation, only this class has students from only one ethnic background.

How prepared are Ambiga and Aishah in terms of their knowledge, pedagogical skills and attitude to teach Malay or English Language and higher-order thinking skills?

Ambiga, the English Language teacher, seems to feel confident about the subject matter knowledge she possesses for teaching English Language in her classes. She thinks that she has been prepared adequately in her pre-service teacher education program to teach English Language in these form two classes. She actually thinks that she faces no problems in teaching English Language, and also believes that she knows more than enough to teach the students.

Raj: ...Could you say about your knowledge? Are you prepared? Do you think you have been prepared sufficiently to do this? Then you can talk about English Language and higher-order

thinking. What do you think about English Language in terms of knowledge to teach English Language?

Amb: English Language I can teach. I am capable of teaching that. No problem.

Raj: In terms of knowledge you think you have more than enough?

Amb: More than enough to teach the students. Okay, HOT as far as I am concerned that will be a big problem.

(Teacher Interview 1T1C4)

She, however, suggests that it is a problem for her in terms of her pedagogical skills to teach higher-order thinking skills in her classes.

Ambiga believes that teaching higher-order thinking skills in her English Language classes is important. For a question whether it is important to teach higher-order thinking skills in her English Language classes, she suggested that, "To me its very important, but very difficult" (Teacher interview, 1T1A3).

Amb: A big problem in the sense that well, we are studying HOT, they didn't teach a skill for HOT. They didn't say okay, this is the course for you. When you go out you teach, this will be one of the course[s]. No. So, there's no HOT as a subject. So all throughout the years of our learning to be a teacher they sort of like infused in us 'okay, if you want to teach the ... okay you do brain-storming, you do this okay if you come to this idea. But when we be a teacher well we just go out and teach like that. There's no such thing as okay we have to teach HOT along with English. So we have a problem. We are still in a mist how, what is HOT.

(Teacher Interview, 1T1C4)

Ambiga attributes the problems to her pre-service teacher education program where she suggests higher-order thinking skills were not introduced as one of the courses. Ambiga seems to have a problem in

even trying to understand what are higher-order thinking skills. She suggests that she is trying to understand the “HOT thing” (Teacher interview, 1T1C4).

Amb: Ya. So first time when I do a survey about HOT, higher-order thinking skills really I have a problem of really trying to recall how to teach higher-order thinking. That’s a problem. You want to teach skills to the students. Higher order. So that’s the problem. I am trying to understand HOT thing...whether I’ve learnt it during the six years of study [two years of matriculation and four years degree study].
(Teacher interview, 1T1C14)

Ambiga believes that throughout her learning experience to be a teacher, she was not exposed to the teaching of higher-order thinking skills as a separate entity or through the infusion approach, that is teaching thinking skills through school subjects like the English Language. She explains that, “There were no such thing as okay we have to teach HOT along with English” (Teacher interview, 1T1C4). She suggests, however, that there were activities like brainstorming to bring out ideas from students in her pre-service teacher education course. She also suggests that this is one of the activities the teacher educators used to encourage students like her to think (Teacher interview, 1T1C4). She also suggests that there were activities like creative writing, public speaking, and reading literature materials, which in her opinion helped prospective teachers like to her to think.

Raj: Despite that in the pre-service when you were doing your degree, in..

Amb: Degree..., no we didn't. No specific we are going to teach you how to teach students higher order... No such thing.

Raj: Can you elaborate a little bit more on that?

Amb: In our subject, usually during matriculation, we have this course for creative writing. That is in term of writing. And then we have public speaking. So, the lecturer asked us to give a speech in front of the students among our friends and do whatever you like. Creative things.... Something like that. Literature.

Raj: Literature, ah..

Amb: Literature. Literature throughout the course. of critical thinking.

Raj: What about the like.. during your degree program? How your... did you see any explicit attempt to incorporate thinking into your subject as a part of your elective? I mean infusion.

Amb: I'm not so sure. No, I don't think so.

(Teacher interview, 1T1A2)

Activities like brainstorming and creative writing certainly help students to think on issues at hand. Students benefit from other students in the class where everyone is encouraged to contribute towards an issue being discussed. There is certainly an opportunity for students to know the multiple perspectives of an issue through this brainstorming session together with their friends in the class, which otherwise they might not see for themselves. However, one wonders whether there were attempts to go beyond gathering multiple perspectives. Whether there were attempts to analyze, synthesize or evaluate the points raised by students in the brainstorming sessions which might have provided the students with the opportunities to acquire higher-order thinking skills.

With no explicit attempts in her pre-service teacher education course to provide teachers with the necessary pedagogical skills to teach higher-order thinking skills in English Language classrooms using the infusion approach, it seems no surprise that she finds it difficult to infuse higher-order thinking skills in her classes. What seems more problematic is that she seems to be not convinced of the need to infuse thinking skills explicitly in the content instruction. She seems to be satisfied with her present way of teaching in her classrooms. She believes that a number of strategies she is using help promote thinking. She is not sure whether these strategies are called higher-order thinking skills strategies. As a result she suggests that she does not agree with the Ministry when it suggests that teachers need to infuse thinking skills in content instruction.

Amb: How, okay I take a subject. So let's say essay writing. Composition titled 'Social problems.' So I ask them to base on their discussion. Those are the strategies. But I do not know whether these strategies I use is called HOT. That's the problem. That is the problem. There's no straight line. I don't know HOT or just one of the strategies. Which one? If they highlight okay, what you are doing now okay you are now on the right track, all the while HOT, no problem. You can go on. But Kementerian [Ministry] is saying like we haven't done this HOT all these while. That's why Kementerian [Ministry] says okay you must infuse in the subject HOT. That's why I don't agree.

(Teacher interview, 1T1C5)

Even the in-house training which was conducted in her school, as stated earlier, was not conducted to provide the teachers with the subject-specific pedagogical skills to infuse higher-order thinking skills in their school subjects. Generic thinking skills were given by the facilitator, and

the teachers were expected to devise their own strategies to infuse the higher-order thinking skills in their subjects. The case of Ambiga seems to demonstrate the problems teachers face in trying to infuse thinking skills in their school subjects.

In the case of Aishah, the Malay Language teacher, she too seems to feel more confident about the knowledge she possesses to teach Malay Language, but not higher-order thinking skills (Teacher interview, 1T2B10). However, she suggests that she is still learning about both the teaching of Malay Language and higher-order thinking skills. In terms of her subject matter knowledge to teach Malay Language, she suggests,

Ais: Even my knowledge for teaching Malay Language, I am still learning. The reason is that I still don't understand the word and sentence formation. I still refer to books....Since Malay Language keeps changing very often...there is pressure, pressure for teachers, especially, in terms of the language itself.

(Teacher interview, 1T2B8)

When it comes to the knowledge about higher-order thinking skills, both Ambiga and Aishah seem to suggest that it is a problem for them. They both think they don't know enough to teach higher-order thinking skills in their classes. Although Aishah was exposed to the teaching of higher-order thinking skills in her pre-service teacher education course, she thinks that she doesn't know enough about higher-order thinking skills to teach her students.

Raj: Aishah, in your opinion, were you ever exposed to teaching higher-order thinking skills? Whenever, either during your pre-service or through in-service courses?

Ais: During my pre-service teacher education course, I was exposed to the teaching of higher-order thinking skills. But, not much was given...But when I am teaching here, I was exposed during the in-house training. But it was too short. What to be taught to students was very limited. Coupled with limited resource materials.. So the thing is it cannot be effectively passed on to students.

(Teacher interview, 1T2A3)

Aishah suggests that although she is still learning how to teach Malay Language and higher-order thinking skills, she is more confident of her pedagogical skills to teach Malay Language than higher-order thinking skills. She believes that the pre-service teacher education course prepared her adequately to teach Malay Language confidently in her form two classrooms. She also thinks that she can refer to reference books to know how to teach certain aspects of Malay Language in her classes. She believes that there are books available for this purpose. She does not seem to consider her pedagogical skills to teach Malay Language in her form two classes as a problem.

However, when it comes to pedagogical skills to teach higher-order thinking skills, she believes that it is a problem. She suggests that very little of higher-order thinking was infused into their pre-service teacher education course (1T2A4). The present situation is that, although she believes that the teaching higher-order thinking skills is important, and she needs to teach higher-order thinking skills in her Malay Language classrooms, she is not sure as how to do that in her form two Malay

Language classrooms. That is, she seems to lack the pedagogical skills to combine the teaching of Malay Language and higher-order thinking skills in her classrooms.

Raj: What about the skills to teach, pedagogy? For Malay Language, do you feel confident Mrs. Aishah? For example, say, teaching composition, comprehension, or language?

Ais: That I think, I can teach. Because that has been taught. So I can teach. And then, as I have said, even if I have a problem...I can look for books. There are books.

Raj: What about for higher-order thinking skills?

Ais: Higher-order thinking skills, teachers themselves have to think creatively. So that is difficult. Want to ask students think like how teachers think. May be, teacher's thinking and students' thinking are not the same.....Although, that is certainly important, but the time is too short. So the pressure is on the teacher to prepare herself for something which is so complex.

(Teacher interview, 1T2B9)

Again, the in-house training which was conducted in her school also left Aishah in the same position as Ambiga where teachers were given generic thinking skills and were expected to infuse thinking skills in their subjects. Aishah suggested that the course was too short, what to be taught to the students was also very limited. She believes, coupled with the problem of lack of resource materials, higher-order thinking skills cannot be effectively passed on to students. Since the course was basically a 'sit and get' type of in-house training, and there were no attempts to provide teachers with the subject-specific pedagogical skills to teach higher-order thinking skills, that is to teach higher-order thinking skills in specific school subjects, teachers like Aishah and Ambiga seem

to have been left to wonder how to teach higher-order thinking skills in their own classrooms. There were also no opportunities for teachers teaching specific school subject to discuss the ways of infusing higher-order thinking skills in their school subjects as a group in that in-house training.

Besides the subject matter knowledge and pedagogical skills to teach Malay or English Language and higher-order thinking skills, it also seemed important to investigate what these two teachers think about the importance of teaching higher-order thinking skills in their content instruction. Although the teaching of higher-order thinking skills is mandated in these classrooms, what teachers like Ambiga and Aishah believe about the teaching of higher-order thinking skills in content instruction reflects their attitude and also may largely influence their attempts to infuse higher-order thinking skills in their Malay or English Language classrooms.

Ambiga and Aishah both seem to believe that it is very important to teach higher-order thinking skills in all school subjects, and particularly in their English Language (Teacher interview, 1T1A3) and Malay Language (Teacher interview, 1T2A7) classes. When Ambiga was asked why she thinks that teaching higher-order thinking is important, she suggested that, "It's important because you have to make a lot of decisions. So higher-order thinking skills is very helpful" (Teacher Interview, 1T1A3). She also believes that teaching students the higher-order thinking skills

will be good because in her opinion, "Higher-order thinking skill, meets the person who really sit down and think and find ways, means and ways to try to solve the given problem" (Teacher interview, 1T1A3). As such, she certainly supports the Ministry of Education's efforts to encourage teachers to teach school subjects and higher-order thinking skills because she believes that this could produce very good thinking students. Again, she has her reservations about the preparedness of teachers to do this in their respective classrooms.

Raj: ...I mean more emphasis on that, more explicit, and teachers consciously do it, to infuse it. What are your thoughts about this kind of stress now given by the Kementerian [ministry]?

Amb: It is a good idea. We will produce very good thinking students but we are so short of time and like I told you before we [have] only been trained to teach English. How could this be done. So I think Kementerian's [Ministry] idea is very good. No doubt about that. But if you want to carry it out you must make sure what you think before you say 'okay, teachers must do this.' You must make sure that the teachers [are] really trained to teach this HOT.

(Teacher interview, 1T1C2)

Aishah too seems to support the attempts to teach higher-order thinking skills through school subjects. She too, like Ambiga, thinks that teaching thinking skills to students will help produce better, and independent thinkers (Teacher interview, 1T2A9). She believes that teaching thinking will assure students do not accept blindly what their teachers say.

Raj: Now, specifically on teaching higher-order thinking skills in Malay Language classes. What are your thoughts about efforts to infuse higher-order thinking skills into Malay Language instruction?

Ais: Good. It is good to infuse higher-order thinking skills in Malay Language instruction. The reason is that students will be able to think for themselves without teachers' help. They wouldn't accept blindly what their teachers are saying. So I like students like that because although they protest, but at least they are able to think. They talk based on logic. That is their own logic. That, for me is good.

(Teacher interview, 1T2A9)

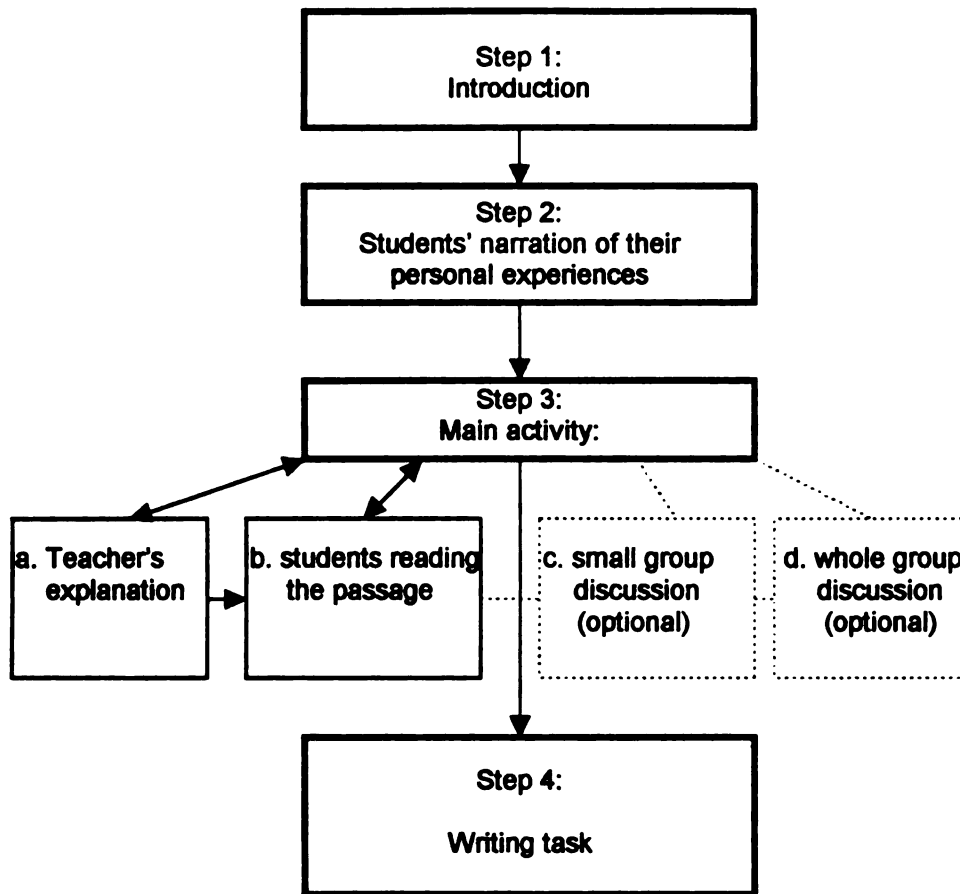
She thinks that students will be able to evaluate what their teachers say, and if they do not agree they may protest. This, she believes, will enable them to think. However, she suggests that it is important that students base their argument on logic.

How do Ambiga and Aishah teach in their own classrooms?: An Overview

Having understood how Ambiga and Aishah have been prepared to teach Malay or English Language in their form two classrooms, and also how they perceive their preparedness to teach higher-order thinking skills in content instruction, it is now important to investigate how they actually teach in their classrooms. That is, what are the common practices in their classrooms in the context of Malay or English Language instruction, and in relation to the acquisition of higher-order thinking skills. A much more detailed description of their practices in the four classes on specific topics like how they use the four language components and different strategies and techniques will be presented later in the chapter. A general overview of common practices in their classes will suffice at this point.

Aishah teaches one high level Malay Language class (Form 2B) and one lower level Malay Language class (Form 2E) (Appendix B - Matrix). Aishah teaches three times a week in each of these classes. Each of these periods are one hour and ten minutes or one hour and twenty minutes periods. The table (Appendix B) shows the major activities observed over a period of two weeks in each of these classes, except for one of the classes canceled for sport activities. There is a mix of listening, speaking, reading, and writing activities carried out in these classes. The teacher uses the prescribed textbook extensively in planning and carrying out activities. Students in these two classes almost during every class period read a passage on factual material from the textbook. The teacher seems to play the role of explaining the passages most of the times. They also often end the class period doing writing assignments.

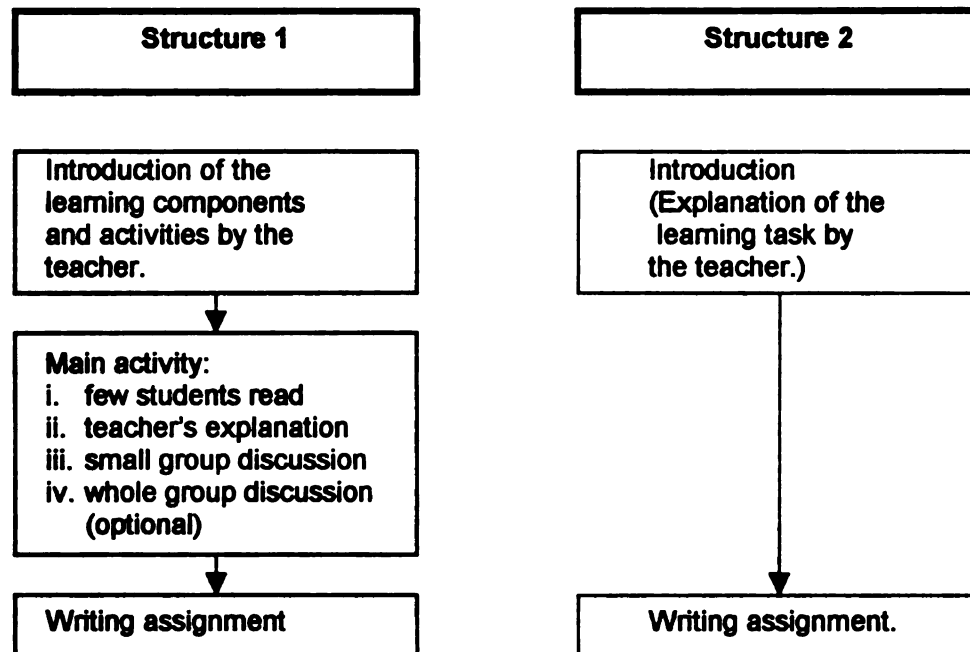
A typical lesson in Aishah's class contains four components (Diagram 1): a simple introduction about the learning aspects of the day; students' narration of their experiences; the main activity of the day; and the writing task. The main activity of the day usually is reading and comprehension of a passage from the text book, or an aspect of Malay Language grammar. The main activity of the day usually consists of sub-components like teacher's explanation of the activity, students reading the passage, teacher's explanation of new aspects in the passage, and sometimes small group discussions among students, although these seem to be very rare in these classes.

Diagram 1 : The structure of lessons in Aishah's classes.

There was only one small group discussion (Form 2E - Day 4 - Refer to Appendix - B) in the two week period in these two classes. Students are either asked to read the passage on their own, or invited to read the passage one by one with the teacher intercepting with explanations of parts of the passage. However, students get to talk about what they are studying as a whole class, and also they sometimes get opportunities to present to the class what they have worked on individually.

Aishah seems to use this structure of lessons in her classes quite consistently. She provides opportunities for 2 or 3 students a day to narrate their experiences in their classes with the hope of promoting public speaking, and students' self-confidence. After the main activity, students are required to carry out their writing task. The class ends with students sending their exercise books to Aishah. There are usually no summing up of the day's activities or the learning task.

Ambiga teaches one higher level English Language class (Form 2A) and one lower level English Language class (Form 2I) (Appendix - Matrix showing major activities in the four classes). Ambiga teaches three times a week in each of these classes. Two of those times are one hour and ten minutes or one hour and twenty minutes periods each, and the rest is a thirty five minutes period. The table (Appendix 22) shows the major activities observed in her two classes over a period of two weeks, except for one of the classes canceled for sport activities.

Diagram 2: The structures of lessons in Ambiga's classes

There is a mix of listening, speaking, reading, and writing activities carried out in these classes, although reading does not seem to be popular activity in her lower level English Language class. Students in the higher level English Language class seem to read or talk about a topic and end up doing the relevant writing assignments. Students in the lower level English Language class seem to listen to the explanations of the day's task and also end up doing the relevant writing assignments. However, students get to discuss about some issues in small groups, and also get to present to the whole class in both these classes.

Ambiga's classes usually have two structures (Diagram 2). It seems to have a much simpler structure compared to Aishah's classes. The first structure consists of three components: an introduction of the

learning components and activities; the main activity of the day; and the writing task. The main activity of the day could be reading and comprehension, or a problem solving activity. This component could also consist of sub-categories: teacher asking a few students to read the text; teacher's explanation; and small group discussion on a particular task from the text the students are reading. There could be whole-class presentations after students have had discussions in small groups before they begin to write.

The second structure consists of only two components (Diagram 2). The first is the introduction where Ambiga explains the day's learning component, which is basically the task the students are expected to carry out. The task the students are expected to carry out is usually a writing assignment. This takes up about 10 minutes of the class time. The students spend the rest of the time doing the writing assignment and the class ends with the students sending the exercise books to their teacher. There is usually no summarizing of the activities of the day.

**How are higher-order thinking skills perceived
in the Form Two Malay and English Language classrooms?**

The innovation of infusing higher-order thinking skills in content instruction is being implemented in classrooms across the country in Malaysia. Teachers are expected to treat higher-order thinking skills as important as content area when planning and teaching in classrooms. The Malay and English Language teachers teaching form two classes in the Perdana School District are also expected infuse the higher-order thinking skills in their Malay or English Language instructions. Likewise, Ambiga and Aishah are expected to infuse higher-order thinking skills in their Malay or English Language instructions.

The question is what do they know about higher-order thinking skills? What do teachers like Ambiga and Aishah and students in their classes perceive higher-order thinking skills to be? It seems important to investigate teachers and students' understanding of what higher-order thinking skills are because that understanding seems to influence their expectations towards teaching and learning processes pertaining to acquiring higher-order thinking skills in classrooms. Also, it seems important to investigate the learning activities which, in their opinion, represent higher-order thinking skills.

What are teachers' perceptions of higher-order thinking skills?

Ambiga, the form two English Language teacher seems to differentiate higher-order thinking from ordinary thinking. She seems to suggest that higher-order thinking requires one to go much higher than just performing the routines. That is, she suggests, the person really sits down, thinks and finds ways to solve a problem. She believes that routine thinking is a very mundane matter that will not help find solutions to problems. One needs to take the extra effort to think hard to find the solutions.

Raj: In your opinion, what do you think can be considered as higher order thinking skills?

Amb: Higher order thinking skills..

Raj: If you're asked to.... what should be considered as higher order thinking skills.

Amb: Means, you can think much higher than ..I mean ... listen to instruction, but you can go further on your own. Without being guided too much. That's what ... I can see.

Raj: How do you differentiate? In your opinion, how do you differentiate routine thinking and higher order thinking? In a classroom, given your classroom for example. How do you differentiate?

Amb: Routine thinking..

Raj: Which is normal, typically goes on as usual. But here, there is a distinction between higher order thinking and routine thinking. How do you feel different?

Amb: Difference.. Higher order thinking skill, meets the person who really sit down and think and find ways, means and ways to try to solve the given problem. Routine thinking is just very mundane matter. So you have to use your intelligence to... its really a mundane thing.

(Teacher interview, 4T1A2)

There seems to be two important aspects raised by Ambiga. That are, in doing higher-order thinking one needs to be allowed to go further than just conducting the routine thinking basically on their own. Also, she seems to suggest that one does the higher-order thinking without much guidance. She also touches on someone using his intelligence to conduct the higher-order thinking to solve the problem. Although she does not elaborate what she means by intelligence, it seems fair to infer that she is not just referring to intelligence in the very literal sense which is often represented in the IQ scores, but is actually suggesting that one exploits his or her higher cognitive abilities to solve a given problem. In Bloom's (1956) taxonomy, for example, the higher cognitive abilities could mean the application, analytical, synthesis, and evaluative skills.

It seems interesting to also note that Ambiga's perceptions of higher-order thinking skills at least partly seems to be in line with the definition provided by Onosko and Newmann (1994) of what they consider to be higher-order thinking skills. She seems to differentiate higher-order thinking from routine thinking which often requires basic cognitive abilities like the use of knowledge or recall skills. She like, Onosko and Newmann (1994), seems to perceive that higher-order thinking skills need to involve students in activities like critically evaluating ideas and opinions. She also seems to suggest that students need to be allowed to use the instruction in the class as the basis and do further all these if possible on their own with little guidance.

In the case of Aishah, the Malay Language teacher who teaches form two classes, higher-order thinking skills are very closely related to students' intelligence. Her perception of higher-order thinking skills seems to be in an operational form relating to how that could be translated into teaching and learning activities in classrooms. She tends to make a distinction between what smart students could do and what weak students could not do. Like for example, she suggests that good students can be asked to give their own views. Students in lower classes may not be able to perform such tasks.

Ais: Higher-order thinking skills, in my opinion, teacher asks students to give their views on their own, that is based on students' level. If students are from poor classes, the level which the teacher could pass on to those students, how students give responses back to the teacher.... are all based on students' level. If students are with higher intelligence, their thinking ability is certainly higher. That's all.

(Teacher interview, 4T2A6)

That, in her opinion, seems to reflect higher-order thinking skills.

Unlike Ambiga, Aishah seems to think and plan activities very much based on behavioral objectives, that is what she thinks her students could be seen as doing. Like for example, after reading the passage or after the teacher explains a grammatical component, students do the writing assignments. Aishah, however, does not seem to pay attention to the underlying thinking processes students have to go through while performing such tasks.

Unlike Ambiga, Aishah seems to make a literal reference to intelligence in her perception about higher-order thinking skills. She seems to correlate very closely students' intelligence and their thinking abilities. Furthermore, her notion of intelligence seems to be based on what she calls "student levels." Student levels here means the type of classes these students are in. As stated earlier, students in the Pustaka Secondary School, where both these teachers are teaching, are streamed into classes based on their grades. In other words, the first 40 students with highest grades will be in Form 2A, followed by other classes. It seems to be that, in Aishah's opinion, students in Form 2A have higher intelligence than students in Form 2B. She may be right when she bases her understanding of intelligence based on academic achievement. After all, IQ tests often test linguistic and mathematical skills, and less of analytical and reasoning skills. However, what seems to be more problematic here is that she tends to correlate closely intelligence and thinking.

One of the myths which inhibits the teaching of thinking skills is that students with high IQ are better thinkers than students with lower IQ scores (de Bono, 1992). This is in line with the thinking among certain educators that thinking is the by-product of good academic achievement. They seem to believe one will eventually be able to think well if one is taught the basic linguistic and mathematical skills, suggesting that there is no need to emphasize the explicit teaching of thinking skills. The serious

problem here, however, is that this notion of thinking seems to be contrary to the notion that higher-order thinking skills need to be treated as important as content instruction, and need to be infused in the teaching of content to all students. Furthermore, De Bono cites a classic study by Getzels and Jackson which claimed to show that up to an IQ of 120, creativity and IQ went together, but after that they diverged. As such, de Bono suggests, "an 'intelligent' person may be a poor thinker if that person has not acquired the skills of thinking. A less intelligent person may have better thinking skills" (p.42). Aishah, for example, seems to think that intelligence and thinking are closely related, and students in good classes could perform activities which require such higher-order thinking abilities and not students in weak classes.

What are students' perceptions of higher-order thinking skills?

Students in Form 2A, the best form two class in Pustaka Secondary School seem to suggest that they have hardly heard about thinking skills. However, a few students admit that they have heard others talk about thinking skills. For the few who have heard of thinking skills, it means making use of the internet and how to take notes in the class. For many others, they seem to have not even heard of thinking skills, and they seem not to have any opinion about what it means. It seems important to note here that these students were randomly selected students from the

best form two class in the school. Their opinions may be taken as representing opinions of other students in that class as well.

- Raj: ...Have you ever heard about thinking skills? Do people talk about thinking skills?
 Ss: No.
 Raj: Thinking skills?
 S7: Yes.
 Raj: Yes. So what have you all heard? What do you know?
 S6: How to make use [of] internet and how to take notes.
 Raj: Anybody else?
 Ss:

(Student interview, 4S1A7)

Students in Form 2B, the second best form two class in the school, seem to be also in almost a similar position with their friends in Form 2A about their understanding about thinking skills. They seem to suggest that they have only heard about the topic of thinking skills, but do not know what it means. When pushed a bit further to think about what they understand about higher-order thinking skills, they suggested things like concentrating on the task and not wavering away from it, paying attention to the teacher while she is teaching, and also trying to understand the meaning of words the teacher is explaining.

- Raj: Have you all heard about thinking skills?
 S6: Yes.
 S2: Yes. I have heard....but...
 S1: Have heard, but don't know.
 Raj: How many of you have heard? Have heard about thinking skills?
 S3: The topic only.
 Raj: Ok. How many of you understand? Or how many of you know about thinking skills? What are thinking skills?
 S4: Don't know.

- S3: He thinks. When doing something, think of that only. Don't think of other things. Think of what the teacher is teaching.
- Raj: Others, anything?
- S1: Thinking about something...or paying attention to the teacher when she is teaching, we concentrate....what the teacher is explaining.
- Raj: Others?
- S6: When the teacher is explaining a word. We have to listen to the word, make sure we know the meaning.
- Raj: Ok, others?
- S4: For me thinking skills are skills to solving problems which are given by
- S2: I think thinking skills give me the confidence to make a decision. Say for example, in a question, given in an objective test, I may see two close answers. So, I must have the confidence to make the right decision. For me, that is thinking skill.
- Raj: So, do make decisions you need thinking skills, do you all agree?
- Ss: Yes.

(Student Interview INTS3A5)

When students were pushed even further to think about what they understand by thinking skills, they seemed to agree that thinking skills are related to the ability to solve problems and also thinking skills raise their confidence in making decisions. For example, they suggest that when there are two close answers to a question in a multiple choice test, they need to be able to make the decision. They generally seem to agree that to be able to make such a decision they need to possess the thinking skills. It seems as though these students find it hard to explain what they understand about thinking skills, but have some ideas about how to use them.

- S3: His thinking is open minded. Read a lot of books and newspapers. You get a lot of general knowledge, then improves your thinking.
- Raj: Ok. Good. So we say someone who has an open mind, reads a lot, he is exposed to many things, yes, others?
- S1: Someone who has a lot of experience.
- Raj: Lot of experience. How. Please explain what you mean by experience.
- S1: Like he goes into the forest, and things like that. He gets experience about some living things, you know like that.
- Raj: Ok. One type of experience. Others?
- Ss:

(Student interview, 4S4A4)

Even students in a lower level Malay Language class have their own perceptions of what thinking skills are (Student interview, 4S4A4). They tend to suggest that being a good thinker means having an open mind, reading a lot of books and newspapers, and having general knowledge. They seem to believe that having these things will help one's thinking ability to prosper. They also seem to believe that effective thinking is equivalent to having vast experience.

Data presented above seem to suggest that students generally seem to have only vague ideas of what thinking skills are. Many of them have not even heard what thinking skills are. Even if they have heard, they seem to think that many of the activities they do routinely help them improve their thinking. These activities include reading, paying attention to the teacher while the teacher is teaching, understanding the meaning or words explained by the teacher, and taking notes. It needs to be noted, however, that they also seem to think that thinking skills are important for problem solving and decision making, although they seem not clear about

how acquiring thinking skills could help in problem solving and decision making. They also suggest that thinking skills give them the confidence to make decisions. It does not seem clear again whether they are trying to suggest that having thinking skills provides them with the thinking processes which one could use to make good decisions.

They seem to share a notion that acquiring thinking skills is equivalent to acquiring knowledge, more specifically acquiring knowledge in the subject matter area. In other words, they seem to be suggesting that they are learning how to think when they are learning the subject matter. This is yet another myth which inhibits efforts to teach thinking skills explicitly in classrooms. This perception stems from the belief that thinking will be a by-product of learning subject matter content. This means that there need not be explicit attempts to include thinking skills in content instruction. This particular belief of the students' seems to be in line with what Ambiga and Aishah believe about teaching thinking too.

Analytic summary

It has become a commonplace belief that learning is the result of the interaction between what the student is taught and his current ideas or concerns (Posner, G, J. et al., 1982). This is by no means a new view of learning. However, what understanding students, and also teachers have about a certain aspect they teaching or learning seems to influence their

expectations or even their accomplishments in that particular task they do in the classrooms.

McCloskey (1983), for example, in his study of naïve theories of motion found that people develop on the basis of their everyday experience remarkably well-articulated naïve theories of motion. He also found that the assumptions of naïve theories were quite consistent across individuals. The more important finding, however, seems to be that although this basic theory appeared to be a reasonable outcome of experience with real-world motion, it was strikingly inconsistent with the fundamental principles of classical physics.

These inconsistent assumptions of motion certainly seem to bring implications to instruction in the classroom. How do teachers handle these naïve theories of motion when teaching theories of motion in a physics class. This and other naïve assumptions hamper students' understanding of a certain aspect. Schools generally do not seem to be very successful in changing these naïve theories (Gardner, 1991). Gardner suggests that this is because schools are really not concerned about engendering deep understanding. In school context, educators have accepted rote, ritualistic and conventional performances. McCloskey (1983), for example, suggests that one way of overcoming such problems is to have physics instructors to discuss with students their naïve beliefs, carefully pointing out what is wrong with these beliefs, and how they differ from the views of classical physics. He believes that in this way students

may be induced to give up the impetus theory and accept the Newtonian perspective.

Using the same argument, it seems important to evaluate the perceptions of the teachers and students about higher-order thinking skills. In the above discussion, it could be seen that educators are concerned with students, and the naïve theories students bring with them to the classrooms, which are often inconsistent with what they are taught in the classrooms. It becomes the duty of the teacher to help change these naïve assumptions.

The problem here, however, seems to be that both the teachers and students in these form two Malay and English Language classrooms generally seem to have naïve assumptions of higher-order thinking skills. Teachers have assumptions like someone who sits down and solve his or her own problems, and students with high IQ could think better than those with low IQ. Students on the other hand, generally think that it means using the Internet, paying attention to the teacher when she is teaching, and how to take notes. However, teachers and students also have mentioned aspects like the ability to solve problems, giving one's views without much help, and the ability to make decisions which have at least some relevance to what higher-order thinking skills are. It seems important to evaluate their perceptions of higher-order thinking skills using two of the frameworks used in this investigation. One is the Bloom's taxonomy of educational objectives, and the other is the definition of

higher-order thinking skills provided by Onosko and Newmann (1994). Bloom's taxonomy (1956), although is about 40 years old, is important because of teachers' familiarity with the taxonomy and the extensive usage of this taxonomy in teacher preparation in Malaysia.

The discussion above seems to suggest that in the Bloom's taxonomy, for example, teachers and students' understanding of higher-order thinking skills seldom go beyond the application level. In the six levels: knowledge; recall; application; analysis; synthesis; and evaluation, it is often accepted that knowledge and recall levels are lower order thinking, and the rest are higher-order thinking. Teachers and students often talk about thinking hard, concentrating, understanding meaning of words, and taking notes. They also talk about being open-minded, decision making and solving problems. Although the students talk about decision making and problem solving they do not refer to the processes one goes through to make decisions or solve problems which could induct someone to become a good thinker.

Teachers do not seem to be referring to any of the activities they do requiring the students to apply their understanding of concepts to different situations, breaking something down into its component parts and then examining the parts and determining their relationship to each other and to the whole, combining or unifying separate ideas or materials to create something new, or making judgments about the purpose, worth

or quality of something. All these activities require higher-order thinking on the part of the students to perform their tasks.

Even using Onosko and Newmann's (1994) definition, although one of the teachers makes a distinction between routine thinking and higher-order thinking, her notion of higher-order thinking seems to be only partly in line with what Onosko and Newmann suggest that to be. In their opinion, if students need to acquire higher-order thinking skills, students need to critically think about information, ideas, and opinions. Students also draw conclusions, inferences or generalizations. Besides that, they produce original communications, make predictions, propose solutions, create, solve life-like problems, judge ideas, express opinions, and make choices and decisions. In one of the teacher's opinion higher-order thinking is, "Higher order thinking skill, meets the person who really sits down and think and find ways, means and ways to try to solve the given problem" (Teacher interview, 4T1A2). The other teacher only has vague, and in fact contrary ideas of what higher-order thinking skills are. The teachers and students seem to have a notion of higher-order thinking which is quite similar to what Onosko and Newmann call lower-order thinking, and suggest to be representing routine, mechanistic application and limited use of the mind. This also includes the repetitive operations such as listing information of previously learned formulae, applying procedural rules, and other routinized or algorithmic mental activities.

Teachers and students' perceptions of higher-order thinking skills which seem to be inconsistent with general definitions of those skills certainly seem to be influencing the teaching and learning of those skills in classrooms. The implication of such perceptions to instruction seems to be that they work against achieving the objective of infusing higher-order thinking skills in content instruction. Since both the teachers and students do not have clear understanding of higher-order thinking skills, they seem to have a limited notion of higher-order thinking skills, and as a result seem to be content with routine practices in the classrooms.

There are three aspects to be considered here. First, since they do not have a clear understanding of what higher-order thinking skills are, they do not even seem to have an expectation to try to acquire them in the classes. For example, if the students understand what acquiring higher-order thinking skills entails, their expectations of classroom teaching and learning processes will be raised in line with the teaching and learning practices in the classrooms which encourage higher-order thinking skills. This may ultimately change many practices in the classrooms. That does not seem to be the case both for the teachers and students.

The second related issue is that since teachers and students do not possess the positive conceptions of higher-order thinking skills they seem to be content with present practices in the classrooms. There is clearly a distinction between activities in the classrooms which cater for

lower-order thinking and higher-order thinking. Since teachers and students are not in a position to make that distinction they are content with what they are doing now. More importantly, teachers do not even seem to see the need to change their practice because they seem contented with their present practices.

The third point relates specifically to what implications such naïve conceptions bring to teachers who are teaching higher-order thinking skills in their Malay or English Language classrooms. Teachers need to have overarching conception of teaching a subject to construct the necessary pedagogical content knowledge. This conception is in his or her knowledge and beliefs the nature of the subject and what is important for students to learn. Here teachers seem to lack that conception about higher-order thinking skills. Teachers also seem to lack the extensive repertoires of powerful representations and ways to adapt these representations to meet the needs of specific learners, which is another requirement to construct the pedagogical content knowledge.

An important point which needs to be stated here is that majority of the Malay and English Language teachers are capable of identifying pedagogical practices which are in line with what many educators and researchers recommend that promotes higher-order thinking in their classrooms. A total of 56.7 percent of the teachers suggested that practices similar to Approach 3 (Refer to Appendix A), an approach in line with most recommendations for promoting higher-order thinking skills,

best promotes higher-order thinking skills among students (A more detailed discussion of the different approaches will be presented in a later section). However, having investigated the case of Aishah and Ambiga, it seems that teachers may be able to identify pedagogical practices which promotes higher-order thinking in classes besides theirs, but may find it hard to explain their own understanding of such practices in relation to promoting higher-order thinking skills. Also, it seems that teachers find it hard to translate what they think promotes higher-order thinking into pedagogical practices in their own classrooms. What this entails is that teachers need not only be able to identify the kind of practices which promotes higher-order thinking skills, but also need to be able to state their understanding of such practices, and also be able to translate such understanding into pedagogical practices in classrooms.

As such, there seems to be a real need to educate, especially the teachers on what higher-order thinking skills are which will add to their understandings of their subject matter knowledge of higher-order thinking skills. When they have better understanding of what those skills are and with the understanding of the need to teach those skills in classrooms, they may realize the need to improve their practices. Once they see the need to change their practices, one may be able to see significant efforts on the part of teachers to infuse higher-order thinking skills in the form of classroom activities. Ultimately, students too will have a better understanding of higher-order thinking skills, and that too could help

improve teaching and learning practices in the classrooms for acquiring higher-order thinking skills.

The Four Language Components In The Four Classrooms: Do They Provide A Foundation For The Teaching Of Higher-Order Thinking Skills?

A review of the literature suggests that all four language components, listening, speaking, reading, and writing have the potential to improve the higher-order thinking abilities of students, if planned and used effectively in the classrooms. It also seems that there are close parallels in the thinking processes in all four language arts areas (Jones B. F., et al., 1987). The following section will investigate how the four language components are used or not used to promote the acquisition of higher-order thinking skills in the Malay or English Language classrooms.

Listening and speaking

As discussed earlier, researchers including Cazden (1979) have shown that the use of oral language by both teachers and students serves to establish a classroom atmosphere that either elicits or discourages certain types of thinking. Cuing and questioning are two primary ways that teachers use overt speech to elicit specific types of thought. Cuing involves teachers' use of overt speech to signal specific learning episodes. That is, teachers verbally signal the type of learning expected within a given period of time. Teachers could use the potential of listening and speaking to promote higher-order thinking skills among students.

Ambiga seems to use listening and speaking components extensively in her English Language classes (Refer to the Appendix B - Matirx). There were major listening speaking activities in 3 out of 5 days (Days 1, 4 and 5) in the higher level English Language class. For example, on Day 5 students prepared dialogues on two situations given by the teacher and presented to the class in the role play activity. There were also major listening and speaking activities in 4 out of 6 days in the lower level English Language class. For example, on Day 6 there were long exchanges between the teacher and students when the teacher explained words and how to pronounce them (Refer to Appendix B). She seems to place a lot of importance on these components because English Language is taught as a second language, and also because of the relatively low proficiency of students in English Language as compared to Malay Language. Also, she seems to use much of the class time to improve their pronunciation of words through the listening and speaking activities in English Language since the students hardly use English Language outside of the English Language classes. There is also almost no need to use this language outside of the classroom.

She uses language drill to make students pronounce the words and phrases correctly. She also explains the meaning of words whenever she introduces new words. This pattern seems to be consistent in both of Ambiga's classes. It has to be noted that she uses the Malay Language quite extensively to explain the meaning of words, especially in the lower

level English Language class. In the following excerpt it could be seen that both the teacher and students from the lower English Language class are involved in a discourse where the teacher is trying hard to have the students understand the meaning of the different words and also how to pronounce them.

- Amb: T: Perkataan- perkataan ini adalah perkataan yang anda salah sebut [These are the words which you all pronounced wrongly]. Ok.
- Amb: T: Ok Begin with the first one. Apa nama ni [What is the name of this]... first question, 'examine'.
- S1: Examine.
- Amb: Examine.
- S1: Examine.
- S2: Examine! [shouted].
- Amb: This one, yang kedua [number two], bunyinya bukan [the sound is not] "belding", its... 'building'.
- Ss: Building.
- Amb: Building.
- Ss: Building.
- Amb: Building.
- Ss: Building.
- Amb: This one, 'two stories'
- Ss: Two stories.
- Amb: Two stories.
- Ss: Two stories.
- Amb: Yang ini [This one], maknanya ialah pintu masuk [The meaning is entrance] ye. Pintu masuk disebut [entrance is pronounced], 'entrance'.
- Ss: Entrance.....
- Amb: This one bukan [not] she-tion ye. 'Section'.
- Ss: Section.
- Amb: Section.
- Ss: Section....
- Amb: This one, bukan [not] 'hag', bukan [not] 'hug', bukan [not] 'huj'. Huge!
- Ss: Huge.
- Amb: Huge.
- Ss: Huge.

Amb: Once again.

Ss: Huge.

Amb: Huge means besar [big] ye.

(Class observation, 72162)

Ambiga introduces the word, provides the correct pronunciation, and requests the students to pronounce the words. She conducts the language drill until they get them right. This seems fine for improving their basic listening and speaking capabilities. However, one wonders whether Ambiga is really exploiting students' prior knowledge, that is whether students themselves are able to pronounce any of these words, in her teaching. She introduces all the words, even when there are students in the class who may know how to pronounce some of these words. Also allowing students themselves to provide correct pronunciation of words, and providing opportunities for students to provide contextual meaning of those words would be in line with encouraging students to think.

A close look of the excerpt above suggests that she controls the discourse, and seems satisfied with one word answers from students. There seems to be no attempt to expand the one word answers to provide opportunities to students to construct phrases, sentences, or even getting them to talk about the words being introduced. None of the words were introduced in a sentence. Students may be invited to give meaning of words being introduced, and other students too could be invited to contribute towards understanding the meaning of the word or even to pronounce those words. As suggested by Jones, B. F. et al. (1987), both

listening and speaking research defines the underlying thinking processes as goal oriented, the goal being to construct or communicate meaning. The listening and speaking skills of students may be improved if they are encouraged to do such things than just listening and repeating such words. Ambiga also seems to assume, even before introducing any words, that students will have the wrong pronunciation of those words, and every time she introduces a new word, she seems to be starting with, "This one, yang kedua (number two), bunyinya bukan (the sound is not) "belding", its... 'building'" (Class observation, 72162).

Even extending the class interaction to include other advanced language activities seems to be a problem here, let alone exploiting these listening and speaking activities for the purpose of promoting higher-order thinking skills. Although there seems to be some reasons like the low proficiency of students in English Language and English Language being taught as a second language, they do not seem to be sufficient reasons to justify why listening and speaking components are not used efficiently, including students using the words in larger language discourses like phrases or sentences, and giving contextual meaning, in these classes.

Aishah too seems to be using listening and speaking extensively in her Malay Language classes (Refer to Appendix B - Matrix). Listening and speaking components make up substantial portions of classroom activities in the two higher level and lower level Malay Language classes. These

activities could include students narrating their experiences in front of the class, students listening to teacher's explanation and providing responses, or students presenting outcomes of their small group discussion to the class. However, it is important to note that Aishah only requires students from the higher level Malay Language class to narrate their experiences. Students in the higher level Malay Language class got the opportunities to narrate their experiences in front of the class 4 out the 5 days in the beginning of the lesson (Refer to Appendix B). Students in the lower level Malay Language did not get this opportunity on any one of the five days. This seems to be in line with her belief that students in the higher level classes are capable of performing much tougher tasks than those in the lower level classes. This may be one of the activities which she considers students in the lower level class to be unable to do.

The pattern of interaction between Aishah and her students in the higher level Malay Language class does not seem to differ much from the interaction between Ambiga and her students in a lower level English Language class. The higher level Malay Language class and the lower level English Language class represent the two best and worst scenarios in terms of students' proficiency. In this listening and speaking activity, students are clearly playing a much more active role than students in Ambiga's lower level English Language class. However, the question is whether students are able to construct and communicate the meaning, the meaning they are making out of the contexts they are talking about. Using

Bloom's taxonomy (1956), are there attempts to move beyond the knowledge or recall level? Are students encouraged to analyze, synthesize or even evaluate information being provided?

- Ais: bagi contoh lain [give other examples]. Salah tak pe (If it wrong it is ok). Saya tak marah [I won't get angry].
 S: Setiap hari Rabu Ali berjalan di tepi taman [Every Wednesday, Ali walks along the garden].
 Ais: Setiap hari Rabu, Ali berjalan di....
 S: Tepi taman.
 Ais: Di tepi taman. Tepi taman? Tepi-tepi aja dia jalan? [he only walks along the garden?].
 S: Di taman [In the garden].
 Ais: Setiap hari Rabu, Ali berjalan di taman [Every Wednesday, Ali walks in the garden]. Ok, di taman bunga [Ok, in the garden].

(Class observation, 72B15)

Aishah asks students to provide a response for her question. A student gives a sentence, "Setiap hari Rabu, Ali berjalan di tepi taman (Every Wednesday, Ali walks along the garden)." Instead of encouraging students to analyze the sentence and finding out for themselves what could be wrong with the sentence based on Malay Language grammar, she makes the evaluation. Students could have evaluated for themselves whether the sentence is grammatically correct. In Bloom's taxonomy, this is the highest level of cognitive operation. After asking the student to repeat the sentence, she asks, "He only walks along the garden?" Students were given a clue that there is something wrong with the sentence and they seem to have figured that 'along' is the wrong word judging from the teacher's intonation of the sentence, "He only walks

along the garden?" They replace the word 'along' with 'in.' When students provided the correct preposition, the teacher repeats the sentence with the correct preposition. She did not even ask the students whether 'in' fits in the sentence, another opportunity for students to evaluate the response on their own. Even repeating the sentence, she does it on her own, to reaffirm that the sentence she is repeating is the correct one.

Whether it is the higher level Malay Language class or the lower level English Language class, the best and worst scenarios, the teachers seem to be not using enough of the potential of listening and speaking for the purpose of promoting higher-order thinking skills among students. Even for the purpose of extending the interactions to include advanced language activities, it seems to be a problem. Aishah and Ambiga, once again, seem to be caught in their own conceptions of playing their dominant role as "knowledge transmitters," which denies opportunities to students to play an active part in the teaching and learning processes, and causes the underutilization of listening and speaking components for the purpose of promoting higher-order thinking skills among students.

Reading

Reading could also be used to promote higher-order thinking skills among students. In reciprocal teaching (Palinscar and Brown, 1984), for example, teaching employs a process of cooperative question-asking

between teacher and students to highlight many of the metacognition demands of reading. The teacher models the overt summarizing, questioning, clarifying, and predicting processes, which are assumed to be internal processes executed during reading, while students comment on the quality of questions, and summaries, and try to construct better ones.

A close investigation of the practices in Aishah and Ambiga's classes seems to provide information to understand whether the potential of the reading component is being exploited to develop the higher-order thinking abilities of the students. In Aishah's classes, reading and comprehension seem to be used consistently as part of the teaching and learning structure (Refer to Appendix B - Matrix). Students got to read passages from the textbook in all the five days in the higher level and lower level Malay Language classes. In fact, she often uses reading and comprehension as the main activity or as a preparatory step leading to the main activity which is often the writing activity (Diagram 1).

Raj: When Mrs.Aishah does reading and comprehension with you all, how do you all usually do? Do you all read the passage first?

S1: We read the passage from the text book.

Raj: From the text book?

S2: Usually from text book.

Raj: Usually from the text book. Does Mrs.Aishah bring passages from newspapers, or magazines?

Ss: Yes.

S3: Yes. But seldom.

(Student interview, 7S3A2)

It could be seen that Aishah often gets students to read the passages from the text book. Although students from this higher level Malay Language class have suggested that she sometimes brings passages from newspapers or magazines for students to read, this did not happen during the period of this investigation. Aishah seems to plan her lessons using aspects of grammar as the main focus. She seems to find passages and also writing exercises which fit into her grammar component of the week. As such, her reading passages which she picks seem to be more for the purpose of teaching the grammar component than for purpose of reading and comprehension. It is fine to use the reading passages for the purpose of teaching grammar. The problem, however, seems to be that when the reading passages are often used to emphasize the grammar component, students do not enjoy the benefits of the reading and comprehension as a language activity. This also seems to further inhibit the possibilities of the activity being used for developing students' higher-order thinking abilities.

What Aishah's pedagogical style in teaching reading and comprehension entails is that she seems to be using the didactic method of introducing the grammar component and using the passage as a resource material for students to find examples. She also seems to believe in teaching grammar using a disintegrated approach, that is the direct teaching of grammar as opposed to incorporating the teaching of grammar in the language components. For example, on March 12, 1997,

in her Form 2B class, she started her class by saying, “Ok. Open page 126. ‘Kata sendi nama’ (adjective) (Class observation, 72B51). She then goes on to explain, “Ok. Ye. ...what do you understand by ‘kata sendi nama?’” She then goes on to explain further before asking students to read the relevant passage. Adjective is introduced in a decontextualized manner. There are usually no discussions in class as a large group or even in small groups about the information found in the passages after the students have read them.

Even when some other aspect is the focus of the lesson, teacher uses the reading passage to introduce those new aspects to students. On Day 2 in the high level Malay Language class (Refer to Appendix B), the teacher introduces students to writing formal letters. The reading passage used from the textbook for the day is a formal letter. Teacher asks students to open page 60 in the textbook and goes on to explain how should a formal letter look like. She goes on to explain the different parts starting with the address of the sender. She also suggests that students pay attention to all the parts because they may lose marks if they omit any of the parts of the formal letter in the examination. All this happens even before students have a chance to look at the format of the letter in the textbook and comprehend the contents.

Ais: Open page 60. Formal letter....

So, this is the format of a formal letter.

Ais: So, this is the format for a formal letter. So, you need to do all. If in the examination, if you don't have all this

information....marks will be deducted. To write a formal letter, a lot of marks you can get in the examination....

Ais: On page 60 you have a formal letter. You know how a formal letter is written. Ok. First of all, address of the sender. When you write the address of the sender....

(Class observation, 72B21)

Aishah's long explanation of the format of the formal letter was coupled with students' contribution as how to write the different parts of the formal letter, like introduction, the main paragraph, and the conclusion. The teacher wrote samples of these parts on the board with contributions from the students. Students were then asked to write a formal letter of 180 words. The reading passage was used in the long explanation to show examples of the different parts. Students had to read parts of the text aloud when the teacher requested and she wanted to explain the respective parts.

These practices seem to constitute the structure of lessons commonly found in Aishah's classes. One of the implications of this type of pedagogical style seems to be that students do not get to enjoy the various possibilities of reading and comprehension in enriching their linguistic abilities like decoding meaning of words, vocabulary and concept development, and comprehending literal and inferential meanings, let alone their higher-order thinking abilities. Comprehending inferential meanings, for example, has very close relationships to students' ability to conduct higher-order thinking. They need to critically think about information provided before they could make inferences or

generalizations. There needs to be discussions among students if they are to critically evaluate the information they read in the passages. They also do not seem to get to do the metacognitive activities often recommended for reading activities. There seems to be very little opportunities for students to do such things in Aishah's classrooms.

Ambiga believes that reading has the highest potential of improving the higher-order thinking skills of students as compared to the other three language components. For a question which of the four components has the highest potentials to improve students' thinking abilities, she suggests, "Reading. Read, you have to read a lot before you can think highly. Then goes writing" (Teacher interview, 7T1A6). She seems to believe that the quantity of materials one reads is directly related to the facts one can retain, and in her opinion that seems to be good thinking. She further suggests, "A well read man, person, just like Lee Kuan Yew (Former Prime Minister of Singapore). He can read so fast, he can remember the facts, he can think" (Teacher interview, 7T1A6).

Ambiga too uses reading and comprehension almost consistently in her two classes (Refer to the Appendix B). Students in her higher level English Level class got to do reading and comprehension activities in three out of five days. Whereas, students in the lower level English Language class got to do reading and comprehension activities four out of six days. A common practice in her classes seems to be reading the passage and doing the comprehension exercises. At least on two of the

three days students learn English Language, they do reading and comprehension exercises. One of the special activities which relate closely to providing opportunities for students to acquire higher-order thinking skills were when she used a problem solving activity in her two classes.

She brought a reading passage titled, "Robbery on a stormy night," (Class observation, Day 4, Form 2A - Refer to Appendix), and the students were requested to read and find reasons to why the police arrested the couple. This she did in her Form 2A class, which is a high level English Language class. For her lower level English Language class, Form 2I, she wrote a total of 19 items on the board and gave students a problem to solve. They were requested to read and understand the 19 items, and were requested to select only six items which they are allowed to bring with them when they are jumping out of a troubled plane. She prepared relatively an easier exercise for this class as compared to Form 2A because their proficiency in English Language is very low.

What happened in these English Language classes as an outcome of these activities is that students had to read, comprehend the meaning of words, and use that understanding to solve real-life problems. For example, in the Form 2A class, students had to read and comprehend the meaning of words so that they could find reasons as to why the couple were arrested although they are the ones who went to the police to make a report that they were robbed of the supermarket cash they were

carrying. Students needed to really understand what they told the police to make inferences to their intentions. There were no explicit clues found in the passages. In the Form 2I class, although there were no right or wrong answers to what were the six items to be brought with them, they had to make their own justifications to the six most important items which they choose. Finding that justification or explanation involved at least some high level thinking. This kind of activities are certainly in line with promoting students' higher-order thinking. The pattern of activities observed in Ambiga's classes, however, suggests that this kind of activity is not used often, and makes one wonder whether she decided to use such an activity because the researcher was there.

A more popular reading and comprehension activity seems to follow the type of activity on Day 1 in the high level English Language class (Refer to Appendix B). Ambiga brought photocopied reading passage on 'Ants' for all students. There was an interaction between the teacher and students about ants. Some of the questions the teacher asked in the interaction include, "What do you think when you read about ants?" and "Any specific names for those types of ants?" (Class observation, 72A11). Teacher asked three students to come to the front of the class and draw on the board the segments in an ant. After this interaction, students were given the reading passage and asked to read silently for 5 minutes and then do the comprehension exercise.

Although reading and comprehension are used quite extensively in these four classes, generally they do not seem to be extended to a level which requires students' higher level cognitive operations. They seem to be used as regular language activities but not with the aim of promoting higher-order thinking among students. Researchers recommend that teacher and students should highlight many of the metacognition demands of reading. Furthermore, one of the five steps of the infusion lesson calls for metacognition, that is providing opportunities to students to evaluate their own thinking processes. The kind of lesson structures discussed so far which are found in Ambiga and Aishah's classes do not seem to cater for such metacognitive demands of reading.

An analysis of reading and comprehension questions given to students in the four classes on a particular day, Day 1 (Table 4) suggests that questions given to test students' comprehension of the passages they read in classes are generally of lower cognitive levels.

**Table 4 : Cognitive levels (Bloom's Taxonomy) of questions in
Reading and Comprehension exercises**

	Cognitive levels of questions	1	2	3	4	5	6	Total
Day 1 2/25/97	Higher Level Eng. Lang. class	7	7					14
Day 1 2/24/97	Lower Level Eng. Lang. class	11	3					14
Day 1 3/11/97	Higher Level Malay Lang. class	4	9					14
Day 1 3/10/97	Lower Level Malay Lang. class		8	5				13

The six cognitive levels in the Bloom's Taxonomy were used to categorize the questions given to students for reading and comprehension exercises. For example, after students in the high level English Language class read a passage on 'Ants,' on Day 1, they were requested to answer 14 questions. The questions were categorized based on the kind of responses they intended to elicit from students. That is whether they require students to use the knowledge level, the first level for which the answers are often found in the reading passage or whether the questions require students to evaluate the given information, the sixth level for which the answers would not be found in the reading passages but the students are expected to create on their own. There were 7 questions of the first level, which included questions like, "Where are ants most commonly found?" and there were 7 more questions of the second

level requiring them to state their comprehension which included questions like, "Explain the meaning of the word 'secrete' as it was used in the passage".

Except for five questions given to students in lower level Malay Language class, all other questions given to students, including the higher level English Language class were of the first and second cognitive levels. The first cognitive level in the Bloom's Taxonomy require students to recall, locate or match information. The second level requires students to restate, identify or estimate responses. Both these levels are considered as lower level cognitive operations. The third level requires students to translate, interpret or employ the information found in the reading passage. The other three levels require students to analyze the information, synthesize or originate information, and even evaluate the given information on their own. The questions given to students on a selected day (Day 1 - Refer to Appendix B) in all the four classes do not seem to go beyond the second level, except in one case. What students end up doing is that they locate and or restate information readily found in the reading passages. In Onosko and Newmann's (1994) opinion, this only requires routine thinking.

The reading passages used or brought by the teachers to the classes are also something which need to be evaluated. Whether there are opportunities for students to conduct higher order thinking depends on the kind of passages used by teachers in these classes. The question

is whether the topics are of interest to students and those which motivate them to know more about the topics. As students in the higher level English Language class suggest, the subject of the reading passages used in the four classes are common topics like 'ants,' 'Keris' (a Malay traditional weapon), 'importance of giving donation,' and 'robbery on a stormy night.' Students from the high level English Language class suggest that the topics used in the reading and comprehension passages also do not interest them.

S4: I don't think.

Raj: So, normal lah. Why is it normal? Because of the classes you do?

S3: Sometimes, from like Standard 1 to Form 2, they're teaching the same thing over and over again. Make the questions.....

S2: Anything new when we go to higher standard. Anything new like..

Raj: What do you want it to be new? That's the one I want to know. You're saying, from Standard 1 to Form 2, reading, comprehension, composition. How you think it'll be interesting? Like something we discussed just now.

S4: More interesting topic.

Raj: More interesting topic.

S4: Aliens, UFO..

(Student interview, 8S1A10)

As the students suggest, these topics are repeated very often from the time they start their standard one (grade one). These topics may be boring to students and they seem to think that they do not have much to learn from reading these passages. This seems certainly a problem in Aishah's classes more than in Ambiga's classes because Aishah uses the textbook consistently to carry out reading and comprehension exercises

in her two Malay Language classes. The topics in the textbook she uses in the class was published in 1993 and much of the information contained in this book may be outdated. Ambiga is in a slightly better chance of bringing topics which interest students because she sometimes brings photostated materials from other sources.

Writing

Writing like other language components has the potential to promote higher-order thinking among students. Flower and Hayes (1980a, 1980b, 1981), for example, characterized writing as a set of iterative, recursive phases, which include planning, translating and reviewing. Within each phase the writer is continually weighing the effects of current decisions on those previously made. This phase is line with the metacognitive step in the infusion lesson.

Writing component is also used consistently in Ambiga's classes (Refer to Appendix B). Students in the higher level English Language class had writing assignments four out of five days. Students in her lower level English Language class had writing assignments five out of six days. These writing assignments include filling in blanks, answering multiple choice questions, copying sentences, and writing a composition. Except for writing a composition, all other writing assignments are based on the reading passages used in the classes. Very often writing assignments

seem to be the focus of the lessons in Ambiga's classes (Refer to Diagram 2). In either of the two structures she uses in her classes, activities are geared towards preparing students to do the writing assignments. In fact, in the second structure (Diagram 2), students work exclusively on writing assignments after listening to the explanations of the teacher about the task.

In Ambiga's English Language classes, students seemed to have had one of the rare opportunities to conduct some serious thinking through the problem solving activity, where she used the reading passage, "Robbery on a stormy night," and finding the six most important things to be carried along, in both the classes. This is the only such activity she used in the two classes during the period of this investigation. Also, Ambiga suggests that this is the first time she has prepared such an activity during the first three months of the school year to have active student participation. For a question, "So, you were saying, this is the first time you are actually having something specifically to get the students involved?", she answered, "Ya, for this year (Teacher interview, 7T1B2). Students needed to find answers based on logic and then write about them, although the writing assignment related to this assignment was relatively brief as compared to the listening and speaking exercises conducted based on this activity. There were no right or wrong answers for the problems given by the teacher. Students had to find legitimate reasons to support their arguments.

Students also had the opportunities to discuss with their friends in small groups about solving this problem. As Ambiga suggests, the students did discuss about many interesting aspects like, “Why this couple (were) convicted? Why? Then the other sense is like.., you read this la..., open window and all. So they..., one couldn’t see what the other can. So they do that kind of discussion till they found out” (Teacher interview, 7T1B14). It could also be seen from the excerpt below from the high level English Language class where students were involved in this activity. Students also found out the contradictions in statements given by the couple to police, and they talked about it. Ambiga also believes that since they were requested to write reasons later, there was a more serious discussion. It seems that the discussion which led them to the writing assignment became more intense because the students knew that they had to write about the reasons later.

Amb: Ok, groups, first you have to read the story. Ok. [teacher reading part of the passage].

Amb: Ok! You’ll be given 10 minutes to solve the, the case ah!

S1: Robbery...

S2: You also write lah...

S3: Oi.. Oi.. Teruklah [Terrible you know].
[Students talking to each other].

S: Because they were trying to cheat him.

S: If I see a lot of money, I’ll..

S: This type of money.. If you keep it,...

S: Someone else has money. So police find ah.....

S: Bank where got open at night?

S: Eh.. Everybody also got jawatan [job] right?

S: Eh! How come you go an add up like that.

S: Open window.... One man put the gun through the open window...

- S: Oi! What la that fellow, I don't understand the storylah.
 S: Actually, that ... no logic you know.
 (Class observation, 72A43)

The important question, however, seems to be how often do students get to do such activities in these English Language classes taught by Ambiga. Does she consciously plan to include such activities in her classes as often as possible? Observation of her two English Language classes seem to suggest that such activities where students take an active part in exploring issues which requires thinking are rare (Refer to Appendix B). She herself admitted that this is the first problem solving activity she planned and conducted in these classes in the first three months of schooling (Teacher interview, 7T1B2). In fact, even other writing assignments seem to be rarely given for students to benefit from the construction processes of writing. The writing process has been described as a recursive act that includes identifiable yet amorphous stages, such planning, translating, and reviewing (Flower & Hayes, 1981). Students in these classes seldom benefit from such activities as much as one would expect because writing assignments which require such thought processes seem rarely planned and implemented in these classes. Except for the composition assignment, the kind of writing assignments given to students suggest that there were no explicit opportunities for students to do metacognition, evaluating their own thinking processes. Students in her higher level English Language class,

for example, suggested that after about three months of school, they have only done one composition (Student interview, 7S1A1). Even if writing assignments are given, they seem to focus on simple assignments like filling in the blanks, or comprehension exercises for which answers are often available in the reading passages. The questions in the comprehension exercises seldom go beyond the knowledge and recall level. Even for improving students' writing abilities it seems to be a problem. The use of writing to improve students' thinking abilities in her English Language classes seems much more problematic.

Writing component is also used consistently in Aishah's classes (Refer to Appendix B). Students were given writing assignments on all five days in the higher level Malay Language class. Students in the lower level Malay Language class had writing assignments on four out of five days. These writing assignments include, copying a poem, filling in blanks, reading and comprehension exercise, and writing a letter. The most popular writing assignments in Aishah's classes are reading and comprehension exercises.

In Aishah's Malay Language classes, as has been discussed above, much of the writing carried out is centered around the grammar component and the relevant reading passages read by the students. In other words, often students are required to conduct writing assignments which test their comprehension of the grammar components learned or the passages they read. Again, these writing assignments mostly seem to

require comprehension or recall abilities of students and most of the times the answers are found in texts. Very rarely do students need to use their analytic, synthesis or evaluative skills in their writing assignments. There certainly seems to be no opportunities to originate new information. Even when students are required to write compositions where students may have a better chance of using those skills, like when students in the higher level Malay Language class were required to write a formal letter, more attention was paid to the format of the letter, like where to place the address of the sender and date, than the contents (Class observation, 72B2). Aishah also discussed in detail what needs to be in the various sections of the letter, leaving little opportunity for students to create the contents of the letter on their own.

However, there seems to be reasons why Aishah is doing such things in her classrooms. What seems to be real problematic is Aishah's belief that only students in her higher level classes are able to think. She believes that writing assignments which require students to think hard to find answers could only be given to students in higher level classes. Students in higher level classes, in her opinion, read a lot and because of this they could conduct their own thinking. On the other hand, she thinks that students in the lower level classes will want to cheat and copy from their friends if they are given writing assignments which require them to think. Once again, in her opinion, these students are lazy and they like to cheat. These beliefs of hers seem real problematic for even teaching

Malay Language, let alone using writing to improve students' thinking. Her perceptions of students in lower level classes certainly seem to inhibit students' opportunities to benefit from writing assignments as compared to their friends in her higher level classes. Even in the higher level Malay Language class, that seems to be a problem.

Raj: What about the issue of writing? The writing assignments given to students. Like the question just now, in your opinion, do they help them think? That is beyond the ordinary.

Ais: You mean in writing?

Raj: Yes. The writing assignments given. Like composition, comprehension, and so on. Do these exercises help?

Ais: As for me, I believe it only helps students in good classes. For students in poor classes, even if we ask them to write, they ask others for help. If possible, they will want to cheat. They want to copy from their friends. So it is really difficult to get those students to think. But for those good students, they are able to think. They read a lot of books. So do things by thinking. They use their thinking. Those students in poor classes, most of the students want to cheat if possible. There are also some good students who can think in these classes. Like, ... when they a sentence, I can see and be sure that those students also read a lot of books. There are also students who take the sentences from their books. That is because they cannot really think. For them it is too difficult. So it is difficult to ask such students to think hard from what they can do. Only to the level they can do. Because these students are lazy, they do not want to think. That's the reason they want to cheat by copying their friends' work.

(Teacher interview, 7T2A15)

Observations of Aishah's two Malay Language classes also seem to support the notion that writing component is used quite consistently like other language components but lack the extra explicit attempts to raise it to a higher level to include higher order thinking abilities in the processes.

Writing, like other language component, is used to fulfill the aims of teaching Malay or English language. There seems to be lack of understanding on the part of the teacher on the potential of writing component to promote higher-order thinking skills among students, and to use writing for that purpose. This lack of understanding inhibits the opportunities of exploiting writing to promote thinking abilities of students. There certainly seems to be very few or no opportunities for students to possess the active nature of writing, providing a medium for exploring implications entailed within otherwise unexamined assumptions.

As a result, writing seems to be grossly underutilized in terms of its potential for both promoting writing abilities, and for improving students' thinking in both Aishah and Ambiga's classes. Students do not receive much opportunities to carry out activities such as planning, translating, and reviewing which could improve students' thinking abilities. Students do not get to do, for example, process of synthesis in which they combine or unify separate ideas or materials to create something new in their writing assignments. Student also rarely get the opportunities to evaluate the information given to them by making judgments about the purpose, worth, or quality of something. One wonders whether Ambiga and Aishah are aware of the high potential of writing to improve student thinking in content instruction.

Analytic Summary

Much of what goes on in Ambiga and Aishah's classrooms seems to suggest that all four language components are underutilized in relation to their potential in promoting higher-order thinking skills. Much of what goes on in the four classes taught by Aishah and Ambiga seem to be in line with the curriculum requirements. That is, the four language components are explicitly stated in the syllabus, curriculum specifications, and in textbooks. Although the teaching of higher order thinking skills is stated explicitly as one of the objectives of the secondary school curriculum, that is "to develop and enhance their intellectual capacity with respect to rational, critical and creative thinking," (Curriculum Development Center, 1989), they are not stated as separate categories like the four language components in these curricular documents. One reason for this is that The Integrated Curriculum for Secondary Schools was implemented in 1988, and the curricular specifications and textbooks were written based on these documents. The explicit treatment of higher order thinking skills in content instruction was only implemented in 1993. This, coupled with the lack of understanding as how to use the four language components in teaching higher-order thinking skills, could be the reasons why Ambiga and Aishah do not pay special attention to the aim of including higher order thinking abilities in their planning and teaching in their classes.

Another curriculum requirement which seems to influence teachers' planning and implementation of the language components in their classes in relation to the acquisition of higher order thinking skills is the testing requirements. Tests and examinations are organized based on the language components, and specifically on the reading and comprehension and writing components. So far there are no separate categories in testing instruments which test students' thinking abilities. Majority of the questions in examinations now are also of low cognitive levels. However, there are attempts to increase questions in national examinations which require students' higher order thinking abilities to 60 percent by the year 2000 from the present 5 to 10 percent, as suggested by Bakar from the Curriculum Development Center (Interview 9JOS3).

At present teachers are used to planing and teaching based on how students are required to answer the Malay or English Language papers in national examinations. It could be seen that much of the language activities in Ambiga and Aishah's classes, especially reading and comprehension, and writing assignments are organized in line with how students are tested in examinations. For example, when Aishah teaches how to write a formal letter she iterates the fact that students need to pay attention to all of different parts of the letter. Otherwise, they will lose marks if they omit any of those parts (Class observation, 72B4).

There are two papers in the National Level Lower Secondary Assessment Examination. The first paper has 60 multiple choice

questions, of which 20 questions were reading and comprehension questions and the rest of 40 questions were on language usage in 1992. The second paper has three sections: writing a composition; writing a précis; and completing a text in the form of filling in blanks (10 blanks) in a given passage. Although there are attempts to increase the exam questions requiring students' higher-order thinking abilities in stages, it does not seem to be an important focus now.

The kind of language practices in Ambiga and Aishah's classes observed seem to suggest that they are planned and taught very much in line with what is expected of students in the examinations. Once again, higher order thinking skills are not the core components of the examinations and this, besides teachers' lack of understanding of the potential of four language components to promote higher-order thinking skills and lack of the pedagogical skills to use them in their classrooms for the purpose of promoting higher-order thinking skills seem to influence how teachers use the four language components in the teaching of higher order thinking skills.

Different Strategies And Techniques In Teaching Higher-Order Thinking Skills In Malay Or English Language Classrooms

In this section, some of the major strategies and approaches used by Ambiga and Aishah in their form two Malay and English classes will be investigated in relation to their effectiveness in promoting higher order thinking skills in classrooms. This section will specifically address the second component of pedagogical content knowledge where teachers are required to know of instructional strategies and representations for teaching particular topics. The analysis will include what teachers generally perceive of strategies and techniques which promote higher order thinking skills in content instruction, and what they think of the strategies and techniques they use in their classrooms. This will be followed by the analysis of teacher and student talk, questioning, small group discussion, and problem solving strategy. Since teachers like Ambiga and Aishah are expected to use the infusion approach to teach higher order thinking skills in content instruction, this section will also include an analysis of whether these teachers are able to use such an approach.

What approaches support the acquisition of higher-order thinking skills?

The Form Two Malay and English Language teachers in the Perdana School District were given three hypothetical situations which

represent three different approaches to teaching and learning in form two English Language classrooms in the survey questionnaire (Refer to Appendix A - Survey questionnaire). They were requested to provide their responses as to how much each of these approaches promote higher-order thinking among students. The main reason was to investigate the type of approach or approaches, in the opinion of these teachers, best promote(s) higher-order thinking skills.

Approach 1 is a very teacher-oriented, didactic teaching strategy. Teacher plays the role of knowledge transmitter. Students are passive listeners. Students are evaluated on how much they have benefited from the teacher's teaching. Questions often require right or wrong answers. There is seldom opportunities for students' views or questions. In approach 2, the teacher brings into the classrooms some materials from other sources. Students are provided with some opportunities to talk about the issue at hand. Teacher asks questions to test student understanding, but more to encourage students getting only the right answers. Student responses are also not explored further. Subsequently, students are requested to carry out the task.

In approach 3, teacher also brings in resource materials from outside sources. The class starts with the teacher asking students to read. There is help for students who are less able. There is a short small group discussion, after which the students discuss the issue as a whole class. Students are encouraged to provide responses to the issue at

hand. The teacher helps students to explore the points raised by the students. Students are also encouraged to ask questions and also wonder about the various things being discussed. They then proceed to discuss about the task they were going to do. Students, then, carry out their task. They were expected to share their work with their friends, and also to provide constructive criticisms of each others' work after they have completed their task. Approach 3 is in line with what most researchers recommend to be the approach which, if used frequently in classrooms, could promote the acquisition of higher-order thinking skills by students.

There seems to be a consensus among majority of these teachers that approach 3 best promotes higher-order thinking skills (Table 5). Among the 104 teachers who participated in this study, 92.3 percent (72.1 plus 20.2 percent) of them agree that approach 3 promotes higher-order thinking skills in the classroom. Whereas, 26.9 percent (4.8 plus 22.1 percent) of the teachers think that approach 2 could promote higher-order thinking skills in the classroom. Only 6.7 percent (1.9 plus 4.8 percent) of the teachers chose to suggest that approach 1 promotes higher-order thinking skills in the given classroom. What this seems to suggest is that majority of the teachers have an idea of the kind of teaching that best promotes higher-order thinking skills, especially in a language classroom.

Table 5: Teachers' responses on the potentials of the three approaches in promoting higher-order thinking skills

	Approach 1	Approach 2	Approach 3
Doesn't promote HOT skills (1)	37 (35.6 %)	6 (5.8 %)	
(2)	45 (43.3 %)	14 (13.5 %)	2 (1.9 %)
(3)	15 (14.4 %)	56 (53.8%)	6 (5.8 %)
(4)	5 (4.8 %)	23 (22.1%)	21 (20.2 %)
Promotes HOT skills (5)	2 (1.9 %)	5 (4.8%)	75 (72.1 %)
Total	104 (100%)	104 (100%)	104 (100%)

Key: Based on a continuum of 1 to 5.

(1) Does not promote higher-order thinking skills

(5) Promotes higher-order thinking skills

It has to be noted that the teachers who suggested that Approach 3 best promotes higher-order thinking skills may have done so based on specific preferences they have which in their opinion promote higher-order thinking skills. However, it seems fair to suggest that majority of the form two Malay and English Language teachers generally agree that higher-order thinking skills are best promoted in classrooms where there are practices similar to approach 3, as explained earlier.

What approaches are teachers using in their own classrooms?

Among the 104 Malay and English Language teachers from the Perdana School District who participated in this study, 56.7 percent of the teachers suggested that approach 3 is most used in their classrooms (Table 6). Another 37.5 percent of the teachers suggested that approach

2 is most used in their classrooms. However, only 5.8 percent of the teachers suggested that approach 1 is most used in their classrooms.

Table 6: Teachers' responses on
Approaches most used in their classrooms

	Frequency	Percentage
Approach 1	6	5.8
Approach 2	39	37.5
Approach 3	59	56.7
Total	104	100.0

It has to be noted here that majority of the teachers have suggested that they have practices similar to what is contained in approach 3 which best promotes higher-order thinking skills. This seems to be in line with what most teachers often do, that is suggesting that they carry out practices in their classrooms which are in line with what is recommended in reforms. This was also true, for example in the investigation carried out by Sternberg and Martin (1988).

"In talking to teachers about thinking, we found that one truism seems always to hold, no matter who the audience is, where it is addressed, or when the address is presented. Virtually all teachers believe that they teach for thinking. When we have asked them whether they believe that their students are learning to think, however, most of them shrug their shoulders or otherwise convey an indefinite response."

(Sternberg and Martin, 1988, p.555)

As suggested by Sternberg and Martin even teachers who were involved in this investigation may have difficulty explaining the kind of practices

that promote higher-order thinking skills in their classrooms based on their own understandings. It was certainly true in the case of Aishah and Ambiga.

Given this situation in classrooms in the Perdana School District, one wonders about the kind of teaching in Aishah and Ambiga's Malay and English Language classes. However, it is not clear where Aishah and Ambiga have placed themselves in these three different approaches. Nevertheless, it seems important to investigate whether there are efforts by teachers to promote the acquisition of higher-order thinking skills by their students? Do teachers like Aishah and Ambiga attempt to employ approaches, strategies and techniques which have positive aspects which are found in approach 3? Do the approaches promote active student participation, allow for students' questions and explorations, cater for the less able in their classes so that they too could benefit from the teaching and learning, and allow students to be part of the teaching and learning processes including playing their part in deciding the task to be carried out?

Although better thinking among students could be a by-product of many activities prepared for the teaching of Malay or English Language, one wonders whether these teachers are making explicit attempts to emphasize thinking skills in their teaching, in line with the recent reform efforts in schools in Malaysia. Also, are these teachers bringing the activities in their classes to a level which possesses distinctive features

from traditional approaches to teaching, and clearly promote higher-order thinking skills in their classrooms?

Teacher and student talk

In every lesson Ambiga and Aishah allocate time to talk to students (Refer to Appendix B - Table 22). Also an analysis of structures of lessons in both Aishah's (Diagram 1) and Ambiga (Diagram 2) and classes suggest that a considerable amount of time is allocated by the teachers to do this. In Ambiga's classes, this teacher talk could be in the form of the teacher explaining a topic like 'ants,' introducing grammatical aspects like 'prepositions,' and explaining meaning of words from the passage. In any one given lesson, at the minimum there will be teacher talk explaining the task of the day after which students do the writing assignments (Refer to Diagram 2). Student talk in Ambiga's English Language classes could be in the form of students providing responses while reading a passage, presenting the outcome of their group discussions to the class, and students' questions. Almost similar type of teacher and student talk takes place in Aishah's classes. One difference seems to be that Aishah provides opportunities to students to narrate their personal experiences to the class. This, however, only happens in the higher level Malay Language class.

A close look at the interaction between Ambiga and her students in the lower level English Language class (Class observation, 52I63)

provides data to understand the pattern of talk between the teacher and the students. Teacher is introducing a number of words, and also is interested in correcting students' pronunciation. Although the turn taking is equally divided between the teacher and the students, the teacher is doing more talk in terms of time taken than the students. It is important to note that there is not even one question asking students, "Do anyone of you know this word (s)?" Teacher talk involves long explanations, but student talk is limited to repeating words in chorus. Although there are students in this lower level English Language class trying to contribute towards what they are learning, the teacher does not seem to exploit students' input to the maximum. For example, when the teacher introduces the word 'rawatan' (treatment), a student, before even she calls for an answer, provides the response by saying 'treatment.' She seems to just go forward by getting students to say the word. She doesn't even explain the word, as she explained the words 'huge' and 'parcel.' Requesting students to explain the word 'treatment,' instead of her explaining may provide opportunities for student talk and would also enrich the discourse.

- Amb :Yang ini adalah bungkusan [This one is parcel], we call it parcel.
 Ss :Parcel.
 Amb :Parcel.
 Ss :Parcel.
 Amb :This one is rawatan [treatment] ye.
 S1 :Treatment.
 Amb :Treatment.
 Ss :Treatment.

- Amb :Treatment.
 Ss :Treatment
 Amb :Ok. Ini bukan 'patent' [This is not patent]. Patent tu
 maknanya lain ye [Patent means a different thing, ok].
 S1 :pe-ti-ent
 Amb :Bukan [not] 'pe-ti-ent'. Dia punya sebutan [the
 pronunciation is] 'patient'.
 Ss :Patient.

(Class observation, 52163)

She goes on to explain the next word 'patient.' She starts to explain, 'This one is not patent, ye', even before asking whether any of the students know the meaning of the word or even how to pronounce it. She seems to assume that none of the students in the class knows the word 'patient.' She also seems to remind the students that 'patent' and 'patient' are two different things, but did not make an attempt to explain the difference. Also, to make things more interesting for students she could have used any one of the students to explain the meaning of the word 'patient.' This pattern of interaction seems to limit student talk and student participation in the class. What seems important to note here is that for effective learning to occur there needs to be both equal number or more turn taking for students to talk, and also the quality of the talk that goes on in the discourse.

A similar scenario seems to be present in Aishah's classes. Below is an excerpt of an interaction between the teacher and students in the lower level Malay Language class. The teacher and students are talking about transitive and intransitive verbs. The teacher asks a question, "what

is the meaning of a verb?" A student answers, "A verb is a word which shows an activity." It needs to be noted that, although this is a lower level Malay Language class, students are ready to provide responses. The answer for the meaning of a verb is in a full sentence, unlike in most cases where students are fond of giving one word answers.

Ais :Nuzrul, what is the meaning of a verb?

Ais :Yes. Razak.

Razak :A verb is a word which shows an activity.

Ais :Activity ye. So, a verb is part of a category of words. One category of words showing an activity. So, a verb is something which is carried out. It shows an activity or someone involving in an activity. That is what called a verb. In Malay Language, we have two types of verbs. Ok, who can give one of the verbs? Remember, in Form One, I have explained.

S1 :Transitive verb.

Ais :Yes. a transitive verb. Ok, the second one?

S2 :An intransitive verb.

Ais :Ok. an intransitive verb.

Ais :Ok. In the text book, this is called intransitive verb.....

(Class observation, 52E11)

She seems to feel happy about explaining the meaning of what a verb is, and later about an intransitive verb, when in fact the students seem capable of explaining many of those terms themselves. For example, when one of the students provided the answer 'intransitive verb,' she did not make an effort to ask whether any of the students knew what an intransitive verb is. There could have been an opportunity for student talk. She instantly started to explain what an intransitive verb is. Even when the student Razak provided an answer for the word 'verb,' she did not attempt to expand the answer by requesting him or other students to

contribute. One way to get students to think and wonder about what they do in their classes, may be, is to contemplate the responses provided in the classes. This does not seem to be happening here.

In one of the problem solving activities in the English Language classes taught by Ambiga, students presented what they discussed in their groups (Refer to Appendix B - Table 22 - Day 5, Lower Level English Language class). Students had the opportunities to talk about the six things they had decided to bring with them from a troubled plane. Ambiga did ask them to explain why the passport is one of the six things they selected. This particular activity obviously provided students the opportunities to talk about the 'why,' in small groups, besides the 'what.' However, continuing the discussion about the 'why,' and allowing students to talk why it qualifies to be one of the six items seems to be the kind of activity which could provide the opportunities for student talk involving higher cognitive operations. Among others, students need to be encouraged to make judgments about purpose, worth, or quality of something.

S1 :Passport.

Amb :Say why you need the passport.

S1 :Because we are Malaysian citizen.

Amb :We are Malaysian citizen. Ok. Next.

S1 :Matches.

Amb :Matches.

S1 :Because we can, we can smoke signal.

Amb :Ok. Signal, how?

S1 :Because when we see someone, we can give signal.

(Class observation, 52153)

There may not and will not be six correct answers for this problem. However, getting students to talk, argue, criticize, and debate these issues would provide them the opportunity to carry out some higher-level thinking themselves. Over time, this kind of exercises may prove useful in educating students to conduct higher-level thinking on their own. Another example from Aishah's higher level Malay Language class demonstrates how the teacher summarizes a discussion between her and the students. Even here the teacher seems to be the one who is talking more than the students which limits opportunities to students to talk and summarize the discussion. Even if students get to talk, they seem to give one word answers to reaffirm what the teacher is saying.

- Ais :Ok, so from this passage, we understand, how a student, Bainum binti Shukri,part of her contributions is to be given to Actually, the student Fairus pretends to use part of his savings to buy a series of books which he likes. ...sympathize...what good values do you all see here? The good things, which needs to be followed or Fairus' attitude?
- S1 :Kind heartedness, teacher.
- Ais :Kind heartedness.
- S2 :Sympathy.
- Ais :Sympathy.
- S3 :Not only thinking of ourselves.
- Ais :Not only thinking of ourselves.
- S4 :Cooperation.
- Ais :Is it?
- S4 :Cooperation
- Ais :Cooperation, so more...?

(Class observation, 52B32)

Students proposed good values like kind heartedness, sympathy, and cooperation for a question what could be learned from Fairus'

attitude. There could be many students in the class who do not understand the meanings of these values, and more importantly how they relate to the main story they have been discussing. Talking about them and also providing opportunities to students to explain the values they proposed and also to play a part in summarizing the lesson may have provided the students with the opportunities to do some higher-order thinking about their learning task of the day. Synthesizing the many points raised in the class seems to be one of the activities need to be promoted in a class where improving students' thinking is one of the learning objectives.

In all the four classes, the two teachers allocate substantial amount of the time for talk, but it seems that much of the time is used for teacher talk than to encourage student talk. The kind of common practices involving teacher and student talk in the four classes (Refer to Appendix B - Table 22), suggest that teachers control and dominate the discourse, even when students could be allowed to talk and extend the classroom discourse. A further investigation of the small group discussions in the classes may help understand further how those small group discussions did or did not help to promote student talk and higher-order thinking skills among them.

Small group discussion

The small group discussions provide opportunities for students to talk about issues at hand. Students solve problems, clarify values, explore controversial issues, and form and defend positions during reflective discussions (Wilén, 1990). This discussion where students are required to synthesize and evaluate information, opinions, and ideas has the potential to push students to the highest levels of cognition.

From the observations of the two English Language and the two Malay Language classes (Refer to Appendix B - Table 22) and the Table 7 below, it could be seen that there were small group discussions in all classes except for the higher level Malay Language class. There were small group discussions in two of the five days in the lower level English Language class, whereas there were small group discussions in two of the six days in the higher level English Language class. However, there was small group discussion in only one of the five days in one of the classes taught by Aishah. There were no small group discussions on any one of the days in the higher level Malay Language class.

Table 7: The usage of small group discussions
in the Malay and English Language classrooms

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Total
Higher Level Eng. Lang. class (2A)				X	X	—	2
Lower Level Eng. Lang. class (2I)					X	X	2
Higher Level Malay Lang. class (2B)						—	0
Lower Level Malay Lang. class (2E)				x		—	1

On the two occasions Ambiga had small group discussions in her classes, she involved students in small group discussions to find ways to solve a given problem and working in pairs to prepare a dialogue. In her higher level English Language class, students had to discuss and find reasons why the couple were arrested in the problem solving activity, and also got to work in pairs to prepare dialogue based on two situations given by the teacher. These were similar kinds of activities which she carried out in both of her English Language classes. Aishah, on the other hand, does not seem to be using much of small group discussions in her lesson structure. The only time she used was when she requested students from the lower level Malay Language class (Refer to Appendix B - Table 22) to prepare questions on an episode of a drama they read in the class. Students worked in pairs. Although students from a higher level Malay Language class suggested that Aishah requests students to be in

small groups and “.. when we are doing our essay, she asks us to gather points for the essay.” and also suggested that, “after that we discuss about the essay” (Student interview, 5S3A3), this did not seem to have occurred in the classes during the period of this investigation.

- Raj :Does your teacher get you all to discuss in small groups in the class?
 Ss :Yes.
 Raj :Could you all explain when you get to do this?
 S5 :Like when we are doing our essay. She asks us to gather points for the essay.
 S6 :After that we discuss about the essay.
 Raj :Ok. Who else can explain?
 S2 :We look for views.
 Raj :When you all look for views, how do you all do that?
 S3 :We discuss as a group.
 S4 :Everyone gives his points or views.
 S6 :But sometimes there are students who make noise, play, do not want to do, or sleep.
 Raj :So, there are people who wouldn't do?
 Ss :Yes.
 Raj :Are there such people in all groups?
 Ss :Yes.

(Student interview, 5S3A3)

The students seem to like discussions in small groups, although there seems to be problems like those mentioned by students above where there are students who do not contribute, make noise, or sleep. The few times students were observed in small groups to discuss in three classes, except the higher level Malay Language class, students were very excited and showed a lot of interest in participating in the discussion. When students in Ambiga's class were asked whether the discussion in a group is interesting, they seem to suggest that they like the discussions,

and they would like to have more of it (Student interview, 5S1B2). They also suggested that the discussions are sometimes challenging, besides being interesting. They claim that because the task given to the group is challenging, it makes them think (Student interview, 5S1A4).

It seems that if the tasks given to the students are interesting and challenging students will have serious debate in the small group discussions. When students did the problem solving activity, and as a part of the activity they had to discuss in small groups, Ambiga suggests, the students did discuss about many interesting aspects like, "Why this couple [were] convicted? Why? Then the other sense is like.., you read this la..., open window and all. So they..., one couldn't see what the other can. So they do that kind of discussion till they found out" (Teacher interview, 7T1B14).

Raj: Inference questions, ya. OK. Let's..., we go into the writing assignments. You give both the classes writing assignments. Group writing assignments they did. Remember, they wrote on the..,

Amb: Ah.. ya.

Raj: So for 2A they wrote all the reasons, and 2I they wrote the six things they can take with them. And then they came up, they presented. When they discussed and wrote that in groups, do you think that they had to think about that? Think about why they need to choose this and not that? And why they make a decision on the reason convincing.., not others?

Amb: While they're discussing?

Raj: Yes, while they're discussing. Sure they have to think about that. Otherwise..

Amb: Ya, When I go around to They, what is this? Why this couple convicted? Why? Then the other sense is like.., you read this la. Macam mana ada buka tingkap [how could they open the window], open window and all. So

they..., one couldn't see what the other can. So they do that kind of discussion till they found out.

Raj: Sure, especially when they want to put on writing, it's more than just talking.

Amb: Yes. they have to really put it like..., otherwise the other group. Then...,

Amb: And then, I think one or two groups found out that there's a contradiction in statements. Because they start asking me, calling me up and said there's something wrong with this statement and this statement. They couldn't figure out what. So I just see and this..., certain things very contradicting. So I see, ah.. ya. The wife said something else and the husband said something else.

Raj: In that writing exercise, do you think there were opportunities for students to state their thoughts. Related to that topic, but they can bring in their own thinking.

Amb: Bring in their own thinking, I mean outside the..., the..

Raj: But related to that topic. What do you think? What is the opportunity?

Amb: There will be.

(Teacher interview, 7T1B14)

Students also found out the contradictions in statements given by the couple to police, and they talked about it. Ambiga also suggested that students called the teacher and asked her questions when they found contradictions. She also believes that since they were requested to write reasons later, there was a more serious discussion. When this kind of discussions take place in small groups, then students get opportunities to make inferences, analyze the issue, synthesize the various perspectives given by different students, and make conclusions.

Small group discussions have the potential to contribute towards student learning in terms of their ability to analyze, synthesize, and evaluate information. They can also make their own judgments after

having done those processes. It seems that the few times small group discussions were used in the English Language class, it motivated the students and provided the opportunities to them to engage in higher cognitive level thinking. It also seems that it is important for Ambiga to increase the frequency of the usage of such small group discussions in her classes. In the case of Aishah, she needs to understand the potential of small groups discussions and include that in her lesson structure as often as possible.

Problem solving strategy

Observations of the teaching and learning in the form two Malay and English Language classes suggest that there are certain strategies like problem solving which have the explicit potential to promote thinking skills among students (Refer to Appendix B - Table 22). Besides being good language activities, they provide the opportunities to students to think hard on issues to solve the problem at hand. However, this problem solving strategy was only used once in the two of Ambiga's two English Language classes. It was not used at all by Aishah in her classes during the period of this investigation which was for two weeks in each of these classes.

Ambiga gave two separate problem solving activities to her two classes (Refer to Appendix B - Table 22). She suggested that she prepared two separate activities based on students' abilities, because one

(Form 2A) is the best form two class and the other (Form 2I) is a lower level class. Furthermore, since she is teaching English Language, she suggested that she needed to have relatively an easier activity for Form 2I. The English Language proficiency of students in Form 2I was very low.

For Form 2A (Day 4), the higher level English Language class, she prepared a problem solving activity called 'Robbery on a stormy night' (Class observation, 52A4). Students were requested to read a passage about a couple who worked at a supermarket, and were apparently robbed of the cash by two gunmen on a stormy night at a traffic light. When they reported to the police the next day, the constable, after listening to the story, said, "Well then, you're both under arrest. You are charged with robbery." The students were requested to get into groups and discuss why the police constable put the couple under arrest. The students were asked to present their reasons to the whole class.

For Form 2I (Day 5), the lower level English Language class, Ambiga prepared an activity where the students were asked to get into small groups and discuss to solve a problem. They were given a total of 19 items which the teacher wrote on the board. They were told to pick only six items before they could jump out of plane which has engine trouble and would crash anytime. The items included passport, camera, matches, cigarettes, pen knife, transistor radio, medicine, and a story book. Ambiga told the students to discuss which six items they would

want to bring along after explaining each of the 19 items. They were also requested to present their six items to the class.

The problem solving strategy used by Ambiga seems to have really excited the students about the problem they were asked to solve (Class observation, 5215, 52A4). It could be seen from the observations of the classrooms that both when they were discussing the problem in small groups and when they presented, the students, including those in the Form 21 class, seemed very excited. They were very eager to talk. They were trying to ask questions to the friends who were presenting in front of the class. In Form 2A, for example, there were students who seemed interested in asking questions to those who presented in front of the class. There seemed, however, no accommodations for students' questions in the structure of the lesson. The teacher too seemed quite unaware of some students' eagerness to ask questions. As a result, they lacked the opportunities to ask questions. When they could not ask those who were presenting in front of the class, there were students shouting, "Teacher you believe that?" (Class observation, 52A4). There were also students shouting, 'How does the robber know they had the money?' (Class observation, 52A4).

These questions seemed so important for the students to discuss. Also in the Form 21 class, there were students interested to know why, for instance, some of the groups selected items like cigarettes. They seemed to have a problem believing that someone will take cigarettes along when

someone is in an emergency situation, and also when one is allowed to take only six items. There seemed to be no explicit attempts by the teacher to promote such questions. These questions, if they were discussed by the students, would have obviously provided them the opportunities to conduct some high level thinking about the problem, for example, critically evaluating opinions and suggestions.

The problem solving activities Ambiga prepared for her two form two English Language classes were without doubt positive attempts to create opportunities for students to engage in higher-order thinking. The students seemed to have liked the activities and were eager to participate and contribute. They also had questions which, if had been entertained, would have led to higher-level discussions in the classes. In fact, Ambiga when explaining the task, especially to Form 2I, did not specifically stress the point for students to discuss why they are selecting the six items (Class observation, 52I5). As such, the problem of discussions on the problem solving activities not going to a higher-level may be rooted in the lack of awareness on the part of the teacher herself. However, the problem solving strategy used by Ambiga in her two classes showed a lot of potential to promote higher-order thinking skills in her English Language teaching. The important point is that there needs to be more of such activities in her classrooms. In the case of Aishah, she needs to understand the importance of using such strategies and use them as often as possible in her Malay Language classes.

Questioning technique

Questioning technique seems to be used quite extensively in Aishah and Ambiga's classes. Teachers very often seem to employ this technique as a way to involve the students, and to break the monotonous 'rhythm' of only they speaking in the class. This often seems to take place when they dominate the discourse and are teaching a new concept or introducing a new learning component. Although the questioning technique is often used in these classes, the question is whether the questions asked are eliciting responses which grow out of their higher thinking processes, and whether the responses are again expanded to provide opportunities for students to carry out higher-order thinking.

- Amb :When you read about the ants, what do you think about the ants?
 Ss :Hardworking.
 Amb :Hardworking.
 S1 :Bites.
 Amb :Bites. Ok. Others.
 S2 :Help each other.
 Amb :Help each other. Yes. .Lain [Others].
 S3 :Cooperative.
 S4 :Loyal to the queen.
 Amb :Loyal..Loyal to the queen. Ok. Next.
 Amb :What do you know about ants? Some of you might know little bit about ants. So..share with ...We have 'loyal to the queen.' What else?

(Class observation, 52A11)

It could be seen from the interaction above that even in the higher level Form 2A English Language class, where the students are eager to participate and provide responses for the questions the teacher is asking,

the teacher seems not to be using student responses effectively. The students gave a number of things they think about when reading about ants. In fact, that is what the teacher wanted the students to share. Their responses like hardworking, bites, help each other, cooperative, and loyal to the queen suggest that the students do have a good knowledge of ants. The students seem to have the knowledge about each of the phrases they told the class.

But unfortunately, Ambiga did not seem to ask any of the students to explain the phrases they were sharing with the class. Asking the student who said, 'Loyal to the queen,' explain what he meant by that may have helped the class to contextualize their thoughts about the topic they are learning on that day. Students may also have had the opportunities to connect this information of ants being loyal to the queen to what they might already know of ants. Extending the discourse with more questions and responses both from the students and the teacher may have created an opportunity for students to know about ants which they were to read from the passage. This discourse may have been the very core of the lesson of day because the reading passage Ambiga brought to the class included many of the aspects the students told the class as a result of her questions.

A similar scenario seems to be present in Aishah's class (Class observation, 52B18). She too seems to be using the questions to break the monotonous rhythm of her teaching. She is teaching a grammar

component, transitive and intransitive verb in her higher level Malay Language class. The curricular documents available to teachers encourage such grammar components to be taught in an integrated manner. That is they need to be part of other language activities and they need to be taught in a context, and taught in the direct and disintegrated manner as Aishah is doing.

- S1 :Ahmad is..studying.
 Ais :Ahmad is...., Ahmad is..studying. Ahmad is studying.
 Studying is a transitive or intransitive verb?
 Ss :Transitive.
 Ais :What??
 Ss :Intransitive.
 Ais :Intransitive. Good. Can that sentence be broken into two parts?
 Ss :Can.
 Ais :Can??
 Ss :Cannot.
 Ais :Cannot. Ahmad is reading. If you break it....that sentence cannot be broken. Ok. Others.
 (Class observation, 52B18)

Here, Aishah is telling students about the different kinds of verbs, which in her opinion, is new information. In the process, she seems to be using the questions to get students to say what she wants to hear, and also to reaffirm what she is saying. She seems to be taking the responses that she would like to hear. She seems to just leave the responses hanging if they are not what she wants. For both the responses she wants the students to say, or what the students say by themselves, she does not seem to make an effort to use these responses to engage the students in a discussion or some serious thinking.

When she asked a question whether studying is a transitive or intransitive verb, the students answered, 'transitive.' Her response for this was, 'What?' Her response seemed to have sent a message to the students that, the answer is not right. Next, the students gave a response which could not be anything other than, 'intransitive.' Aishah's response this time is, 'Good.' Similar thing seemed to have happened when she asked the students whether that sentence can be broken into two parts. When the students said, 'Can,' she asked, "Can??" This again, seemed to have sent a message that what the students said was wrong. Next, the students said what she wanted to know, that is 'cannot.' There seems to be no need for students to do any kind of serious thinking to figure out the 'correct' answer.

The kind of responses elicited from students largely depend on the quality of questions posed by the teachers in classrooms. If they are low cognitive levels, that is requiring students to recall or restate information already provided, then one ends up getting such responses. On the other hand, if the questions posed by the teacher require students to critically evaluate information or to make a judgment, then one could expect such kind of responses from students. In this respect, an analysis of questions and responses from Ambiga and Aishah's classes were conducted.

The analysis in Table 8 is on the interaction between the teacher and students in the higher level English Language class where they were talking about 'ants' the topic of the reading passage the students were

going to read. The interaction between the teacher and students went on for 18 minutes (Refer to Appendix E - The interaction between the teacher and the students), after which the students read the passage and did the writing assignment. This is one of the rare times when the teacher and student interaction went on for 18 minutes which is about one-third of the class time. There was active participation from students in providing responses.

**Table 8: Classification of Teachers' Questions
and Students' Responses based on Bloom's
Taxonomy of Educational Objectives**

Cognitive levels of questions	1	2	3	4	5	6	Total
Teacher's Questions	26						26
Students' responses	30						30

Key:

Higher Level English Language class

Form 2 A: Day 1 (2/25/97)

Total time of the class : 1 hour 10 minutes

Total time of interaction and analysis: 18 minutes

There were a total of 56 turns in this segment. The teacher had 26 questions, and the students had 30 responses. An analysis of the questions and responses (Table 8) suggests that the questions and responses are all of the first category in the Bloom's Taxonomy. The categories were decided on the kind of responses they intended to elicit. Teacher's questions required students to name, list, recall, or repeat

information previously stored, which is the first cognitive level in Bloom's taxonomy. Teachers' questions included, "What do you know about ants?" and "What do you call the black one?" (Refer to Appendix E). Most of the responses were one word answers. Students' responses included, "Hardworking," "Cooperative," and "Loyal to the queen." There were no attempts to extend the responses from students. Very often they followed the IRE (i.e., Initiation, Response, Evaluation) sequence. In other words, there was a question from the teacher for which there was a response, and the teacher evaluated the response. Since there were no speculation on the responses, and also because teacher's questions basically requested students to recall or repeat information, all of students' 30 responses were at the lowest level of cognitive operations. Students basically had to rely on their recall, relocate, and restating abilities.

The analysis in Table 9 shows the type of questions and responses in the interaction between the teacher and students in the higher level Malay Language class. This interaction went on for a total of 25 minutes (Refer to Appendix E - The interaction between the teacher and the students), after which students were introduced to a poem and later copied the poem in their books. This interaction also represents one of the rare opportunities where it went on for about one-third of the class time. There were a total of 108 turns in which the teacher and students

shared equal number of turns. In this interaction, the teacher is introducing a grammatical component, 'verb.'

**Table 9: Classification of Teachers' Questions
and Students' Responses based on Bloom's
Taxonomy of Educational Objectives**

Cognitive levels of questions	1	2	3	4	5	6	Total
Teacher's Questions	41	9	4				54
Students' responses	37	10	7				54

Key:

Higher Level Malay Language class

Form 2 B: Day 1 (3/11/97)

Total time of the class : 1 hour 10 minutes

Total time of interaction and analysis: 25 minutes

Teacher's questions were of the first, second and third levels in the Bloom's taxonomy. Likewise, students' responses were also of the same three cognitive levels. The number of students' responses in each of the categories also seem to almost follow the teacher's questions in each of the categories. The categories were decided on the type of responses intended to be elicited from students. Teacher's questions were of three categories. They included, "How many types of verbs are there?" (Level 1), "Why is it that this is an intransitive verb?" (Level 2), and "Ali kicked the ball. Ok. In this sentence, where is the verb?" (Refer to Appedix E). Students' responses included, "Two types" (Level 1),

“Because they do not need an object” (Level 2), and “Kicked is the verb” (Level 3).

This seems to suggest that there is a close relationship between the cognitive levels of teacher’s questions and students’ responses. Unlike the situation in Ambiga’s class, here students provided responses at the third level where they had to apply the information learned to provide new examples. They even tried to summarize what they had learned in the discussion. Students suggested, for example, that intransitive verbs do not need objects in the sentence. In other words, if teaching higher-order thinking is one of the objectives, then teachers need to ask more of higher level cognitive level questions.

Infusion approach

Teachers in Malaysian classrooms are expected to use the infusion approach to teach higher-order thinking skills in their content instruction. In infusion lessons, direct instruction in thinking is blended into content lessons (Swartz and Parks, 1994). There are five steps in the infusion approach: introduction to content and process; thinking actively; thinking about thinking; consolidation or enrichment activities; and applying thinking (Teacher Education Division, 1994). .

Teachers were requested to state whether they think they have the ability to teach Malay or English Language and higher-order thinking skills using the infusion approach (Table 10). Among the 104 teachers

who participated in this study, 42.3 percent of the teachers either agreed or strongly agreed that they are able to teach Malay or English Language and higher-order thinking skills using the infusion approach in their classrooms.

Table 10: Teachers' perceptions of their ability to teach Malay or English Language and higher-order thinking skills using the infusion approach.

	Frequency	Percent
Strongly disagree	5	4.8
Disagree	9	8.7
Neutral	46	44.2
Agree	42	40.4
Strongly agree	2	1.9
Total	104	100.0

The largest group among the teachers, that is 44.2 percent, suggested that they are not sure whether they are able to teach both Malay or English Language and higher-order thinking skills using the infusion approach in their classrooms. The rest of the teachers who make up 13.5 percent either disagreed or strongly disagreed that they are able to teach Malay or English Language and higher-order thinking skills using the infusion approach. An ANOVA test conducted suggest that there was no significant difference ($p = .124$) between the Malay and English Language teachers in terms of their responses towards teaching Malay or English Language and higher-order thinking skills using the infusion approach. This suggests that for majority of the Malay and English

Language teachers using the infusion approach to teach Malay or English Language and higher-order thinking skills was a problem.

Observations of Ambiga and Aishah's English and Malay Language classrooms suggest that there are no attempts to use infusion approach to teach higher-order thinking skills (Refer to Appendix B - Table 22). Even the structures of lessons used by Aishah (Diagram 1) and Ambiga (Diagram 2) do not seem to accommodate the five steps suggested for infusion lessons. The only thing which seems to be happening is the first step, that is the introduction of content, which is the language content and not the content of the thinking skills. Even in that, the introduction of process, which needs to be introduced together with content, is omitted. The kind of practices in Aishah and Ambiga's classes do not suggest that there are explicit attempts to involve students in thinking actively, metacognitive process, that is thinking about the thinking process, or applying the thinking skill learned, which are other important steps in the infusion lessons. There were no pedagogical steps to involve students in evaluating their own thinking processes, like thinking about why they did or did not make a particular decision.

Another problem here why one does not find these infusion lesson steps in Ambiga and Aishah is that, they do not seem to make a distinction between the strategies and techniques they are using and the specific steps recommended for infusion lessons. For example, Ambiga

suggests that she does not agree with the Ministry's proposal to teachers to infuse thinking skills into content instruction.

Raj: Not of much help. You see like the first thing is you must know what you are supposed to teach. In English Language, yes, you are fine. You have done a four year degree program. But when it comes to higher order thinking skills, I mean ...

Amb: How, okay I take a subject. So let's say essay writing. Composition titled 'Solving Social Ills.' So I ask them to base on their own knowledge. Those are the strategies. But I do not know whether these strategies I use is called HOT. That's the problem. That is the problem. There's no straight line. I don't know HOT or just one of the strategies. Which one? If they highlight okay, what you are doing now okay you are now on the right track, all the while HOT, no problem. You can go on. But Kementerian (Ministry) is saying like we haven't done this HOT all these while. That's why Kementerian (Ministry) says okay you must infuse in the subject HOT. That's why I don't agree.

(Teacher Interview, 1T1C5)

The reason why Ambiga finds it hard to accept the Ministry's proposal is that she believes the strategies and techniques she is using now are fine for teaching thinking. She is also not sure whether the strategies and techniques she uses could be called higher-order thinking skills strategies. That is suggesting that she and Aishah do not seem to see a distinction between the new strategies to infuse thinking into content instruction and what they are doing now in their classes. Ambiga also seems to oppose the ministry's proposal because she believes that ministry's proposal is coming out of an assumption that teachers are not teaching thinking now.

Analytic Summary

Both Aishah and Ambiga seem to be using various approaches, strategies, and techniques in their Malay or English Language classes. They basically seem to use these strategies to teach the Malay or English languages which are the main foci in their teaching. These strategies and techniques are not extended to a level to cater for the acquisition of higher-order thinking skills by the students. However, some of the strategies have shown promise of promoting higher-order thinking skills if teachers deliberately plan and use them effectively in their classrooms. On the whole, it seems that the teachers lack the understanding of the potential of many strategies in promoting higher-order thinking skills in their language classrooms, engaging students in what could be challenging problems, guide student manipulation of information to solve problems, and support students' efforts. Their practices in the classrooms do not seem to suggest that the various approaches and techniques are used effectively in the context of promoting higher-order thinking among students, except in the use of problem solving strategy. .

To be able to use these strategies and techniques with high potential to promote higher-order thinking skills, teachers need to possess the subject matter knowledge and pedagogical skills to combine both the teaching of content and thinking skills. For this, they need to be able to construct the pedagogical content knowledge necessary to conduct the

teaching and learning processes in their classrooms. Investigation of how they use or do not use different strategies suggest that Ambiga and Aishah lack at least two of the four categories required to construct the pedagogical content knowledge, especially for the teaching of higher-order thinking skills (Grossman, 1990). The two categories are, the overarching conception of teaching a subject, that is the teachers' knowledge and beliefs about the nature of the subject and what is important for students to learn, and knowledge of instructional strategies and representations for teaching particular topic. What this entails is that Ambiga and Aishah seem content with their present practices. They do not seem to see the need to change their current practices. Even if they do see the need to change their current practices to promote higher-order thinking skills in their Malay or English Language classrooms, they need to possess the necessary knowledge and pedagogical skills, which they lack now, to construct the pedagogical content knowledge to teach Malay or English Language and higher-order thinking skills together in their own classrooms.

Teachers too do not generally know about using the infusion approach which is expected to be used by teachers to teach higher-order thinking skills in content instruction. First of all, since they do not know about the specific steps to be used, and also the pedagogical skills to use them in their classrooms, it is no surprise that these infusion approach seldom found in these classrooms. There also seems to be a clear

dissonance between the type of strategies and techniques Ambiga and Aishah use in their classrooms, which in their opinion is sufficient to teach thinking, and the type of strategies and techniques and the practices which accompany them that promote higher-order thinking skills. This also includes the infusion approach. It could be that teachers like Ambiga and Aishah suggest that they happy with their present practices, and also suggest what they are doing now could be seen as higher-order thinking strategy to avoid being labeled as doing a bad job of teaching in general, and teaching higher-order thinking skills in particular.

Student Participation In The Teaching And Learning Processes And How That Influences The Acquisition Of Higher-Order Thinking Skills

O'Flahavan J. F. and Tierney, R. J. (1991) believe that one's reasoning ability is best developed in conjunction with learning situations that nurture student initiative. They also believe that empowering learners with the unalienable right to guide their own learning is an important aspect of our view of critical thinking; without this, the behaviors associated with independent learning (e.g., intrinsically driven involvement in their own learning) may fail to emerge. In language classrooms, specifically, Bereiter and Scardamalia (1987) suggest that students need to be prepared to gradually take over all the goal-setting, context-creating, motivational, analytical, and inferential actions.

Student participation in the teaching and learning processes plays a vital part in the promotion of higher-order thinking skills in classrooms. There seems to be overwhelming amount of evidence to support this notion. As has been suggested by O'Flahavan and Tierney (1991) above, failure to cater for students taking responsibility for their learning will hamper efforts to promote higher-order thinking among students. The aim of this section is to investigate whether such attempts are being made in the form two Malay and English Languages. First, the question whether students are capable of becoming involved in such activities will be investigated. In the process, the type of teaching and learning that goes

on in these classrooms, especially in relation to student participation will be explored. Second, some reasons as to why students do or do not participate will be investigated.

Are students capable of becoming involved?

Ambiga teaches two from two English Language classes. One is a higher level, and the other is a lower level class. In the lower level English Language class, much of the interaction between the teacher and the students is conducted in Malay Language. A close analysis of the discourse in this class suggest that students are eager to participate and contribute to the learning process even without much effort from the teacher. They do not only provide answers, they also ask questions for which students themselves find answers.

- S1: Makanan [food], pakaian [clothes],
 S2: Ai! Cikgu [teacher], makwe-makwe pun kena bawa cikgu
 [girls also must bring along, teacher].
 Amb: Iyela (yes)...! Rindu..kan [will be missing them isn't it?].
 S3: Sambil terjun tu kan tengok aii [when jumping you must see]
 S4: Mancis pun kena bawa [matches must be brought too].
 S5: Mancis memang ah! [matches, yes].
 S1: Nak bakar ape? [what do you want burn?]
 S2: Api.....unggun api [fire, camp fire].

(Class observation, 82151)

It seems interesting to note that the pattern of interaction is different from the pattern of interaction common in these classes. As has been discussed in the teacher and student talk, and questioning techniques sections this pattern of interaction is not common in these

classes. The popular pattern of interaction is teacher - student interaction pattern. That is, teacher asks a question, and one or many students provide responses. The teacher then provides her response. This follows the traditional IRE sequence (Initiation, Response, Evaluation). Two other patterns, which take the initiative of students to participate, that are student - teacher and student - student patterns, are not commonly found in these classes. In these two patterns of interactions, students ask questions, or provide opinions which are directed towards the teacher or other students on their own. The structure of lessons used by teachers in these four classes do not seem to allow such flexibility (Refer to Diagram 1 & 2). However, in the interaction above, it could be seen that there is student - student pattern. It could also be seen that students go on for five turns without assistance from the teacher. And also, what they are saying is in the form of questions and answers, and are not the usual type of one word answers. More importantly, it seems to occur spontaneously without much effort from the teacher. It is also important to note that this is taking place in the lower level English Language class. One of the reasons why students are actively participating could be because of the kind of problem they are talking about.

Aishah and her students in the lower level Malay Language class discussed verbs, transitive and intransitive verbs. Although this is a lower level Malay Language class, students seem interested in participating in the discussion. They provide responses to all questions raised by the

teacher. Students' responses suggest that they are following the development of the lesson closely. Teachers' questions were arranged to in the order of "What is the meaning of a intransitive verb?", and then "What do you mean by does not need an object?" Teacher developed the second and the following questions based on students' responses. The interaction pattern suggest that students from this lower level Malay Language class are following the development and provide responses accordingly.

- Ais: Ok. Apa yang dimaksudkan dengan kata kerja tidak transitif [What is the meaning of an intransitive verb] ? Cuba [try]..... ha apa [what] ?
- S1: Kata kerja yang tidak mempunyai objek [a verb which does not need an object].
- Ais: Kata kerja yang tidak mempunyai objek [a verb which does not need an object]. Ok. Apakah yang dimaksudkan dengan tidak mempunyai objek [what do you mean by does not need an object]? Apa dia objek [what is an object] ?
- S2: Benda-benda cikgu [like things teacher].
- Ais: Ye [is it] ?
- S2: Benda-benda cikgu [things, teacher].
- Ais: Benda, benda yang macam mana [things like what]? Selain daripada objek [other than object], apa kita [what do we say]... Kata kerja yang tidak mempunyai objek [a verb which does not need an object] atau (or) kata kerja yang mempunyai objek [a verb which needs an object] ?
- S3: Objek [object].
- Ais: Objek [object]).
- S4: Perbuatan [verb].
- Ais: Penyambut [object]. Kata kerja yang tidak mempunyai penyambut [a verb which does not need an object].

(Class observation, 82E11)

In the same lower level Malay Language class when the teacher and students discussed about adjectives on another day, students also contributed for the development of the lesson. Students were making

connections of what they were learning on that particular day 'adjectives,' with what they have already learned previously 'verbs,' although the teacher did not seem happy with that question by saying "Why are you talking about verbs now?" More importantly, a student initiated a question, "What is a functional word, teacher?" since the teacher said adjectives could be categorized into functional words category." All this happens if students are given the opportunity and the right discourse.

- Ais: OK, kata sendi nama ialah kata (an adjective is an) , sejenis kata yang tergolong dalam kata tugas (a type of word which could be categorized into functional words). Ia tergolong dalam kata tugas (It is categorized in functional words).
- S: Kata kerja (verb).
- Ais: Buat apa awak cakap fasal kata kerja? (Why are you talking about verb) Sekarang kita (Now we).....
- S: Eh aku pulak (Eh, myself), dia (he).....
- S: Kata tugas tu apa cikgu? (what is a functional word, teacher?)
- Ais: Kata tugas (functional word), bukan kata kerja (not verb). Kata kerja tu penggolongan kata kerja (verb is in verb category). Sekarang (now)..... tergolong dalam penggolongan yang lain (it is categorized under different category). Tak sama (not the same). OK. Jadi kata sendi nama ada beberapa jenis (adjectives have different types), dan (and)..... kata sendi nama juga mesti diletakkan dihadapan (Adjectives must be placed in front), frasa nama ataupun kata nama (Noun or a phrase). Mesti diletakkan (must be placed).
- Ais: Baik, jadi, kata sendi nama ni mesti diletakkan di hadapan (Ok, so, adjective must be placed in front).
- Ss: Frasa nama (Phrase - noun).
- T: Frasa nama ataupun?
- Ss: Kata nama (noun) .

(Class observation, 82E33)

What seems problematic, however, is that such interactions do not seem to occur often in these classes. At least in Ambiga's classes

(Diagram 2), one of her structures incorporates small group and whole group discussions. Otherwise, the interaction in the classroom is based on teacher explanation of the passage or the learning task. In Aishah's classes (Diagram 1), small group and whole group discussions are rarely included, and the interaction is basically on teachers' explanation of the reading passage, teaching of a grammatical component, or a learning task. However, she provides opportunities for student participation in higher level Malay Language class by requesting them to narrate their experiences.

On the whole, from observations of the four classrooms (Refer to Appendix B - Table 22) it could be said that seldom are discourses such as the one discussed above created in the classrooms where students actively participate as they were doing in this lower level English Language class. Students from the higher level English Language class, where a similar activity was conducted, seem to suggest that they had only one such opportunity to participate, although they have been through three months into the school year. Students generally tend to believe that there should be more of such activities (Student interview, 8S1B10).

S1: No, but we already did the participation only once only, so we.....

Raj: Before this never?

S3: Never.

Raj: So tell me. That means you have had only one experience participating like that.

S1: Yes.

Raj: Others? Do you all agree?

- Raj: Ya. That means, except for this, you have no other activity where you got involved, you can talk about it, you present in front of class. Sure?
- Raj: What about reading? When there is reading, do you get chance to read one by one, or something in the class. And then you all correct each other.
- S4: Actually teacher asks us to volunteer, who want to speak. But not... correcting
- Raj: No OK. The participation part, from what you all say, except for this, there was nothing else before. So, do you think there should be more or not?
- S5: Yes.
- S4: Yes.
- Raj: Rizal? Should..
- Rizal: Not more not less la.
- Raj: Macam ini pun [even like this is] OK.
- Rizal: Ya.
- Raj: Others, what do you all think?
- S3: More.

(Student interview, 8S1B10)

There seems to be a similar scenario in the Malay Language classes as well. Students from the higher level Malay Language class, when discussing about opportunities to participate in discussions or creating student - teacher or student - student patterns, suggested that they seldom get such opportunities ("Kadang-kadang sahaja [seldom only]" - Student interview, 8S3A8). They seem to think that it is because the teacher gives a lot of attention to grammar components (Student interview, 8S3A8). This, they believe, leaves very little room to talk and contribute because the teacher teaches about the grammar components and students tend to be passive listeners.

Why are students not getting enough opportunities to participate?

The problem here seems to be that they are not given enough opportunities to participate. The teachers often seem to take the prominent role in the classroom discourse, be it listening and speaking, reading and comprehension or writing. Even when there are excellent opportunities to encourage students to extend the discussion further, the teachers seem to be dominating the discourse by telling them what they ought to know, when in fact students could have figured that out by themselves if they had been given the chance. This seems to happen even in the simplest form of activities.

For example, when Aishah and students in the higher level Malay Language class were having an exchange on sentence formation (Class observation, 82B14), she asked students to provide alternatives for object in a sentence. Students gave responses like, "near the river," and "in Karaoke." After students had given the two alternatives, not the students, but the teacher repeats the whole sentence, "Everyday Ali sings in karaoke," with the object given by a student. Although she requested students to give examples of other sentences, she seemed to be happy with one word or phrase answers. Encouraging students to provide sentences will certainly be a more challenging activity than getting them to give one word or phrase answers, when in fact constructing sentences with intransitive verbs is the objective of this particular activity.

- Ais:boleh ubah [can change]. Setiap hari Ali bernyanyi [everyday Ali sings], di mana [where]?
 S1: Di tepi sungai [near the river].
 Ais: Di tepi sungai [near the river].
 S2: Di karaoke [In karaoke].
 Ais: Setiap hari Ali bernyanyi di karaoke [everyday Ali sings in karaoke], Ok....
 Ais: Ok. Contoh lain [Ok, other examples].
 (Class observation, 82B14)

Teachers like Aishah and Ambiga seem to still hold on to a pattern of interaction, that is the 'initiation - response - evaluation' (IRE) sequence which gives them the dominance in the class. They are the ones who provide the initiation for which the students are expected to provide responses. With this pattern often being used in the classrooms, students' initiative to participate is rarely tapped. This pattern of interaction could be said as one of the main reasons which inhibits student participation. As Edwards and Westgate (1994) suggest, "The frequency of those exchanges, and the overwhelming tendency of teachers to make the first and third moves, is 'essentially' what makes classrooms so distinctive" (p.125). The sequence establishes a pedagogical frame of reference which is renewed with every 'third (evaluative) turn.'

Such interactions seem problematic even for helping students acquire linguistic competencies, let alone extending those activities to include higher-order thinking abilities. For that, as has been suggested by O'Flahavan and Tierney (1991), there have to be deliberate attempts by teachers to extend the discourse to include higher-order thinking skills. In

Bloom's taxonomy, for example, extending the discussion beyond the knowledge and recall levels mean that they should include analysis, synthesis or evaluation levels. If the teacher extends the discourse to require students to use their synthesizing skills, for example, students could involve themselves in combining or unifying separate ideas or materials to create something new. Again, teachers need to be committed to plan and conduct such activities in their classrooms. Besides this, teachers also need to know how to do such activities in their classrooms and actually do them.

When the form two Malay and English Language teachers in the Perdana School District were asked whether they think that they are able to involve students actively in the teaching and learning processes (Table 11), one third (32.7 percent) of the teachers either disagreed or were not sure whether they are able to involve students actively in the teaching and learning processes for teaching Malay or English Language. However, 67.3 percent of the teachers either agreed or strongly agreed that they are able to involve students actively in the teaching and learning processes in teaching Malay or English Language.

Table 11: Teachers' perceptions of their ability to involve students actively in the teaching and learning processes for Malay or English Language and Higher-order thinking skills

	Teaching Malay or English Language	Teaching HOT skills
Strongly disagree		1 (1.0 %)
Disagree	2 (1.9 %)	14 (13.5 %)
Neutral	32 (30.8 %)	43 (41.3 %)
Agree	52 (50.0 %)	28 (26.9 %)
Strongly agree	18 (17..3 %)	15 (14.4 %)
Missing		3 (2.9 %)
Total	104 (100%)	104 (100%)

It seems even more problematic to look at teachers' responses in terms of involving students in the teaching and learning processes in teaching higher-order thinking skills (Table 11). A total of 14.5 percent of the teachers either strongly disagreed or disagreed that they were able to involve students actively in the teaching and learning processes in teaching higher-order thinking skills. Another 41.3 percent of the teachers were not sure they are able to do this in their classrooms. In other words, almost three fifth of the teachers (55.8 percent) think either they are not able to involve students actively in the teaching and learning processes, or are not sure whether they are able to do that in their classrooms, especially in the teaching of higher-order thinking skills. For both the teaching of Malay or English Language and higher-order thinking skills, this aspect seems to be a problem for teachers. It could be seen from Aishah and Ambiga's classes how majority of the teachers' perceptions

about their unpreparedness to involve students actively in the teaching and learning processes are manifested in classroom practices. However, teachers are not the only reason why students are not taking active part in the teaching and learning processes.

There seems to be at least two other closely related reasons why students in these Malay and English Language classes are not participating as one would like. One reason is the students themselves. That is how students are and what type of orientations, including in their homes, they have received in life so far which either support or inhibit their active participation in the classrooms. The other is the culture of the classrooms, that is the environment in these classrooms which promotes or inhibits student participation, besides the factors contributed by the teachers.

Students in these classes are generally nervous and shy when it comes to taking part in class discussions, especially when they need to stand in front of the class. The main reason for this seems to be that they are not confident of the language they are using, especially English Language. They, in fact, seem to think that they do not know how to use the language. It is surprising that students from even the best form two class (Form 2A) think that they do not know how to talk the language (Student interview, 8S1A3). They seem to feel that they might make a mistake if they talk.

- Raj: No. Why? You don't get.
 S2: I don't think so anyone wants to talk also. No one wants to talk.
 Raj: Why?
 S3: Because very nervous.
 Raj: Very nervous! Why do you
 S4: We don't know how to talk the language.
 Raj: Don't know how to talk in English.
 S1: Our English [is] not good.
 Raj: English is not good.
 S2: After they talk, then, all will start to laugh at them.
 Raj: That's the main problem is it?
 Ss: Yes.
 Raj: So that's basically why people don't want to talk. But if they don't talk, if people don't try, when are we going to learn, isn't it?
 S: Yes.
 Raj: The main reason you think, is people are nervous.
 S2: Yes.
 Raj: Because of their language. Is that true also for Bahasa Malaysia [Malay Language], in the BM class?
 Ss: No.
 S4: Everybody knows how to speak BM.
 R: Other than that, do you think any reason why people don't want to talk. Any other reasons?
 S6: Depends on yourself. Whether, you want to speak, you have to speak in front.....teacher.....
 Raj: So they go and talk to the teacher. Not in the class, not..., they put up their hand and say.....
 S2: Some of them are feeling shy or worried because the students will start to laugh at them,
 (Student interview, 8S1A3)

Students in this higher level form two class seem to think that students do not have problems in the Malay Language class because as they suggest, "Everybody knows how to speak in BM [Malay Language]." Students are relatively more confident about their proficiency in Malay Language than their proficiency in English Language. As a result, they think that they cannot talk and participate in the English Language class.

Students obviously seem to feel more confident about their command of Malay Language better than English Language because the medium of instruction for all subjects, except for English Language, Chinese Language and Tamil Language, is Malay Language. Furthermore, a pass with good grades in Malay Language is mandatory if one needs to pass any examination. However, it seems that students' perceptions of their better command of Malay Language as compared to English Language alone do not make qualitative differences in their participation in the Malay Language classes, as could be seen from the data discussed so far.

The reason why students are shy seems more to be that they are afraid other students in the class will laugh at them if they make mistakes. This certainly seems to be a serious problem, not only for the purpose of participation but for the teaching and learning processes as a whole. An observation of these classes suggest that laughing and shouting at their friends especially when one makes a mistake is very common. Also very seldom the teacher discourages such things in order to encourage the nervous and shy students to participate. As a result, students, even from the best class, seem not so eager to participate.

A closely related issue is that students are not used to being criticized in these classes. Although, laughing, shouting and belittling are not healthy activities and should not be allowed, encouraging students to ask questions, provide their reactions, and even respectfully criticizing

friends and teachers are healthy activities which need to be cultivated in these classes. However, that does not seem to be the case in these Malay or English Language classes. Students seem very wary of being criticized.

Students also seem to suggest that the kind of topics discussed in these classes are another factor which either encourages or discourages them from talking and participating (8S1A10). They suggest that the topics have to be new, interesting and with lots of new information. They think they need to know new information. They tend to think that topics are often repeated from the time they start their standard one. The outcome is that they think they have little to benefit from the topics being discussed and they seem to think that it is not worth talking. It is interesting to note that students prefer topics like aliens, or UFOs instead of ants. This seems to be general thoughts of students in this group. Students think that they benefited from the passage on ants which they read and discussed but they seem to think that topics like aliens and UFOs will get students more interested in what is going on in the class.

S1: Not that much. Ifvery good topics, yes la. The latest topics,maybe the latest, maybe we can get more with our.. most of us know how, because they don't want.... They won't feel that.

Raj: They wouldn't feel bored, is it?

S4: I don't think.

Raj: So, normal.. Why is it normal? Because of the classes you do?

S3: Sometimes, from like Standard 1 to Form 2, they're teaching the same thing over and over again. Make the questions.....

- S2: Anything new when we go to higher standard. Anything new like..
- Raj: What do you want it to be new? That's the one I want to know. You're saying, from Standard 1 to Form 2, reading, comprehension, composition. How you think it'll be interesting? Like something we discussed just now.
- S4: More interesting topic.
- Raj: More interesting topic.
- S4: Aliens, UFO..

(Student interview, 8S1A10)

There also seems to be a general reluctance among students, especially among those in lower level classes, to provide responses. This seems to be in line what they have been doing in their classrooms so far. They are often given the answers. This is usually done by the teacher. They are not used to be pushed for responses. Again, there are seldom situations where they have to really think hard using their higher cognitive abilities to arrive at solutions. This is because, the questions often require right or wrong answers, and very often only test their knowledge or recall abilities. The consequence of this practice seems to be that students often wait for the teacher to just give the answers. As Aishah suggests, "They just want the teacher to give the answers. May be because they think the teacher already knows, why doesn't she just tell us" (Teacher interview, 8T2B4). This situation does not seem surprising given the fact that students have most of the time been encouraged to do that, that is being passive listeners receiving information from the knowledge transmitter, the teacher.

Why students tend to be passive listeners is, besides the environment in the classroom, due to how they have and still are getting their orientation to voice out their opinions. Are they encouraged to freely but respectfully share what they think about something being discussed? Be it in their homes or when they are among their friends, does this seem to happen or encouraged?

There is certainly the influence of cultural aspects in how students perceive their roles in classrooms, and how they actually participate. Ambiga, for example, attributes much of the problem of the reluctance on the part of students to participate in class discussions to how they are treated in most homes (Teacher interview, 8T1B7). She suggests that parents rarely allow their children to participate in the discussions in homes, especially when elders are involved. However, she suggests students with educated parents tend to fair slightly better. Students from these homes may be more prepared. They may be better prepared for school and this is what sociologists call the "cultural capital." To support this notion she shared her own experience and suggested that most of her students are also facing this situation in their homes.

Amb: Apply to most students. I agree. Coming to, coming back to.., OK, see the students in my classes, I think I agree with you. Because my family, same type. When I try to barge in, so mum says, "Diam, shut up. Jangan kacau [don't disturb], jangan ganggu [don't bother us], see. Orang-orang tua ni [look at the elders here]. OK, so just shut up, just listen. Or just go away and to something else". You're not allowed to say anything. Even if you have, our parents will not listen. Only later on, only now, not now, only

when I'm in matriculation, my mum read a lot about psychology., then only she tried to apply all those things and tried to listen to them.

(Teacher interview, 8T1B7)

There is an extensive literature to suggest how the home influences the children in many ways relating to their educational achievements. It is not the intention here to explore in detail the many influences of the cultural practices in the homes of these students in these form two Malay or English Language classes and how those practices influence their willingness to participate in classroom discussions. However, it seems sufficient to suggest that based on the observations of classrooms, and students' testimonies as being nervous and shy to take part in classroom discussions, could be due to how they are treated in their homes by their parents. It is also important to accept that experiences of Ambiga and most of other students in their homes are culturally accepted norms. That is, children are often discouraged from participating in discussions in homes if those discussions involve elders. The main concern, however, is that some of the cultural practices seem to be contrary to what teachers are trying to promote in classrooms, especially when teachers attempt to infuse higher-order thinking abilities in their content instruction.

Analytic summary

It is imperative to have an active student participation in the teaching and learning processes in the classrooms, especially when one intends to infuse higher-order thinking skills into content instruction. It also seems important that teachers need to be aware of this need and deliberately plan and conduct the lessons which promote student participation. The classrooms need to provide a conducive learning environment to encourage active student participation. Student participation should become a common practice.

Based on the discussion above, it seems that teachers are playing their predominant and traditional roles as "knowledge transmitters," which is antithetical to involving students actively in the teaching and learning processes. It seems that teachers need to also drop their beliefs that there is a fixed body of knowledge which needs to be transmitted to students, and instead need to accept the fact that knowledge is constructed in the process of interaction between the teacher and students. This seems to be especially true if teachers want students to exploit their analytical, synthesis and evaluative skills. These skills cannot be taught but could be acquired by students in activities which warrant such high cognitive operations.

Teachers also need to be aware of the fact that they need to encourage student participation by talking less in the classrooms. Data

presented above suggest that they tend to dominate the classroom discourse most of the time. Rather than trying to dominate the discourse most of the time, they should try to involve students to extend the discussions. As Duckworth (1987) suggests, one of the two aspects of teaching is to have the students try to explain the sense they are making, and, instead of explaining things to students, do try to understand their sense.

Data presented above also suggest that students are capable of performing tasks which require their active participation. They also seem to be accomplishing tasks which require high cognitive operations if given the opportunity. However, they tend to be nervous and shy when comes to taking part in classroom discussions. They also wait for the teacher to provide the answers most of the time. There seems to a number of reasons contributing to this state in the Malay and English Language classrooms.

It seems very important that teachers discourage belittling and shouting in classrooms when a student makes a mistake, and instead encourage students to share their views, questions, and criticisms all in a respectful manner. This will cater for students' concern of having to talk with very low proficiency in English Language, and also in the Malay Language classes. They could be more willing to participate in the classroom discussions.

Some of the cultural practices in the homes seem to be counter productive to encouraging students to participate actively in the teaching and learning processes. While accepting those practices as culturally accepted norms, teachers may need to be aware of this fact and in fact create their classrooms to be places where students could compensate for their losses in their homes. Schools and teachers should not help to perpetuate what students already lack. More conscious and concerted efforts by teachers may go a long way in overcoming this problem.

**TEACHING HIGHER-ORDER THINKING SKILLS IN
LANGUAGE CLASSROOMS: THE NEED FOR
TRANSFORMATION OF TEACHING PRACTICE**

VOLUME II

By

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Chapter 5

TEACHERS' PERCEPTIONS OF THEIR KNOWLEDGE, PEDAGOGICAL SKILLS, AND ATTITUDE TO TEACH MALAY OR ENGLISH LANGUAGE AND HIGHER-ORDER THINKING SKILLS

A detailed description of how the two Malay and English Language teachers perceived their preparedness to teach higher-order thinking skills in their Malay and English Language classrooms, and of their practices in their four classes, two Malay and two English Language classes, was provided in the last chapter. It provided the data to understand how teachers grapple with many issues in trying to infuse higher-order thinking skills in their language classrooms. This chapter will provide data on the perceptions of teachers in the Perdana School District, where the Aishah and Ambiga teach, in relation to their preparedness to teach higher-order thinking skills in their Malay or English Language classrooms.

Teachers in the Perdana School District, like their colleagues in other schools in Malaysia, are required to infuse thinking skills in their content instruction. That is, they are expected to give equal treatment to both school subject they are teaching and thinking skills in their planning, teaching and evaluation of student improvement in classrooms. To be able to carry out this task in their own classrooms, they need a deep understanding of the subject matter and pedagogical skills of both the content and thinking skills to teach them together in their classrooms.

They also need the right attitude to carry out this important innovation in their own classrooms.

The following section will provide data and discussion on form two Malay and English Language teachers' perceptions of their knowledge, pedagogical skills, and attitude towards teaching Malay or English Language and higher-order thinking skills. Data presented here were obtained from 104 teachers, who represent 93 percent of all form two Malay and English Language teachers in one of the school districts in Malaysia, the Perdana School District. Besides teachers' perceptions of their knowledge, skills, attitude, the discussion will also involve if there are any factors which have influenced their perceptions. Also, there will be a brief discussion about the percentage of class time they allocate to teach Malay or English Language and higher-order thinking skills in their own classrooms.

Teachers' Perceptions Of Their Subject Matter Knowledge

Teachers were requested to provide responses on eight items which cover many aspects of the curriculum, knowledge about planning, using different strategies, using the infusion approach and involving students in the teaching and learning processes (Refer to Appendix A - survey questionnaire). The aim of the items (Refer to Table 12) was to investigate what are teachers' perceptions of their knowledge for

teaching Malay or English Language and higher-order thinking skills. It has to be noted that these eight items had an Alpha level of .9231 in the reliability analysis test.

Table 12: Teachers' perceptions of their knowledge to teach Malay or English Language and Higher-Order Thinking Skills

		Mean	Std. Dev	t value	sig (2 - tailed)
know details of the curriculum for	ML/EL	3.94	.74	7.467	.001
	HOT	3.19	.96		
know how to plan to teach	ML/EL	4.11	.70	6.678	.000
	HOT	3.52	1.00		
know how to use different strategies and techniques to teach	ML/EL	3.86	.77	6.316	.000
	HOT	3.38	.94		
know how to teach ML/EL and HOT using the infusion approach	ML/EL	3.17	1.03	2.232	.028
	HOT	3.02	1.01		
know how to stratify the learning components to the level of students for	ML/EL	3.81	.73	6.723	.000
	HOT	3.30	.90		
know how to involve students actively in the teaching and learning processes in	ML/EL	3.87	.70	5.292	.000
	HOT	3.47	.95		
know how to develop the individual potential of students in	ML/EL	3.70	.73	3.855	.000
	HOT	3.43	.93		
know how to evaluate student improvement	ML/EL	3.75	.71	5.085	.000
	HOT	3.35	.93		

Key: Responses were on a Likert scale
 1 - Strongly disagree
 5 - Strongly agree

It could be seen (Table 12) that the means of all items for the teaching and learning of Malay or English Language is consistently higher than the means of all items for the teaching of higher-order thinking skills.

For example, on the item whether teachers think they know the details of the curriculum for both the Malay or English Language and higher-order thinking skills, the mean for language teaching is 3.94 and for higher-order thinking skills is 3.19. Also for the item, whether teachers think they know how to plan to teach Malay or English Language and higher-order thinking skills, the mean for language teaching is 4.11 and for higher-order thinking skills is 3.52. Teachers responded on Likert scale of 1 to 5, with 1 being the value for strongly disagree and 5 being the value for strongly agree. This suggests that for both the items stated above, the Malay and English Language teachers have indicated that their average response is 3.94 or above which means they state their agreement on the items for Malay or English Language teaching. Whereas, their average responses for items on higher-order thinking skills are 3.19 and 3.52 which means that they are more undecided on these items. Also for each of the items pertaining to teachers' perceptions of their knowledge to teach Malay or English Language and higher-order thinking skills, teachers feel they are better prepared to teach Malay or English Language than to teach higher-order thinking skills.

Table 12 also shows that the standard deviation of all items for teaching Malay or English Language is consistently lower than the standard deviation of all items for the teaching of higher-order thinking skills. For the item whether teachers' think they know the details of the curriculum, for example, the standard deviation for language teaching is

.74 and for higher-order thinking skills is .96. The Malay and English Language teachers' responses were consistently more dispersed from the mean for higher-order thinking skills as compared to the teaching of Malay or English Language. T-test results indicate (Table 12) that the Malay and English Language teachers significantly differed in their responses for each of the items for the teaching of Malay or English Language and higher-order thinking skills.

Table 13 shows the composite values of all eight items constituting the knowledge component for teaching Malay or English Language and higher-order thinking skills. The composite mean of all items for teaching Malay or English Language is 3.78 and higher-order thinking skills is 3.33 suggesting teachers rate their perceptions of their knowledge to teach Malay or English Language as higher than their knowledge to teach higher-order thinking skills. The composite standard deviation for all eight items (Table 13) for teaching Malay or English Language is .52 and higher-order thinking skills is .77 suggesting the Malay and English Language teachers are more dispersed from the mean about their perceptions of their knowledge to teach higher-order thinking skills compared to teaching Malay or English Language. This suggests that there is relatively a larger variation in the Malay and English Language teachers' perceptions of their knowledge to higher-order thinking skills as compared to teaching Malay or English Language. There is also a statistically significant difference ($p = .000$) in teachers' perceptions of

their knowledge to teach Malay or English Language and higher-order thinking skills.

Table 13: Malay and English Language teachers' knowledge
(composite - 8 items) to teach Malay or English Language and
Higher-order thinking skills

	Mean	Std. Dev.	t value	Sig (2 - tailed)
Malay and English Language teachers' perceptions of their <u>knowledge</u> to teach Malay or English Language	3.7823	.5245	7.863	.000
Malay and English Language teachers' perceptions of their <u>knowledge</u> to teach higher-order thinking skills	3.3346	.7750		

Key: Responses were on a Likert scale
 1 - Strongly disagree
 5 - Strongly agree

Teachers who participated in this study teach Malay and English Language in form two classes. It was important to investigate whether these teachers who teach two different subjects, Malay and English Language, differed significantly in their responses on their knowledge towards teaching Malay or English Language and higher-order thinking skills.

Table 14: ANOVA of Malay and English Language teachers' knowledge to teach Malay or English Language and Higher-order thinking skills

	Mean Sq.	F Ratio	F Prob.
Malay & English Language teachers' perceptions of their knowledge to <u>teach Malay or English Language</u>	.0144	.0514	.8210
Malay and English Language teachers' perceptions of their knowledge to <u>teach higher-order thinking skills.</u>	1.348	2.273	.134

ANOVA test results (Table 14) suggest that there is no significant difference in the Malay or English Language teachers' responses for teaching Malay or English Language ($p = .8210$) and higher-order thinking skills ($p = .134$). This suggests that the Malay and English Language did not significantly differ in their responses suggesting that they are better prepared in terms of knowledge to teach Malay or English Language as compared to teaching higher-order thinking skills.

Teachers' Perceptions Of Their Pedagogical Skills

Besides knowing what the Malay and English Language teachers perceive of their knowledge to teach Malay or English Language and higher-order thinking skills, it also seems important to investigate what these teachers perceive of their pedagogical skills to teach Malay or

English and higher-order thinking skills. Teachers were requested to provide responses on nine items which cover many aspects including planning a lesson to teach, being able to use different strategies and techniques, using resource materials, involving students in the teaching and learning, and evaluating student improvement (Refer to Appendix A - survey questionnaire). The aim of the items (Refer to Table 15) was to investigate what are teachers' perceptions about their pedagogical skills to teach both Malay or English Language and higher-order thinking skills. It has to be noted that these nine items had an Alpha level of .9511 in the reliability analysis test.

It could be seen (Table 15) that, except for one item, the means of all items for the teaching and learning of Malay or English Language is consistently higher than the means of all items for the teaching of higher-order thinking skills. For example, on the item whether teachers think they are able to plan a lesson to teach for both the Malay or English Language and higher-order thinking skills, the mean for language teaching is 3.99 and for higher-order thinking skills is 3.42. Also for the item, whether teachers think they are able to use different strategies and techniques to teach Malay or English Language and higher-order thinking skills, the mean for language teaching is 3.79 and for higher-order thinking skills is 3.35. The only item where the mean score was higher for the teaching of higher-order thinking skills (3.49) than the teaching of Malay or English Language (3.38) was for the item whether teachers think that they are

able to use resource materials for the effective learning of Malay or English Language and higher-order thinking skills.

Table 15: Teachers' perceptions of their pedagogical skills to teach Malay or English Language and Higher-Order Thinking Skills

		Mean	Std. Dev	t value	sig (2 - tailed)
able to plan a lesson to teach	ML/EL	3.99	.74	6.625	.000
	HOT	3.42	.82		
able to use different strategies and techniques to teach	ML/EL	3.79	.72	6.284	.000
	HOT	3.35	.84		
able to teach ML/EL and HOT using the infusion approach	ML/EL	3.26	.84	3.228	.002
	HOT	3.09	.94		
able to stratify the learning components to the level of students for	ML/EL	3.81	.70	6.673	.000
	HOT	3.36	.93		
able to use resource materials for the effective learning of	ML/EL	3.38	.73	5.638	.000
	HOT	3.49	.88		
able to provide feedback to students for the effective learning of	ML/EL	3.84	.68	5.708	.000
	HOT	3.41	.83		
able to involve students actively in the teaching and learning processes in	ML/EL	3.83	.73	5.858	.000
	HOT	3.42	.94		
able to develop the individual potential of students in	ML/EL	3.61	.76	3.764	.000
	HOT	3.37	.94		
able to evaluate student improvement in	ML/EL	3.71	.71	4.701	.000
	HOT	3.38	.93		

Key: Responses were on a Likert scale
 1 - Strongly disagree
 5 - Strongly agree

Except the responses for one item, teachers' perceptions of their pedagogical skills to teach Malay or English Language and higher-order

thinking skills seem to suggest that teachers feel they are better prepared to teach Malay or English Language than to teach higher-order thinking skills.

The Table 15 also shows that the standard deviation of all items for teaching Malay or English Language is consistently lower than the standard deviation of all items for the teaching of higher-order thinking skills. For the item, for example, whether teachers' think they are able to stratify the learning components to the level of students, the standard deviation for language teaching is .70 and for higher-order thinking skills is .93. Teachers' responses were consistently more dispersed from the mean for higher-order thinking skills as compared to the teaching of Malay or English Language. T-test results indicate (Table 15) that the teachers significantly differed in their responses for each of the items for the teaching of Malay or English Language and higher-order thinking skills.

Table 16 below shows the composite values of all items constituting the pedagogical skills component for teaching Malay or English Language and higher-order thinking skills. The composite mean of all items for teaching Malay or English Language is 3.75 and higher-order thinking skills is 3.36 suggesting teachers rate their perceptions of their pedagogical skills to teach Malay or English Language as higher than their pedagogical skills to teach higher-order thinking skills.. The composite standard deviation for all items for teaching Malay or English

Language is .53 and higher-order thinking skills is .76 suggesting teachers are more dispersed about their perceptions of their pedagogical skills to teach higher-order thinking skills compared to teaching Malay or English Language.. There is also a significant difference ($p = .000$) in teachers' perceptions of their knowledge to teach Malay or English Language and higher-order thinking skills.

Table 16: Malay and English Language teachers' pedagogical skills (composite - 9 items) to teach Malay or English Language and Higher-order thinking skills

	Mean	Std. Dev	t value	Sig (2 - tailed)
Malay and English Language teachers' perceptions of their <u>pedagogical skills</u> to teach Malay or English Language	3.7594	.5393	7.287	.000
Malay and English Language teachers' perceptions of their <u>pedagogical skills</u> to teach higher-order thinking skills	3.3683	.7683		

Key: Responses were on a Likert scale
 1 - Strongly disagree
 5 - Strongly agree

ANOVA test results (Table 17) suggest that there is no significant difference in the Malay or English Language teachers' responses for teaching Malay or English Language ($p = .74$) and higher-order thinking skills ($p = .55$).

Table 17: ANOVA of Malay and English Language teachers' pedagogical skills to teach Malay or English Language and Higher-order thinking skills

	Mean Sq.	F Ratio	F Prob.
Malay & English Language teachers' perceptions of their pedagogical skills to <u>teach Malay or English Language</u>	.0307	.1046	.7470
Malay and English Language teachers' perceptions of their pedagogical skills to <u>teach higher-order thinking skills.</u>	.2108	.3548	.552

This again suggests that the Malay and English Language did not significantly differ in their responses suggesting that they are better prepared in terms of their pedagogical skills to teach Malay or English Language as compared to teaching higher-order thinking skills.

Teachers' Attitude Towards Teaching Malay Or English Language And Higher-Order Thinking Skills

General pedagogical knowledge includes a teacher's knowledge and beliefs about teaching, learning, and learners. When teachers try to learn new instructional practices, as in this case where teachers are expected to teach thinking skills in content instruction, their existing views of teaching and learning and their knowledge of instructional strategies

can have a profound influence on the changes they actually make (Putnam & Borko, 1996).

Teachers were requested to provide responses on eleven items to which reflect their attitude and beliefs towards teaching Malay or English Language and higher-order thinking skills (Refer to Appendix A - survey questionnaire). The items include teachers' perceptions on their responsibilities, satisfaction in teaching, influence on the life of students, the need for teachers to receive continuous training to teach, and what they think of teaching thinking and preparing students for tests and examinations (Refer to table 18). It has to be noted that these eleven items had an Alpha level of .8049 in the reliability analysis test.

It could be seen (Table 18) that the means of all items for the teaching and learning of Malay or English Language is consistently higher than the means of all items for the teaching of higher-order thinking skills. On the item whether teachers find a great deal of satisfaction in teaching for both the Malay or English Language and higher-order thinking skills, for example, the mean for Malay or English Language teaching is 3.51 and for higher-order thinking skills is 3.33. Also for the item, whether teachers think that to be a better teacher one needs continuous training to teach Malay or English Language and higher-order thinking skills, the mean for language teaching is 4.22 and for higher-order thinking skills is 4.05.

Table 18: Teachers' attitude towards teaching Malay or English**Language and Higher-Order Thinking Skills**

		Mean	Std. Dev	t value	sig (2 - tailed
Teachers' responsibilities are confined to the school and its working hours in terms of teaching	ML/EL	2.85	1.31	.324	.747
	HOT	2.82	1.16		
I find a great deal of satisfaction in teaching	ML/EL	3.51	.98	2.877	.005
	HOT	3.33	.90		
I have an important influence in life of my students in terms of teaching	ML/EL	3.46	.90	3.234	.002
	HOT	3.29	.91		
teaching never gets monotonous when teaching	ML/EL	3.51	.90	1.618	.109
	HOT	3.41	.94		
new and better ways of teaching are always being discovered in	ML/EL	3.69	.89	2.130	.036
	HOT	3.49	.89		
is the duty of the teacher to know more on their own for	ML/EL	4.18	.77	4.294	.000
	HOT	3.91	.90		
to be a better teacher one needs continuous training in	ML/EL	4.22	.79	3.378	.001
	HOT	4.05	.87		
A good teacher should adapt the curriculum to the needs of students even if this involves adding more work	ML/EL	4.21	.82	3.770	.000
	HOT	3.96	.86		
A teacher should modify the curriculum for the good of students even if this means not following the established curriculum	ML/EL	4.07	.89	4.777	.000
	HOT	3.77	.99		
I would rather prepare students to face examinations than to teach them the thinking skills. In fact that is what everybody wants	ML/EL	3.10	1.16	1.040	.301
	HOT	3.01	1.05		
I have a problem in preparing students for examinations and at the same time teaching them how to think	ML/EL	3.40	1.10	1.347	.181
	HOT	3.27	1.09		

Key: Responses were on a Likert scale

1 - Strongly disagree

5 - Strongly agree

Teachers' perceptions on all items seem to suggest that they demonstrate better attitude and beliefs to the teaching of Malay or English Language than the teaching of higher-order thinking skills.

However, it has to be noted here that the last two items, "I would rather prepare students to face examinations than to teach them the thinking skills. In fact that is what everybody wants," and "I have problem in preparing students for examinations and at the same time teaching them how to think" were both not very effective in eliciting teachers' responses pertaining to these particular issues. The reason is that these items do not seem to make a clear difference between the teaching of Malay or English Language and higher-order thinking skills. Furthermore, the "I would rather prepare students..." for the teaching of Malay or English and higher-order thinking skills had a correlation coefficient of .683, and the item "I have a problem in preparing..." for the teaching of Malay or English Language and higher-order thinking skills had a correlation coefficient of .808, suggesting that there was a very high correlation between the responses for these items for both the teaching of Malay or English Language and higher-order thinking skills.

Although the mean scores of all items were higher for the teaching of Malay or English Language than higher-order thinking skills, the standard deviation of these items are mixed (Table 18). Unlike the trends in the knowledge and pedagogical components, the standard deviation was lower for the teaching of Malay or English Language than higher-

order thinking skills in five items, equal for both in one item, and was lower for the teaching of higher-order thinking skills in four items.

For items on teachers' responsibilities, finding a great deal of satisfaction in teaching, preferring to prepare students for examinations than to teach thinking skills, and having a problem in both of this, the standard deviation of teachers' responses for Malay or English Language was higher than the standard deviation for higher-order thinking skills. The Malay and English Language teachers' responses for Malay or English Language teaching for these items were more dispersed from the mean suggesting teachers had a bigger range of variations as compared to the teaching of higher-order thinking skills. This could be attributed, once again, to the fact that these items did not really make a difference between the teaching of Malay or English Language and higher-order thinking. In other words, teachers seem not to make a difference between the responses for the teaching of Malay or English Language and higher-order thinking skills. As was stated earlier, the items, "I would rather prepare...", and "I have a problem preparing...", high correlation for both the teaching of Malay or English Language and higher-order thinking skills. Likewise, teachers' responses for items, "Teachers' responsibilities are...", for both the teaching of Malay or English Language and higher-order thinking skills had a correlation of .728, and "I find a great deal of satisfaction...", for both the teaching of Malay or English Language and higher-order thinking skills had a correlation of .724.

Whereas, for items, influence on the life of students, teaching never gets monotonous, duty of the teacher to know more on their own, teacher needs continuous training, adapting the curriculum, and modifying the curriculum, the standard deviation for the teaching of Malay or English Language was lower than that of higher-order thinking skills. This suggests that teachers' responses for these items were spread out much around the mean as compared to the responses for higher-order thinking skills. In other words, the Malay and English Language teachers' perceptions different pedagogical tasks explained by these six items had much less variations in relation to teaching of Malay or English Language as compared to the teaching of higher-order thinking skills. For the items, new and better ways of teaching are always being discovered, the standard deviation was the same for both the teaching of Malay or English Language and higher-order thinking skills.

T-test results indicate (Table 18) that the teachers significantly differed in their responses for seven items for the teaching of Malay or English Language and higher-order thinking skills. Again suggesting that teachers' possessed significantly different and better attitude towards teaching Malay or English Language as compared to the teaching of higher-order thinking skills. However, for four items on teachers' responsibilities ($p = .747$), teaching never gets monotonous ($p = .109$), would rather prepare students for examinations than to teach them thinking skills ($p = .301$) and have a problem preparing students for

examinations and teaching thinking ($p = .181$) teachers did not significantly differ in their responses for the teaching of Malay or English Language and higher-order thinking skills.

Table 19 shows the composite values of all eleven items constituting the attitude component for teaching Malay or English Language and higher-order thinking skills. The composite mean of all items for teaching Malay or English Language is 3.65 and higher-order thinking skills is 3.49, suggesting that teachers have relatively better attitude and beliefs for teaching Malay or English Language as compared to teaching higher-order thinking skills. The composite standard deviation for all items for teaching Malay or English Language is .44 and higher-order thinking skills is .52. Although, there were four items for which the standard deviation was lower for the teaching of higher-order thinking skills than the teaching of Malay or English Language, the composite standard deviation of .44 for Malay or English Language was lower than that of .52 for higher-order thinking skills. This suggests that teachers' responses for attitude towards teaching Malay or English Language, on average, was spread much around the mean as compared to the responses for higher-order thinking skills. There is also a statistically significant difference ($p = .000$) in teachers' attitude towards teaching Malay or English Language and higher-order thinking skills.

Table 19: Malay and English Language teachers' attitude
(composite - 11 items) to teach Malay or English Language and
Higher-order thinking skills

	Mean	Std. Dev	t value	Sig (2 - tailed)
Malay and English Language teachers' <u>attitude</u> towards teaching Malay or English Language	3.6514	.4369	3.774	.000
Malay and English Language teachers' <u>attitude</u> towards teaching higher-order thinking skills	3.4937	.5231		

Key: Responses were on a Likert scale
 1 - Strongly disagree
 5 - Strongly agree

ANOVA test results (Table 20) suggest that there is no significant difference in the Malay or English Language teachers' responses for teaching higher-order thinking skills ($p = .236$). However, it seems interesting to note that the Malay and English Language teachers significantly differed ($p = .005$) in their responses to items suggesting their attitude for the teaching of Malay and English Language.

Table 20: ANOVA of Malay and English Language teachers' attitude for teaching Malay or English Language and Higher-order thinking skills

	Mean Sq.	F Ratio	F Prob.
Malay & English Language teachers' attitude towards teaching <u>Malay or English Language</u>	1.440	8.330	.005
Malay and English Language teachers' attitude towards teaching <u>higher-order thinking skills.</u>	.387	1.422	.236

On the whole, it seems that the Malay and English Language teachers significantly differed in their perceptions of their attitude as explained by these eleven items for the teaching of Malay and English Languages. Although the Malay and English Language teachers differed significantly in their responses for items reflecting their attitudes for the teaching of Malay and English Language, they did not significantly differ in their responses for higher-order thinking skills, suggesting that they have a better attitude towards teaching Malay or English Language as compared to the teaching of higher-order thinking skills.

Are There Any Factors Influencing Teachers' Perceptions Of Their Knowledge, Skills And Attitude?

Multivariate tests of significance were conducted on teachers' perceptions of their knowledge, pedagogical skills and attitude towards teaching Malay or English Language and higher-order thinking skills (Refer to Appendix C - Multivariate tests of significance). Six background variables: sex (VR02); subject taught (VR03); number of years of teaching (VR04); academic qualification (VR05); professional qualification (VR06); and training to teach higher-order thinking skills (VR07) were tested for their influence on teachers' perceptions of their knowledge, pedagogical skills, and attitude.

Except for the variable the number of years of teaching, other variables sex, the different school subjects taught, academic qualifications, professional qualifications, and training to teach higher-order thinking skills did not have significant influence on teachers' perceptions of their knowledge, skills and attitudes towards teaching Malay or English Language and higher-order thinking skills. What seems surprising in this is that teachers' training to teach higher-order thinking skills, in which case, 41.3 percent of the teachers have informed that they did not receive any form of training to teach higher-order thinking skills, did not have a significant influence on how teachers perceive their preparedness to teach Malay or English Language and higher-order thinking skills. It seems that whether or not these teachers had some kind

of training (41.3 percent), or did not receive any kind of training (58.7 percent) to teach higher-order thinking skills did not have any significant influence in their perceptions of their knowledge, skills and attitude, especially for the teaching of higher-order thinking skills.

The only variable which had a significant influence on teachers' perceptions was the years of teaching. Even in this case, the number of years the teachers have been teaching has had significant influence on only on teachers' perceptions of their knowledge (Refer to Appendix C - categories A1 - $p = .013$ and A2 - $p = .029$), and pedagogical skills (Refer to Appendix C - categories B1 - $p = .002$ and B2 - $p = .008$) to teach Malay or English Language and higher-order thinking skills. The number of years the teachers have been teaching did not have a significant influence on teachers' attitude towards teaching both Malay or English Language (C1 - $p = .305$) and higher-order thinking skills (C2 - $p = .898$).

What Percentage Of Their Class Time Do Teachers Allocate For The Teaching Of Higher-Order Thinking Skills?

Teachers were requested to state the percentage of time they allocate for the teaching of Malay or English Language and higher-order thinking skills using the infusion approach in a medium standard form two Malay or English Language. The aim of this item was to investigate the common practices among form two Malay and English Language teachers

in the Perdana School District pertaining to the teaching of higher-order thinking skills.

It could be seen from the Table 21 below that among teachers in this school district, 26 percent of the teachers indicated that they do not allocate any of the class time for the teaching of Malay or English Language and higher-order thinking skills using the infusion approach. Another 52.1 percent of the teachers suggested that they use 10 percent or less of the class time for teaching higher-order thinking skills.

Table 21: Percentage of class time allocated for teaching content and higher-order thinking skills using the infusion approach

Percentage of class time (35/70 mins)	Frequency	Percentage
0	27	26.0
1 - 10	54	52.1
11 - 20	17	16.3
21 - 30	1	1.0
31 - 40	1	1.0
41 - 100	1	1.0
Missing	3	2.9
Total	104	100

Among the teachers, 16.3 percent of them suggested that they allocate between 11 to 20 percent of the class time for the teaching content and higher-order thinking skills using the infusion approach. In other words, 77.7 percent or more than three-fourths of all Malay and English Language teachers in the Perdana School District allocate 10 percent or less of the class time to teach Malay or English Language and higher-order thinking skills using the infusion approach.

Analytic Summary

The form two Malay and English Language teachers in the Perdana School District perceive that they are better prepared in terms of their knowledge, pedagogical skills, and attitude to teach Malay or English Language as compared to teaching higher-order thinking skills. Their perceptions are significantly different for the teaching of Malay or English Language as compared to the teaching of higher-order thinking skills. Yet, they are expected to teach both the content and higher-order thinking skills in their classrooms. More importantly, they expected to teach both the content and higher-order thinking skills using the infusion approach.

Data presented above suggest that these teachers perceive that they lack in at least two of the four categories (Grossman, 1990) required to construct the pedagogical content knowledge, the overarching conception of teaching a subject, and in the knowledge of instructional strategies and representations for teaching particular topics, especially in higher-order thinking skills. The other two categories, knowledge of students' understandings and potential misunderstandings, and knowledge of curriculum and curriculum materials were not adequately investigated in this study. There seems to be sufficient data, however, to suggest that teachers lack in the first two categories. Given this situation, it is no surprise that they find it difficult to construct the pedagogical

content knowledge to teach higher-order thinking skills. Numerous writers have argued that teaching that emphasizes student understanding, reasoning, and problem solving requires richer and more flexible understandings of subject matter (Cohen, 1988b).

As a result, as has been indicated by these teachers who are required to teach higher-order thinking skills in their content instruction, 26 percent of them do not allocate any class time to do this, and 77.7 percent of the teachers allocate 10 percent or less of their class time to do this in their classrooms. Even if they do attempt to teach, one could see the complex problems they face in their own classrooms, like in the case of Ambiga and Aishah.

The basic problem seems to be that they are not adequately prepared to make this innovation in their classrooms. It seems that there has to be a comprehensive approach in preparing teachers to carry out such innovations in their classrooms. Providing the 'sit and get' type of courses certainly do not seem to make a difference. Although 59 percent of the teachers have received some form of training to teach higher-order thinking skills, and the rest of 41 percent of the teachers did not receive any training to teach higher-order thinking skills, this did not seem to have significantly influenced their perceptions of their knowledge, pedagogical skills, and attitude to teach Malay or English Language and higher-order thinking skills. It seems that the 60 percent of the teachers who received their training may not even think that they are better prepared than those

who did not receive any training to teach higher-order thinking skills. A close analysis of Ambiga and Aishah seems to provide much more information to understand how teachers grapple with this and many other issues. There also seems to be a real need to help all teachers learn, more so for those who have taught for more than 10 years, about this new reform and ultimately make changes in their practices in their classrooms.

Chapter 6

THE NEED FOR TRANSFORMATION

This study investigated the teaching of higher-order thinking skills in form two Malay and English language classes. It also investigated teachers' perceptions of their preparedness to implement this innovation in terms of their knowledge, pedagogical skills and attitude. Teachers in the form two Malay and English Language classes in the Perdana School District were expected by reformers to infuse higher-order thinking skills in their content instruction. Data from this investigation suggests that they are not yet prepared to perform this innovation in their classrooms. Although they seem confident and able to teach the subject matter they are teaching, data from this investigation suggests that even in the teaching of Malay and English Language there are weaknesses in their practices. What seems even more problematic is that teachers do not feel prepared to integrate the teaching of higher-order thinking in their Malay or English Language classrooms. Teachers see these two components: teaching higher-order thinking; and subject matter, as different and separate.

As a result of this, to a large extent, the kind of teaching that goes on in the classrooms investigated seems to be distinctively different from what is expected for the promotion of higher-order thinking skills in

language classrooms. As Anderson (1989) has argued, most current reform efforts, including this one, are grounded in a 'cognitive-mediational' conception, where learners are viewed as active problem solvers who construct their own knowledge and the teacher is responsible for stimulating students' cognitive activities needed for learning. She also argues that this conception is quite different from a 'receptive-accrual' view, often implicit in direct instruction models of teaching, in which learning is a matter of receiving and practicing information and skills presented by the teacher. What goes on in the classrooms investigated seems to be largely on the 'receptive-accrual' type.

Why Is It Difficult To Change?

Various reasons seem to have contributed towards this state of teaching and learning in these classrooms. Some of them are contributed by the teachers themselves, and there are other factors which are contributed by various other players. Although the reformers at the Ministry of Education seem to have a clear objective when mandating the teaching of higher-order thinking skills in schools, they may have failed to help teachers integrate old and new approaches to teaching subject matter which includes higher-order thinking skills. This integration seems more urgent as there are attempts by the Ministry of Education to make at least 60 percent of the national examination questions by the year 2000 to

require critical thinking and problem solving abilities of students. The problem, however, seems to be that teachers have been left alone to face a number of dilemmas in their efforts to integrate higher-order thinking skills in their content instruction.

Issues of Teacher Learning

Reformers often assume that if directives are issued, implementation should follow (Elmore, 1993; Cohen & Spillane, 1993). Reform, however, is a learning process for all teachers and reformers. Thus a number of questions need to be raised if the objectives of the reform are to be attained.

Teachers' preparedness to teach higher-order thinking skills.

After the reform was initiated, teachers in Malaysian classrooms were expected to teach higher-order thinking skills in their content instruction. They were expected to infuse higher-order thinking skills in their Malay or English Language teaching. But little preparation for teachers to acquire the necessary knowledge and skills, lack of exemplary models, and on-going guidance for teachers have made this goal difficult to reach by many.

The curricular documents prepared by the Ministry of Education state clearly the objectives of teaching thinking (Curriculum Development Center, 1993). There are also documents which contain some of the

strategies, techniques, activities, and model lesson plans which could be used by teachers in the teaching of higher-order thinking skills in content instruction (Curriculum Development Center, 1994). However, little or no attention was given towards understanding what it takes for teachers to make dramatic changes in their practices as required by this innovation.

Although the basic curricular documents had been prepared, and some basic training had been provided, other aspects such as the dissemination of information to teachers in the centralized educational system, structure of schools and the politics which go with it, teacher incentives, and other support systems for teachers to continue to learn to make the necessary changes in their practices were not dealt with adequately. Specifically, the complex issue of teachers having to make dramatic changes in their practice was not given the necessary attention.

In spite of the seemingly clear guidelines given by the Ministry of Education, findings of this study and another study conducted by the Teacher Education Division of the Ministry of Education discussed earlier (Teacher Education Division, 1995) suggest that teachers find it hard to carry out this task in their classrooms. It is possible that by seriously listening to teachers' concerns this intervention may be fine-tuned. In this investigation, teachers have suggested that they perceive their preparedness in terms of their subject matter knowledge, skills and attitude to teach Malay or English to be significantly different from teaching higher-order thinking skills, an argument that suggests that

teachers see as separate the teaching of subject matter and higher-order thinking skills. They have suggested that they are prepared to teach Malay or English Language, but not higher-order thinking skills. This was also evident in the classes observed. Part of the reason for teachers' confusion is that the reform also conceptualized language teaching as separate from the teaching of higher-order thinking as if one could be divorced from the other. The segmentation of the innovation regarding expectations from teachers has impeded until now the consolidation of subject matter learning for critical thinking and understanding in Malaysia.

Because this is a complex innovation which requires teachers to do what they have never done before, the Ministry of Education needs to provide clear examples to themselves and to teachers of how this new approach to teaching looks like in practice. It would be a costly mistake to expect teachers to integrate thinking skills in content instruction by themselves based on unclear mandates for change.

Reformers need to understand that teachers need to possess the necessary requirements of the four categories suggested by Grossman (1990) for both the Malay or English language and thinking skills to be able to teach thinking skills in language instruction. Based on the data available in this study teachers lack in at least two categories, particularly in thinking skills, required for constructing the pedagogical content knowledge to teach thinking skills. First, teachers' knowledge and beliefs about the nature of the higher-order thinking skills, and what is important

for students to learn, and second, knowledge of instructional strategies and representations for teaching particular thinking skills. As such, teachers found it hard to construct the pedagogical content knowledge necessary to teach higher-order thinking skills in their Malay or English Language classrooms.

As a consequence of this, more than three-fourths of the teachers by their own admission allocate 10 percent or less of the time to teach thinking skills. It could be said that from the observations of the Malay and English Language classrooms, the percentage of the class time used to promote thinking skills is similar to that. What seems even more problematic is that 26 percent of all teachers have indicated that they do not allocate any class time to teach thinking skills in their content instruction. A result indicating the conceptualization of subject matter and higher-order thinking as separate entities.

Besides the unclear reform mandates, other reasons seem to contribute towards the present state where majority of the teachers, both believe that they are not prepared and are actually not able to infuse higher-order thinking skills in their Malay or English Language instruction. In the case of Ambiga and Aishah, it was seen that their pre-service teacher education did not prepare them adequately to perform this important task. Their teacher educators did not themselves try to infuse higher-order thinking skills in their own Malay or English Language instruction. The in-house training they received too did not help them

overcome many of the issues they are facing in trying to integrate higher-order thinking skills in their Malay or English Language instruction. For example, generic thinking skills were explained in the in-house training and teachers were left on their own to figure out how to integrate thinking skills in content instruction. Whatever the reason may be, the sure thing seems to be that Aishah, Ambiga and majority of others in Perdana School District are left in a dilemma of having to carry out a task for which they are not prepared for.

A more serious problem here seems to be that teachers like Aishah and Ambiga are not even aware that the implementation of the innovation requires them to change their practice in dramatic ways. In the case of Aishah and Ambiga, they seem to feel content with the kind of practices they are doing in their classrooms. They do not seem to recognize the distinctive features of pedagogical practices which are required by this particular reform as compared to their present practices. In the kind of teaching practices expected in their classrooms, students must spend the larger part of their time with activities that ask them to generalize, find new examples, carry out applications, and work through other understanding performances (Perkins, 1993). And they must do so in a thoughtful way, with appropriate feedback to help them perform better.

To make the changes being asked of them, teachers must reflect deeply and critically on their own teaching practice, on the content they teach, and on the experiences and backgrounds of the learners in their

classrooms. They must become more adventurous to engage in the kinds of ambitious teaching being called for (Cohen, 1988b). As Cohen (1988, cited in Prawat, 1992) points out, "Teachers who take this path must work harder, concentrate more, and embrace larger pedagogical responsibilities than if they only assigned text chapters and seatwork" (p.357). There obviously seems to be a clear dissonance between the kind of pedagogical practices the ministry is requiring teachers to do, the way the Ministry has attempted to implement the reform, and the kind of practices teachers think are necessary to promote higher-order thinking skills in their content instruction.

Teachers' own orientations towards teaching.

When teachers try to learn new instructional practices, their existing views of teaching and learning and their existing knowledge of instructional strategies can have a profound influence on the changes they actually make (Putnam & Borko, In Press). In this investigation, where teachers are expected to change their practice distinctively from what they have been doing to teach higher-order thinking skills in their Malay or English Language classrooms, this question seems very pertinent. It seems important to investigate whether teachers see themselves as assuming the traditional role as "knowledge transmitters" or more of a facilitatory role in a constructivist approach to teaching and learning.

Observations of how Aishah and Ambiga teach in their classes seem to suggest that they too like a majority of the teachers assume the role of 'knowledge transmitters' (Cuban, 1984; Sternberg and Martin, 1988). They very often play the predominant role in the classroom. They seem to perceive that they have a duty to impart knowledge to students. Teachers are also content in having students as passive recipients of information relayed to them. As Sternberg and Martin (1988) point out, teachers conduct such practices without even realizing that it works against creating more participatory roles for students or in providing opportunities to students to wrestle with higher-order thinking situations in their classrooms. Even if they realize that they seem to be not providing the right opportunities to students to play an active role in the teaching and learning processes in which, like Beyer (1987) suggests, "the teaching and learning of thinking exists where student and teacher thinking occur continuously, where learning activities regularly require thinking, and where students and teachers frequently reflect on and discuss on their thinking" (p.66), they may not be able to change their practices for at least for one reason. That is their own orientations towards teaching and learning.

How Aishah and Ambiga got their orientations towards teaching is certainly an issue. How they learned from their own teachers in schools, and how they were taught by their teacher educators seem to have influenced their beliefs about their role in their classrooms. Evidently

teacher education did not change teachers' beliefs acquired through the long apprenticeships of observation (Lortie, 1975). Their teacher educators too did not seem to have played role-models for the 'cognitive-mediational' model. All this become evident from observations of how they teach in their classrooms, and how they perceive their preparedness to teach higher-order thinking skills in content instruction. It seems no surprise that teachers find it hard to change their current practices.

Another outcome of such practices is that teachers seem very interested in getting only the 'right' responses from students. This works antithetical to creating a situation in the classroom for students to speculate, analyze, and evaluate the given information. This emphasis, without doubt, is related to how examination questions are organized in schools and in national examinations, at least for now. The other reason is related to how teachers and students view knowledge. Most of the activities in their classrooms are geared towards students getting the 'right' answers. Knowledge is not seen as a human construction but as a static event. Writing a composition, for example, which is a different type of activity, however, is not done as often as it should be in these classrooms. What this entails is that students are orientated towards configuring their understandings of meanings into two realms - right versus wrong; and good versus bad (Perry, 1988). Instead, to encourage thinking, teachers may need to guide students towards multiplicity, diversity of opinion and values recognized as legitimate in areas where

right or wrong answers are not yet known, or guide students towards diversity of opinion, values, and judgment derived from coherent sources, evidence, logic, systems, and patterns allowing for analysis and comparison (Perry, 1988).

Common practices in Aishah and Ambiga's classrooms seem to be an outcome of a larger problem too, that is how teachers conceptualize knowing. That is, the epistemological beliefs about the process by which one comes to know. This includes the beliefs about the source of knowledge and the justification for knowing, which includes evaluation of evidence, the role of authority, and the process of justification (Hofer and Pintrich, 1997). As suggested by Hofer and Pintrich, it is generally assumed that knowledge originates outside the self and resides in external authority, from whom it may be transmitted. The evolving conception of self as knower, with the ability to construct knowledge in interaction with others, is a developmental turning point of most recent models. Obviously, many seem not to be prepared to accept this recent phenomena. This belief, that knowledge originates outside self, which obviously influences teachers' practices in classrooms, certainly works against creating a conducive learning environment in the classrooms where students are expected to play an active role in the meaning making progress. This is particularly so for the integration of higher-order thinking skills in Malay or English Language instruction.

Myths about teaching thinking.

There seems to be at least three myths which inhibit the teaching of thinking in Malaysian classrooms. First, there is the myth that when one has high IQ he or she can think well. Research suggests that this is not true. Gardner (1993) suggests that there are multiple intelligences which include linguistic and logical; spatial ; musical; bodily kinesthetic; and two forms of personal intelligence - one oriented toward understanding of other persons, the other toward understanding of oneself. More recently, Goleman (1995), drawing on important findings on brain and behavioral research, show factors at work when people of high IQ flounder and those of modest IQ do surprisingly well. These factors add up to a different way of being smart - one Goleman terms "emotional intelligence" (p.35).

A closely related problem is teachers' belief that only students in higher level classes are capable of performing tasks involving higher-order thinking. This kind of belief discriminates students in lower level classes from benefiting from classroom activities which require higher cognitive operations. Contrary to what many teachers believe, even students in the lower level classes have demonstrated their capability to involve themselves in higher-order thinking activities as was seen in the case of the problem solving activity.

A second myth is that imparting subject matter content is sufficient to improve student thinking. This belief stems from the assumption that

good thinking will be a by-product of acquiring subject matter knowledge, denying the need to shape subject matter knowledge within a higher-order thinking framework in what Shulman (1986; 1987) calls pedagogical content knowledge. This results in teachers not seeing the need to make significant changes in their current practices: thinking skills instruction is seen as something that one can add on or subtract without altering too much what goes on in classrooms. There is overwhelming evidence now requiring the need to provide more explicit attention to the teaching of thinking skills in content instruction than assuming that it will naturally happen in the teaching of subject matter content.

The third myth among teachers is that effective thinking will evolve with extensive reading, traveling, and doing lots of writing assignments. There is no doubt that these activities would help improve one's thinking abilities. But they are means to an end, and not the end themselves. Accepting them as sufficient requirements to improve students' thinking, without even considering the quality of what students read and write, creates a real problem.

Opportunities for teachers to learn to teach.

Given the situation where teachers are not adequately prepared to implement the innovation in their own classrooms, the obvious question seems to be, are there other opportunities for teachers to change their practices? Are there opportunities for teachers to discuss this important

innovation with their colleagues? Are there opportunities for these teachers to access resource materials in the schools or in the district? What support do they receive from the school administrations, the in-service training programs or the Ministry of Education?

Ambiga suggested that she had never discussed with her colleagues the reform mandate to infuse higher-order thinking skills in her English Language teaching. She suggested that there was no discussion among English Language teachers at form two level in her school even after the in-house training where, as she confessed, this problem was also not discussed (Teacher interview, 9T1A9). Aishah too suggests that there is no opportunity for her to discuss with her colleagues in her school about the teaching of higher-order thinking skills in her Malay Language classrooms. She suggests that the only person who knows something about teaching thinking skills, in her opinion, is the one teacher who attended a short course organized by the State Education Department. She is the teacher who conducted the in-house training in the school. Again, in her opinion, this teacher herself is not confident about teaching thinking skills in content instruction (Teacher interview, 1T2A4).

There could be many reasons as to why there are no discussions among teachers about this very important innovation in their schools. One of the reasons, as has been pointed out by Aishah, is that teachers believe that they are all in the same position of not knowing how to infuse thinking skills in content instruction. They seem to believe that only after

someone has attended a course on teaching thinking skills they will have something to contribute. And this observation may not be too far off since written mandates mean little in practice. Data from this study shows that, contrary to what these two teachers believe, 59 percent of the teachers involved in this study have received some kind of training to teach higher-order thinking skills. Paradoxically, whether teachers got to attend any one of these courses or not, did not seem to matter in how they think of their abilities in teaching higher-order thinking skills. Teachers like Aishah and Ambiga do not seem to believe that talking to other colleagues, although they might not have attended any courses, may help to figure out a number of things pertaining to infusing thinking skills in their content instruction. Knowing that teachers do not form collegial communities to learn from each other spontaneously, there needs to be support systems, including incentives for teachers, to promote such a culture among teachers.

The other reason is that teachers also find it hard to have the time to discuss educational innovations. Although teachers like Ambiga seem to like the idea of getting together to talk about new ways of teaching, the day-to-day school routines make it difficult for them to find the time to talk about new innovations like this one. Ambiga, for example, suggested that although she likes the idea of having discussions with her colleagues about making this innovation in her classrooms, finding a suitable time to

get teachers together is extremely difficult, and as such she thinks that it cannot be carried out (Teacher interview, 9T1C26).

Teachers also suggest that they already have so many routine responsibilities that they find it hard to explore what the teaching of higher-order thinking skills in their Malay or English Language classrooms would entail. They see the routine duties they are already performing as basic and mandatory. They consider the teaching of Malay or English Language as separate and more important over the teaching of higher-order thinking skills. For this reason, Ambiga suggested, "They want us to teach thinking skills. But don't expect us to do it by ourselves. We have other things to do" (Teacher interview, 9T1C19).

Besides having no opportunities to discuss with colleagues what it means to teach Malay or English Language within a higher-order thinking skills framework, Ambiga and Aishah said that another problem in the process of learning to conduct this specific task is that there are no resource materials like reference books available to them for guidance. They believe that they could use resource materials to learn more about integrating higher-order thinking skills in their content instruction. To a question whether there are resource materials on this subject available for teachers to read, Aishah suggested, "there were none in her school, including the school library" (Teacher interview, 9T2B11). Zaiton, who is the key personnel for providing training to teachers to implement this innovation, also suggests that, "There are no resource materials. I think

even the district as whole does not have any relevant resource materials” (Interview, 9ZAL17).

In summary, as a result of the poor conceptualization of the innovation teachers view higher-order thinking skills separate from subject matter. Teachers have not been adequately prepared to teach higher-order thinking skills in their Malay or English Language classrooms. Teachers also do not seem to have the opportunities to discuss the innovation with their colleagues and learn in the process. To make this problem even more complicated, there are also no relevant resource materials available which the teachers could use to read more about infusing higher-order thinking skills in their Malay or English Language instruction. The few guidelines prepared so far have proved insufficient. Yet, they are expected to carry out the innovation in their classrooms. A closer examination of the curriculum may help provide some needed solutions.

Issues of curricular requirements and students

Centralized curriculum.

Teachers use a centralized curriculum for all subjects. Teachers are provided with the respective syllabus and curriculum specifications for each of the subjects, and also the textbooks for them to plan and teach in their classrooms. Sometimes even the semester and weekly plans for

each of these subjects are coordinated and standardized at the district level. Besides this, individual teacher's phase of teaching needs to be in line with others in the school and elsewhere to ensure the students have completed the necessary skills to sit for their school and national examinations.

Teachers make their weekly and daily plans using the various documents given to them and also considering the many aspects stated above. Teachers are in constant pressure to keep up with the phase to ensure that students get to do the necessary activities in the classrooms to face examinations, not to mention having to manage the average of 40 students in each of their classrooms. They also have to shoulder many other responsibilities besides planning and teaching in classrooms.

What this entails is that teachers seem to be left with little room to implement innovations in their classrooms. Although the teaching of higher-order thinking skills is required in all classrooms, teachers seem to have very little or no space to accommodate the changes required by this innovation. The freedom to plan and teach higher-order thinking skills in their content instruction based on the individual progress of each of the students and classes could not be done as is proposed given the curricular requirements guiding the teaching and learning in schools. Also, extending language instruction to include higher-order thinking skills demands considerable amount of flexibility in teaching in the classrooms for students could play an active role. Bereiter and Scardamalia (1987),

for example, suggest that students be prepared to gradually take over all the goal-setting, context-creating, motivational, analytical, and inferential actions. Teachers, however, to fulfill the curricular requirements, feel more comfortable having a fixed structure to conform to these needs, rather than accommodating the curriculum to the innovation.

Another important issue related to the curricular requirements is that the Integrated Curriculum For Secondary School was formulated in 1988 with one of its thirteen objectives for teaching thinking skills. The individual syllabi, curriculum specifications and textbooks for each school subject were prepared based on this curriculum. More explicit attempts to teach thinking skills were introduced in 1993. The outcome of this is that there are no separate categories for thinking skills in the individual syllabi, curriculum specifications, or the textbooks. For language instruction, for example, the categories listed include listening and speaking, reading, and writing. Since thinking skills are not stated as separate categories like the other language components, teachers seem to pay little attention to thinking skills in their planning and teaching.

Preparing students for tests and examinations.

Another important curricular requirement is preparing students for tests and examinations. Through my survey questionnaire I found that over 40 percent of the teachers agreed that it is a problem to prepare students for examinations and at the same time teach them how to think

(Refer to Appendix B - Table 23). Almost the same number of teachers suggested that they are not sure whether it is a problem. Only one fifth of all teachers who participated in the study disagreed that teaching thinking and preparing students for examinations is a problem for them. In other words, 80 percent of form two Malay and English Language teachers in the Perdana School District agreed or were not sure whether teaching thinking skills and preparing students for examinations is a problem.

To investigate, in light of such a dilemma, what teachers prefer to do in their own classrooms, they were asked whether they “would rather prepare students to face examinations than to teach them the thinking skills. In fact that is what everybody wants.” More than one-third of the teachers agreed that they would rather teach them to face examinations than to teach them thinking skills (Refer to Appendix B - Table 24).

Slightly more than 30 percent of the teachers were not sure whether they would teach them to face examinations than to teach them thinking skills, suggesting they are in a real dilemma. The other third disagreed that they would rather prepare students to face examinations than to teach them thinking skills. This could be one of the reasons why more than three-fourths of the teachers have admitted that they allocate 10 percent or less of the time to teach thinking skills in content instruction as discussed earlier.

There are a number of questions which arise from such a dilemma faced by teachers teaching higher-order thinking skills in their form two

Malay or English Language classrooms. First, Malaysia's education system is a very examination-oriented system. Students at the primary level sit for national examinations at the end of year three and year six, although the examination at the end of year three is optional. Students also sit for mandatory national examinations at the end of year nine, and year eleven. Students sit for a very important Malaysian Certificate of Education examination at the end of year eleven. All these examinations, without doubt, put tremendous pressure on students, teachers, and parents.

The outcome seems to be that preparing students for examinations becomes the most important aspect of schooling. This is a problem almost everyone including researchers, policy makers, and teachers everywhere seem to encounter. In this respect, Gardner (1993) suggests, "I believe that in our society we suffer from three biases, which I have nicknamed "Westist," "Testist," and "Bestist" (p.12). He is concerned about the importance given to tests in educational systems. It will be ideal if students are prepared to become good test takers and at the same time better thinkers. It will also be exciting to see teachers doing both of these successfully in the classrooms. However, it does not seem to be the case most of the time.

Parents also play an extensive part in determining what is given importance by teachers in schools. Aishah, who teaches Malay Language in her form two classes, suggests that besides examinations, what

parents want schools to do affects the teaching of higher-order thinking skills. She suggests that parents, first and foremost, want their children to pass the examinations. In her opinion, parents come and ask teachers why their children did not pass an examination (Teacher interview, 9T2B14). In her opinion, parents do not give much importance to the teaching of thinking, and they do not seem to be concerned whether their children are or are not taught higher-order thinking skills.

A related issue is that teachers are left on their own to handle the tension between curricular objectives and parents' desires in their classrooms. Ambiga who teaches English Language in form two classes also suggested that parents are more concerned about the examination results as proxy for learning. She also suggests that "What they [parents] want is, okay they send their children to school what I [parents] want from you [teachers] is [to] get As, that's it" (Teacher interview, 9T1C9). As suggested by Aishah and Ambiga, parents are only interested in their children getting good grades in the tests. As a result of this, teachers are compelled to teach them to face examinations.

Another related issue is who else contributes to tension around school examinations. The Ministry of Education adopts the policy of using examinations for the purpose of improving practice in schools. This certainly seems to be a commendable goal and does not directly contradict the implementation of the thinking skills. The Ministry of Education expects that if examination questions are gradually changed to

thinking skills questions requiring students to use their critical thinking and reasoning skills, teachers will give serious attention to the teaching of these skills. In this respect, Bakar from the Curriculum Development Center suggested that, "The examination questions requiring thinking skills will be gradually increased to 60 percent. So when, so when the thinking skills you know, are in the examination questions then the teachers will see the need for it" (Interview, 9JOS3A).

In summary, It seems to be the belief that only when the examination questions are changed to require students to apply critical thinking to answer examination questions, teachers will change their focus from emphasizing memorizing skills to teaching many thinking skills, versus the current emphasis on rote learning.

Students and their expectations.

Language proficiency of students seems to be an important criteria for students to follow and actively participate in the teaching and learning processes. As has been stated earlier, the Malay Language classrooms have the Chinese and Indian students who are non-native speakers of the language. In the English Language classrooms, all the Malay, Chinese or Indian students are non-native speakers. Furthermore, there seems to be vast differences in language proficiency between students in the higher and lower level classes for both Malay and English Language.

Comparatively, students', even for the non-native speakers, command of

their Malay Language is better than their command of their English Language. These variations in linguistic abilities among students make it hard for teachers to involve all students in activities in the way required for the integration of thinking skills in language instruction.

Teachers are asked to teach higher-order thinking skills and conduct activities which involve the use of complex cognitive abilities like analyzing, making inferences, creating original communications, in a context where there are so many variations among students. Ambiga who teaches English Language suggests, “half of my 21 [a lower level English Language class] are illiterate. They can’t read anything in English Language” (Teacher interview, 9T1A4). She argues that she faces immense problems teaching these classes where the students’ proficiency in English Language is very low. That obviously seems to inhibit their active participation in the class activities to a large extent.

However, Aishah suggests that students do not participate enough in the processes because, “they do not have enough exposure. They are shy to stand up or even to stand in front of the class. They have not been exposed enough in this” (Teacher interview, 9T2A8). In that respect, she also suggests that because of lack of exposure and the traditionally passive role accorded to students, students often expect teachers to provide the answers. She suggests that students believe, “Teacher surely knows answers for questions. So [she should] just tell that” (Teacher interview, 8T2B4). The students too seem to support what Aishah has

suggested. Even students from a higher level English Language class suggest that they would like to avoid having to answer questions because they are shy to stand up or going in front of the class (Student interview, 9S1B12).

The students may be justified in their reluctance to participate as the typical learning environment in Malaysian classrooms is not conducive to free discussion or exposition of ideas, and allows students to ridicule others who take the risk to participate. This fact of life in Malaysian classrooms need to change if teachers and reformers aim to build a conducive environment for teaching and learning thinking skills.

In summary, there are a number of reasons that discourage students from taking active part in the teaching and learning processes in the class. The main reasons for this situation, seem to be the low proficiency in the languages, being afraid to make mistakes, expecting teachers to provide answers, and being 'booed' by their friends in the class. Cultural practices in majority homes, such as discouraging children from involving in discussions, too do not seem to support the kind of participation required for the teaching of higher-order thinking skills.

Implications

Teaching thinking in content instruction in Malaysia is certainly a move in the right direction. This is in line with worldwide attempts being

made to include thinking in the school curriculum for all children (Resnick, 1987). The teaching of thinking is now beginning to become a part of the curriculum in both elementary and secondary schools (Collins and Mangieri, 1992). However, as Collins and Mangieri suggest, many teachers know little about thinking. It has not been part of their own education. In that respect, findings of this investigation bring implications to further improve the teaching of higher-order thinking skills in Malaysian schools. The implications will be divided into three categories: implications for policy makers; implications for practice; and implications for further research.

Implications for Policy

There is a serious need to streamline the program for teaching thinking in teacher education colleges and in schools. Right now there are significant differences between the approaches adopted by the Teacher Education Division which prepares teachers for schools, and the Curriculum Development Center which is responsible for the implementation of the innovation in schools. Better coherence in the programs adopted by these agencies and better cooperation among themselves and with teachers in the implementation will go a long way in improving the numerous problems faced by teachers.

However, as was seen in this study, it is important that the way curriculum is changed and the way those changes are introduced take

into consideration the extent to which the curriculum is accepted within the school and the community. Consequently, educators increasingly argue that involving the community in curriculum development is important in building support for such changes.

Wheeler, McDonough, Gallagher, Sookpokakit & Duongsa (In Chapman, D. W. & Mahlick, L. O, 1996, March), for example, describe a model that has worked successfully in Thailand for bringing community members into the instructional activities of the school through a top down initiative to encourage local community participation. The Thai example presents a different model of in-service teacher training and a different view of teacher-community communications that may work in Malaysian classrooms. Besides improving the in-service training for teachers, this model could bring parents closer to understanding the innovations in classrooms which could result in parents complementing efforts taken by teachers.

Teacher education programs, both the pre-service and in-service approaches, need to further emphasize the importance of preparing teachers to be able to construct the pedagogical content knowledge to teach higher-order thinking skills in content instruction. The focus of these programs has to be on at least four categories (Grossman, 1990): teachers' overarching conceptions of teaching higher-order thinking skills in their knowledge and beliefs about the nature of the subject and what is important for students to learn; knowledge of instructional strategies and

representations for teaching particular topics; knowledge of students' understandings and potential misunderstandings in higher-order thinking skills; and knowledge of curriculum and curriculum materials, which includes familiarity with the range of textbooks and other instructional materials available for teaching various topics (Putnam & Borko, In Press).

Teachers in this case need to fulfill the requirements of the four categories for both Malay or English Language and higher-order thinking skills to be able to construct the pedagogical content knowledge to teach them successfully in their classrooms. However, the need seems more so for higher-order thinking skills. The teaching of higher-order thinking skills need to be contextualized in the specific subjects such as Malay or English Language and not provided as generic skills, separate from the subject matter content. In other words, it is important to develop subject-specific pedagogical practices for teaching higher-order thinking skills in Malay or English Language classrooms, and even across the curriculum. Teacher educators should model the teaching of higher-order thinking skills in Malay or English Language classrooms as they expect teachers to teach their students in their own classrooms.

Curricular documents such as the individual syllabi, curriculum specifications, and textbooks for Malay and English Language need to integrate higher-order thinking skills in the content so that teachers do not see as their choice to teach higher-order thinking skills. There is a need

to review and update these important documents on which teachers rely in planning and teaching their lessons. Extra resource materials, including printed materials and technology-based materials, should be made available to teachers in schools. It was evident from the findings of this investigation that teachers face a serious lack of resource materials to support new ways of teaching.

On a long term basis, teachers need to be given the flexibility to incorporate the changes they deem suitable into their teaching. In other words, teachers need to be empowered to make their own pedagogical decisions, and be given the necessary flexibility in their classrooms rather than feeling compelled to follow a rigid structure. This obviously seems to inhibit the attempts to integrate higher-order thinking skills in their content instruction. One way this could be done is to systematically reduce the emphasis placed on national examinations. Instead of having four national examinations at the elementary and secondary school levels, at least two of the four need to be made school based, and formative type evaluations. This would certainly reduce the examination anxiety now very prevalent among teachers, students, and parents. There is also a need to consider the way schools are structured which often do not allow for teachers to exercise the flexibility, and more importantly continue to learn to make new innovations.

Implications for Practice

There needs to be serious efforts to make professional development an ongoing part of teachers' daily work through joint planning, study groups, peer coaching, and research. Rather than relying too much on the 'sit and get' type of in-house training workshops, ongoing professional development efforts need to provide opportunities for teachers to reflect on their practice, and discuss the issues among themselves and benefit from each other. Teachers need to learn to communicate openly and honestly, to confront differences and resolve conflicts, and to sublimate personal goals for the good of the team (Reimers & McGinn, 1997).

In specific contexts, there has to be process facilitators such the school principals who have to determine the best ways to help groups reach decisions and function effectively. Most groups use face-to-face interaction, the most common and easiest way of group interaction. Other alternatives include: brainstorming, the nominal group technique - group participants are asked to produce solutions individually after group exchange and prior to further exchange; Delphi exercises, to obtain consensus among group members; ideawriting, a method for developing ideas and exploring their meaning; and interpretive structural modeling, a method to identify relationships among the key aspects which define an issue or problem (Moore, 1994).

Teachers need to be encouraged to contextualize their discussions on teaching higher-order thinking skills in the teaching of Malay, English Language or any other school subject. For this to happen there has to be support from the school administration, especially in providing the resources for teachers to organize such study groups. There also need to be incentives for teachers who volunteer to participate in such initiatives. As discussed earlier, teachers need to focus on acquiring subject-specific pedagogical skills to integrate thinking skills in their content instruction. This is different from how it is generally being done now where teachers are given the generic thinking skills and they are expected to figure out on their own how to integrate those skills in their content instruction.

These ongoing professional development efforts may provide teachers the opportunity to be members of a professional community which may allow them to move away from the notion that teaching is an individualistic and idiosyncratic practice (Buchmann, 1993). These professional communities could help teachers improve their practice. In the case of an autobiography book club, for example, Florio-Ruane et al., (1995) report that changes in teachers' beliefs occurred after teachers participated in these clubs. The experience consisted in helping teachers feel comfortable with the members of the group. Once this occurred, teachers were willing to place their own experience and beliefs on the table to be evaluated by their colleagues. Besides this school-based ongoing professional development initiatives, there also need to be efforts

to organize new sources of professional development such as learning networks and school-university or teacher college partnerships that transcend school boundaries. Teachers may be able to keep up with latest directions in research from such involvement, and learn from them as well.

Implications for Further Research

Researchers have often discussed the construction of pedagogical content knowledge based on the various categories suggested by Shulman (1986, 1987) or the four categories suggested by Grossman (1990). The discussion thus far has only focused on teaching a single school subject, such as language arts, mathematics or science. It certainly seems very important to investigate how teachers may construct the pedagogical content knowledge to successfully integrate higher-order thinking skills in Malay or English Language instruction. Although there is sufficient data in this investigation to suggest that teachers were lacking in at least two of the four categories of pedagogical content knowledge to successfully integrate higher-order thinking skills with Malay or English Language in their classrooms, it was beyond the scope of this study to investigate how teachers actually construct the pedagogical content knowledge to integrate higher-order thinking skills into Malay or English Language instruction in their classrooms. As such, this question warrants further investigation.

Teaching changes at a glacial pace and in fragmentary fashion (Cuban, 1984). In most cases teachers borrowed bits and pieces of progressive ideas and practices and integrated them into standard classroom formats (Cohen & Spillane, 1993). One of the main reasons for such a situation is that the policies and programs coming from the ministry are often seen by teachers as inappropriate and out of touch with the realities of the classroom (Chapman & Mahlck, 1996).

In centralized education systems, such as the one in Malaysia, teachers are at the tail end of the spectrum in receiving mandated reform policies. As Chapman and Mahlck argue, when policies are communicated to schools, often in such vague terms, school personnel do not understand what actions they are supposed to take. As a result, they either implement the policy incorrectly, or do not implement it at all. As such, it is important to listen to teachers of their concerns in implementing innovations. Virtually every innovation, especially in the early stages, makes new demands on teachers, requiring them to learn new things, teach in new ways, or modify their classroom practices in ways that requires time and energy. It is important to investigate how teachers react to such new innovations. Research should also focus on how reformers and teachers could work together in formulating and implementing new policies, given the socio-political situations in the country.

There is a serious need to investigate how could conducive learning environment be cultivated in Malaysian classrooms for the

integration of higher-order thinking skills in Malay or English Language instruction. Students come to school with little motivation to participate in discussion and to play an active role in the teaching and learning processes. To make matters worse, there are certain behaviors in the classrooms which discourage students from playing an active role. In this respect, there needs to be further research to investigate this problem, especially given the fact that certain socio-cultural practices found in the society work against encouraging students from participating actively in discussions and classroom activities.

APPENDIX A

**(SURVEY QUESTIONNAIRE -
In English Language & Malay Language)**

Department of Teacher Education
College of Education
Michigan State University
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East Lansing, Michigan 48824-1034
USA

Teacher Survey Questionnaire

Questionnaire Instructions

I request your voluntary participation in this study. You have the right to assent or decline to answer this questionnaire. You give your permission to participate in this study by completing the survey.

Please take time to answer all questions. Please give complete and honest answers. All responses will be treated with the strictest confidence and will not be seen by anyone except the research team. You will not in anyway be affected by the analysis and reporting of the results of this study.

We thank you for your cooperation in answering this questionnaire.

Section 1: Background Data Questionnaire

Fill in the blanks or mark [X] in the appropriate space.

1. Name of school: _____

2. Sex :

Male	:	☐
Female	:	☐

3. Subject taught:

Malay Language	:	☐
English Language	:	☐

4. Number of years teaching the subject (Malay or English Language):

0 - 5 years	:	☐
6 - 10 years	:	☐
more than 10 years	:	☐

5. Highest Academic qualification: _____

6. Professional qualification: _____

7. Training to teach higher-order thinking skills:

- a. Post-Degree Teacher Education Program
- b. Staff Development Course (by CDC, SED or school)
- c. No training

☐
☐
☐

Section 2

What follows is a lesson in a Form Two English Language Arts as observed in classrooms in 3 different secondary schools located in the suburbs. Please read these lessons accounts and circle the appropriate responses based on your own knowledge and experience.

"A Form Two English Language Arts class is having a 80 minute lesson on writing an essay on the topic, 'Ways of addressing the problem of juvenile crimes'. There are 42 students in the class. They vary in their linguistic abilities. The objective of the lesson is to have students write an essay on the topic 'Ways of addressing the problem of juvenile crimes' and also to learn the skill of solving problems".

Classroom 1 (Approach 1)

The teacher started by reading some excerpts from newspapers which relate to juvenile crimes. Teacher, then, explained how to write this essay. He also explained the important points which should be in the essay to overcome the problem of juvenile crimes. Students were then asked to write the essay.

Classroom 2 (Approach 2)

The teacher started the class by reading some excerpts from newspapers which relate to juvenile crimes. The class talked about juvenile crimes. The teacher asked many questions designed primarily to elicit facts and feedback. Teacher responses took the form of responses such as 'right' or 'wrong'. Students' sentences were accepted if correct, and written down on the board. They were turned down if incorrect, and not written on the board. Right answers were not explained, and wrong answers were treated as unreal. Students were then asked to write the essay.

Classroom 3 (Approach 3)

The teacher started the class by asking the students to read some excerpts from newspapers which relate to juvenile crimes. The most able students helped those less able to get through the reading. After a short small group discussion, the class talked about the juvenile crimes. Students were encouraged to provide their ideas based on what they had just read as what causes juvenile crimes and the ways to address them. The teacher commented on or added to what students had said. He encouraged students to pose questions to him and other students. Students were allowed to wonder why things are, to inquire, to search for solutions, and to resolve incongruities in current ways of thinking about

how to address juvenile crimes. They also talked about the components of the essay. Several students had different ideas as to how to write an essay. The teacher allowed and encouraged variation in their writing rather than adhering to a strict structure. Students were then asked to write the essay. After finishing their essay student were expected to share, discuss and provide constructive criticism of each others' work.

Please circle the appropriate responses to the questions below to the best of your knowledge and experience.

1. Although each teaching approach has a somewhat different purpose, rank the three different classrooms to the degree to which, in your opinion, they promote higher-order thinking (HOT) among students.

	(Doesn't Promote HOT)					(Promotes HOT)				
	1	2	3	4	5	1	2	3	4	5
i. Approach 1										
ii. Approach 2										
iii. Approach 3										

2. Which approach, in your opinion, is most used in your classroom?

Approach 1 2 3

Please circle the appropriate responses to the questions below to the best of your knowledge and experience.

	Strongly Disagree					Strongly Agree				
3. Approach 3 provides the most opportunities to students to continue to think and wonder about what they are discussing in class	1	2	3	4	5					
4. Students get opportunities to figure out how they arrived at those answers in approach 2.	1	2	3	4	5					

	Strongly Disagree				Strongly Agree			
5. Approach 2 may permit the students to think but approach 3 demands that they think.	1	2	3	4	5			
6. Approach 1 helps teachers to reduce disciplinary problems created by students in the classroom.	1	2	3	4	5			
7. Teachers' own experience as students encourages the use of approach 1.	1	2	3	4	5			
8. Language teachers often face difficulties using approach 3 in their classrooms.	1	2	3	4	5			

Section 3

Please circle the appropriate responses to the questions below to the best of your knowledge and experience for the teaching of Malay or English Language Arts (Column 1), the subject you teach, and Higher-order thinking skills (Column 2). Your willingness to provide responses for these questions is much appreciated.

Key:

<u>Strongly Disagree</u>				<u>Strongly Agree</u>			
(SD)				(SA)			
1	2	3	4	5			

A. Knowledge

	Language Arts					Higher-order Thinking Skills				
	SD					SA				
I know,										
1. the details of the curriculum for	1	2	3	4	5	1	2	3	4	5
2. how to plan to teach	1	2	3	4	5	1	2	3	4	5
3. how to use different strategies and techniques to teach	1	2	3	4	5	1	2	3	4	5
4. how to teach language arts (Malay or English Language) and higher-order thinking skills using the infusion approach	1	2	3	4	5	1	2	3	4	5
5. how to stratify the learning components to the level of students for	1	2	3	4	5	1	2	3	4	5
6. how to involve students actively in the teaching and learning processes in	1	2	3	4	5	1	2	3	4	5
7. how to develop the individual potentials of students in	1	2	3	4	5	1	2	3	4	5
8. how to evaluate student improvement in	1	2	3	4	5	1	2	3	4	5

B. Skills

	Language Arts					Higher-order Thinking Skills				
	SD					SA				
I am able to,										
1. plan a lesson to teach	1	2	3	4	5	1	2	3	4	5
2. use different strategies and techniques to teach	1	2	3	4	5	1	2	3	4	5
3. teach language arts (Malay or English Language) and higher-order thinking skills using the infusion approach	1	2	3	4	5	1	2	3	4	5
4. Stratify the learning components to the level of students for	1	2	3	4	5	1	2	3	4	5
5. use resource materials for the effective learning of	1	2	3	4	5	1	2	3	4	5
6. to provide feedback to students for the effective learning of	1	2	3	4	5	1	2	3	4	5
7. involve students actively in the teaching and learning processes in	1	2	3	4	5	1	2	3	4	5
8. develop the individual potential of students in	1	2	3	4	5	1	2	3	4	5
9. evaluate student improvement in	1	2	3	4	5	1	2	3	4	5

C. Attitude

	Language Arts					Higher-order Thinking Skills				
	SD					SA				
1. Teachers' responsibilities are confined to the school and its working hours in terms of teaching	1	2	3	4	5	1	2	3	4	5
2. I find a great deal of satisfaction in teaching	1	2	3	4	5	1	2	3	4	5
3. I have an important influence in the life of my students in terms of teaching	1	2	3	4	5	1	2	3	4	5
4. Teaching never gets monotonous when teaching	1	2	3	4	5	1	2	3	4	5
5. New and better ways of teaching are always being discovered in	1	2	3	4	5	1	2	3	4	5
6. Is the duty of the teacher to know more on their own for	1	2	3	4	5	1	2	3	4	5
7. To be a better teacher one needs continuous training in	1	2	3	4	5	1	2	3	4	5
8. A good teacher should <u>adapt the curriculum</u> to the needs of the pupils even if this involves adding more work.	1	2	3	4	5	1	2	3	4	5
9. A teacher should <u>modify the curriculum</u> for the good of the students even if this means not following exactly the established curriculum.	1	2	3	4	5	1	2	3	4	5
10. I would rather prepare students to face examinations than to teach them the thinking skills. In fact that is what everybody wants.	1	2	3	4	5	1	2	3	4	5
11. I have a problem in preparing students for examinations and at the same time teaching them how to think.	1	2	3	4	5	1	2	3	4	5

Section 4

Based on your own practice in a medium standard Form Two Malay or English Language Arts classroom, state the percentage of the time you use for each of the aspects stated below. Just mark (-) if any of the aspects are not applicable to your classroom.

	Class (40/80 mins.)	Week
1. Teaching of Malay or English Language Arts	____%	____%
2. Teaching of Higher-order Thinking Skills	____%	____%
3. Teaching of Malay or English Language Arts and Higher-order thinking skills using the infusion approach	____%	____%
4. Preparation for tests and examinations	____%	____%
5. Disciplinary problems and classroom routines	____%	____%
6. Review of homework	____%	____%
7. Grading students' written assignments.	____%	____%
Total	<u>100%</u>	<u>100%</u>

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Soal Selidik Guru

Keterangan:

Saya memohon kepada pihak tuan/puan untuk menjawab soal selidik ini secara sukarela. Ingin dinyatakan dengan jelas bahawa tuan/puan mempunyai hak untuk membuat keputusan untuk menyertain ataupun tidak dalam kajian ini.

Sila jawab semua soalan dengan lengkap. Kerjasama tuan/puan untuk memberi maklumat dengan ikhlas dan jujur sangat kami harapkan dan hargai.

Identiti tuan/puan akan dirahsiakan. Maklumat yang anda berikan akan digunakan untuk kajian ini sahaja. Tuan/puan tidak akan menerima sebarang kesan negatif akibat maklumat yang diberi.

Kerjasama tuan/puan untuk menjawab soal selidik sangat dihargai.

Terima kasih.

Bahagian 1: Maklumat Asas

Sila isikan tempat kosong ataupun tandakan [X] dalam petak yang sesuai.

1. Nama Sekolah : _____

2. Jantina :

Lelaki : ☐

Perempuan : ☐

3. Matapelajaran yang diajar:

Bahasa Malaysia : ☐

Bahasa Inggeris : ☐

4. Pengalaman Mengajar (Bahasa Malaysia atau Bahasa Inggeris) :

0 - 5 tahun : ☐

6 - 10 tahun : ☐

Lebih dari 10 tahun : ☐

5. Kelulusan Akademik Tertinggi: _____

6. Kelulusan Profesional : _____

7. Latihan Untuk Mengajar Kemahiran Berfikir:

a. KPLI atau SPLI

b. Kursus Dalam Perkhidmatan (PPK, JPN,
atau sekolah)

c. Tiada Latihan

☐
☐
☐

Bahagian 2

Berikut adalah satu sesi pelajaran dalam Kelas Bahasa Inggeris Tingkatan Dua yang dilihat di tiga buah sekolah menengah yang berasingan. Sila baca keterangan tentang tiga pelajaran ini dan bulatkan pilihan jawapan yang sesuai berdasarkan pada pengetahuan dan pengalaman tuan/puan.

“Sebuah kelas Bahasa Inggeris Tingkatan Dua sedang mengikuti dua waktu pelajaran selama 80 minit untuk menulis sebuah karangan bertajuk ‘ Cara-cara menangani masalah jenayah juvenil’. Kelas ini mempunyai 42 orang pelajar yang berbeza dari segi penguasaan bahasa. Objektif pelajaran ini adalah untuk menyediakan pelajar demi menghasilkan sebuah karangan di atas tajuk yang diberi dan juga mempelajari kemahiran menyelesaikan masalah.

Kelas 1 (Pendekatan 1)

Guru telah memulakan kelas dengan membaca beberapa keratan akhbar yang berhubung dengan jenayah juvenil. Seterusnya, guru telah menerangkan tentang cara menulis karangan dan isi penting yang perlu terdapat dalam karangan tersebut. Selapas itu, Pelajar telah diminta untuk menulis.

Kelas 2 (Pendekatan 2)

Guru telah memulakan kelas dengan membaca beberapa keratan akhbar yang berhubung dengan jenayah juvenil. Kelas telah mengadakan perbincangan tentang jenayah juvenil. Guru telah mengemukakan banyak soalan bertujuan mendapatkan maklumat dan maklum balas dari pelajar. Respon guru terhadap jawapan murid berbentuk ‘betul’ atau ‘salah’. Jawapan pelajar telah diterima dan ditulis di papan hitam jika betul. Jawapan pelajar telah ditolak dan tidak ditulis di papan hitam jika salah. Jawapan betul tidak diterangkan dan jawapan salah dianggap tidak langsung mempunyai ciri jawapan. Seterusnya pelajar telah diminta untuk menulis karangan tersebut.

Kelas 3 (Pendekatan 3)

Guru telah memulakan pelajaran dengan meminta pelajar membaca keratan akhbar yang berkaitan dengan jenayah juvenil. Pelajar cerdas telah membantu pelajar lemah untuk membaca dan memahami keratan akhbar tersebut. Selepas mengadakan perbincangan dalam kumpulan secara ringkas, perbincangan telah diadakan di peringkat kelas.

Pelajar telah digalakkan untuk memberi idea mereka berdasarkan pada apa yang telah dibaca untuk menangani dan mengatasi jenayah juvenil. Guru telah memberi komen mengenai jawapan yang diberi oleh pelajar. Guru telah menggalakkan pelajar mengemukakan soalan kepada belia ataupun kepada pelajar lain. Pelajar telah dibenarkan untuk memahami keadaan, memikirkan secara mendalam tentang isu tersebut, mencari penyelesaian dan cuba mengatasi masalah ketiadaan pakatan dalam memahami dan mengatasi masalah tersebut.

Kelas juga telah mengadakan perbincangan tentang komponen karangan. Beberapa orang pelajar telah mengemukakan idea yang berbeza tentang cara menulis karangan tersebut. Guru telah membenar, malah menggalakkan kelainan dalam cara menghasilkan karangan tersebut. Seterusnya, pelajar telah diminta menulis karangan. Pelajar dijangka mengongsi, membincang dan memberi kritikan membina terhadap hasil penulisan masing-masing dalam kumpulan.

Sila bulatkan respons yang bersesuaian berdasarkan pada pengetahuan dan pengalaman tuan/puan.

1. Walau pun setiap pendekatan mengajar mempunyai tujuannya tersendiri, berdasarkan pada pendapat anda, sila tentukan keberkesanan setiap pendekatan dalam menggalakkan kemahiran berfikir di kalangan pelajar.

	(Tidak Galakkan Kem. Berfikir)					(Menggalakkan Kemahiran Berfikir)
	1	2	3	4	5	
i. Pendekatan 1	1	2	3	4	5	
ii. Pendekatan 2	1	2	3	4	5	
iii. Pendekatan 3	1	2	3	4	5	

2. Pendekatan mana yang paling kerap digunakan dalam kelas yang tuan/puan mengajar?

Pendekatan 1 2 3

Sila bulatkan respon yang sesuai bagi setiap kenyataan di bawah berdasarkan pengetahuan dan pengalaman anda.

	Sangat Bersetuju					Tidak Bersetuju				
3. Pendekatan 3 memberikan peluang yang terbanyak kepada pelajar untuk terus memikir dan menyelidik tentang isu yang dibincang di dalam kelas	1	2	3	4	5					
4. Pelajar mendapat peluang untuk memikirkan bagaimana mereka mendapat jawapan dalam pendekatan 2.	1	2	3	4	5					
5. Pendekatan 2 membenarkan pelajar berfikir manakala pendekatan 3 memaksa pelajar berfikir.	1	2	3	4	5					
6. Pendekatan 1 membantu guru mengurangkan masalah disiplin yang ditimbulkan oleh pelajar dalam kelas.	1	2	3	4	5					
7. Pengalaman diri guru sebagai pelajar menggalakkan penggunaan pendekatan 1.	1	2	3	4	5					
8. Guru bahasa sering menghadapi masalah menggunakan pendekatan 3 di dalam kelas.	1	2	3	4	5					

Bahagian 3

Sila bulatkan respon yang sesuai bagi soalan/kenyataan berdasarkan pada pengetahuan dan pengalaman mengajar Bahasa Malaysia atau Bahasa Inggeris (Ruang 1) dan kemahiran berfikir (Ruang 2). Kesediaan tuan/puan untuk memberi respon sangat dihargai.

Petua:

<u>Tidak Bersetuju</u>			<u>Sangat Bersetuju</u>	
(TB)			(SB)	
1	2	3	4	5

A. Pengetahuan

BM/ BI		Kemahiran Berfikir	
TB	SB	TB	SB
Saya tahu,			
1. kandugnan sukatan pelajaran bagi	1 2 3 4 5	1 2 3 4 5	
2. merancang untuk mengajar	1 2 3 4 5	1 2 3 4 5	
3. bagaimana menggunakan pelbagai strategi dan teknik untuk mengajar	1 2 3 4 5	1 2 3 4 5	
4. bagaimana mengajar BM atau BI dan kemahiran berfikir dengan menggunakan pendekatan penyebatian	1 2 3 4 5	1 2 3 4 5	
5. bagaimana menentukan isi kandungan pelajaran berdasarkan pada kebolehan pelajar	1 2 3 4 5	1 2 3 4 5	
6. bagaimana melibatkan pelajar secara aktif dalam proses pengajaran dan pembelajaran	1 2 3 4 5	1 2 3 4 5	
7. bagaimana mengembangkan potensi individu pelajar	1 2 3 4 5	1 2 3 4 5	
8. bagaimana menilai perkembangan pelajar dalam	1 2 3 4 5	1 2 3 4 5	

B. Kemahiran

	BM/ BI					Kemahiran Berfikir				
	TB		SB			TB		SB		
Saya berkebolehan,										
1. merancang pelajaran untuk mengajar	1	2	3	4	5	1	2	3	4	5
2. menggunakan pelbagai strategi dan teknik untuk mengajar	1	2	3	4	5	1	2	3	4	5
3. mengajar BM atau BI dan kemahiran berfikir dengan menggunakan pendekatan penyebatian	1	2	3	4	5	1	2	3	4	5
4. menentukan isi kandungan pelajaran berdasarkan pada kebolehan pelajar	1	2	3	4	5	1	2	3	4	5
5. menggunakan sumber pengajaran dan pembelajaran bertujuan mengadakan pengajaran dan pembelajaran yang berkesan	1	2	3	4	5	1	2	3	4	5
6. memberi maklum balas yang berkesan kepada pelajar bagi tujuan mereka mempelajari	1	2	3	4	5	1	2	3	4	5
7. melibatkan pelajar secara aktif dalam proses pengajaran dan pembelajaran bagi	1	2	3	4	5	1	2	3	4	5
8. mengembangkan potensi individu pelajar	1	2	3	4	5	1	2	3	4	5
9. menilai perkembangan pelajar dalam	1	2	3	4	5	1	2	3	4	5

C. Sikap

	BM/ BI					Kemahiran Berfikir				
	TB		SB			TB		SB		
1. Tanggungjawab guru adalah terhadap kepada sekolah dan masa di sekolah bagi mengajar	1	2	3	4	5	1	2	3	4	5
2. Saya mendapat kepuasan yang cukup dalam mengajar	1	2	3	4	5	1	2	3	4	5
3. Saya mempunyai pengaruh yang kuat dalam hidup pelajar dari segi pengajaran	1	2	3	4	5	1	2	3	4	5
4. Proses pengajaran dan pembelajaran tidak sekali menjadi monotonous' bila saya mengajar	1	2	3	4	5	1	2	3	4	5
5. Pendekatan mengajar yang baru dan yang lebih berkesan dikenali dari semasa ke semasa dalam mengajar	1	2	3	4	5	1	2	3	4	5
6. Adalah menjadi tanggungjawab guru untuk mengetahui lebih banyak dengan sendiri bagi	1	2	3	4	5	1	2	3	4	5
7. Untuk menjadi seorang guru yang berkesan seseorang memerlukan latihan yang berterusan dalam	1	2	3	4	5	1	2	3	4	5
8. Seorang guru yang berkesan perlu mengubahsuai kandungan sukatan pelajaran berdasarkan pada keperluan pelajar walaupun ia menjadi lebih banyak tugas baginya	1	2	3	4	5	1	2	3	4	5
9. Seorang guru yang berkesan perlu mengubahsuai kandungan sukatan pelajaran bagi manfaat pelajar walaupun itu bermakna tidak mengikut dengan sepenuhnya sukatan pelajaran	1	2	3	4	5	1	2	3	4	5

BM/ BI					Kemahiran Berfikir				
TB					SB				
10. Saya lebih suka menyediakan pelajar menghadapi peperiksaan daripada mengajar kemahiran berfikir. Sebenarnya, itulah yang dikehendaki oleh semua orang.					1	2	3	4	5
11. Saya menghadapi masalah dalam menyediakan pelajar untuk menghadapi peperiksaan dan pada masa yang sama menyediakan mereka untuk berfikir.					1	2	3	4	5

APPENDIX B

(TABLES)

Bahagian 4

Berdasarkan pada pengalaman tuan/puan mengajar sebuah kelas BM atau BI Tingkatan dua yang sederhana, sila nyatakan peratus masa yang anda gunakan untuk setiap aspek yang tersebut di bawah. Sila tandakan (-) jika mana-mana aspek tidak berkaitan dengan kelas tersebut.

	Kelas (40/80 min.)	Minggu
1. Pengajaran dan Pembelajaran BM atau BI	——%	——%
2. Pengajaran dan Pembelajaran Kemahiran berfikir	——%	——%
3. Pengajaran dan Pembelajaran BM atau BI dan kemahiran berfikir dengan menggunakan pendekatan penyebatian	——%	——%
4. Penyediaan ujian dan peperiksaan	——%	——%
5. Masalah disiplin dan tugas rutin bilik darjah	——%	——%
6. Penilaian kerja rumah pelajar	——%	——%
7. Penilaian tugas bertulis pelajar.	——%	——%
Jumlah	<u>100%</u>	<u>100%</u>

Table 22: Matrix of major activities in the Malay and English Language classes

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Form 2A (Higher Level English Language Class)	-Teacher talks about ants -Ss provide responses. -Ss read passage -answer questions 1 hr. 10min (2/25)	-Students do exercise a. filling in blanks b. multiple choice questions 35 mins (2/28)	-Teacher puts up a white paper with a map and a title - Students copy the map and write a composition 1 hr. 20mins (2/28)	-Students in small groups - read a passage & do a problem solving activity -present to class 1 hr. 10 min (3/4)	-Teacher gives students 2 situations for Role Play -Ss in pair prepare dialogue -Ss present to class 1 hr. 20mins (3/7)	-----
Form 2I (Lower Level English Language Class)	-teacher introduces 'perpositions' -Ss copy the sentences in their grammar books 35 mins (2/24)	-Ss continue previous day's work - Teacher uses different pictures . - Ss do exercise underlining correct preposition 1 hr. 10 min (2/25)	-Ss using text book identify places in the map -Ss draw/trace map, answer multiple-choice questions (14 in total) 1 hr. 10 min (2/27)	-Ss continue with the previous day's work (prepositions) 35 mins (3/3)	-Ss are in small groups - doing the problem solving activity (6 things from a troubled plane) - Ss present to the class 1 hr. 10min (3/4)	- Ss in pairs read dialogues -Teacher explains words -Ss do exercise 1 hr. 10mins (3/6)
Form 2B (Higher Level Malay Language Class)	- 2 Ss share experience with class - Ss read the passage one by one - T explains verb - T explains poem -Ss copy poem 1 hr. 10mins(3/11)	-Few Ss narrate experiences -T explains writing a formal letter using text book -Ss contribute -Ss write the letter 1 hr. 10 min (3/13)	-Few Ss narrate experience -Ss read passage one by one -T explains meaning of words -Ss do exercise 1 hr 20min (3/14)	-Ss read passage from text book one by one -T explains words -T discusses Questions with Ss -Ss do the exercise 1 hr 10 min (3/20)	-Few Ss narrate their experience -T explains 'adjectives' from the textbook -Ss do the exercise 1 hr 20 min (3/21)	-----
Form 2E (Lower Level Malay Language Class)	-Teacher explains 'verb' using a passage from textbook -Ss do exercise 1 hr 10 min (3/10)	-T uses a passage from textbook and explains words -Some Ss give responses -Ss do exercise (Filling in blanks) 1 hr 10min (3/13)	-Ss read a passage one by one -T explains passage, 'adjective' -Some Ss give responses 1 hr 10 min (3/17)	-Ss read episode of a drama -T explains features of drama/meaning -Ss create Questions -Ss read Qs aloud -Ss do exercise 1 hr 10 min (3/19)	-Ss read a passage from textbook one by one -T explains passage/ words -Ss do exercise vocab & const. sent. 1 hr. 10 min (3/20)	-----

Table 23: Whether teachers have a problem preparing students for examinations and at the same time teaching them how to think

	Frequency	Percentage
Strongly disagree	4	3.8
Disagree	16	15.4
Neutral	39	37.5
Agree	23	22.1
Strongly agree	21	20.4
Missing	1	1.0
Total	104	100.0

Table 24: Whether teachers would rather prepare students to face examinations than to teach them thinking skills

	Frequency	Percentage
Strongly disagree	11	10.6
Disagree	19	18.3
Neutral	34	32.7
Agree	27	26.0
Strongly agree	12	11.5
Missing	1	1.0
Total	104	100.0

APPENDIX C
**(RELIABILITY ANALYSIS &
ANALYSIS OF VARIANCE)**

RELIABILITY ANALYSIS - SCALE (ALPHA)

TOTAL SCALE #18-#73

Reliability Coefficients

N of Cases = 90.0

N of Items = 56

Alpha = .9479

KNOWLEDGE

Reliability Coefficients

N of Cases = 98.0

N of Items = 16

Alpha = .9231

SKILL

Reliability Coefficients

N of Cases = 100.0

N of Items = 18

Alpha = .9511

ATTITUDE

Reliability Coefficients

N of Cases = 91.0

N of Items = 22

Alpha = .8049

EFFECT .. VR04

Multivariate Tests of Significance (S = 2, M = 1 1/2, N = 44 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.20987	1.79760	12.00	184.00	.051
Hotellings	.24142	1.81068	12.00	180.00	.049
Wilks	.79866	1.80441	12.00	182.00	.050
Roys	.15479				

Note.. F statistic for WILKS' Lambda is exact.

Multivariate Effect Size

TEST NAME Effect Size

Pillais	.105
Hotellings	.108
Wilks	.106

EFFECT .. VR04 (Cont.)

Univariate F-tests with (2,96) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
A1	2.34237	24.84856	1.17118	.25884	4.52476	.013
A2	4.16045	54.30926	2.08023	.56572	3.67712	.029
B1	3.53160	24.80130	1.76580	.25835	6.83500	.002
B2	5.46499	51.74096	2.73250	.53897	5.06986	.008
C1	.45722	18.25055	.22861	.19011	1.20251	.305
C2	.06029	26.75876	.03015	.27874	.10815	.898

APPENDIX D
**(READING AND
COMPREHENSION EXERCISES)**

PRACTICE 8

*Read the passage carefully and then answer the questions that follow.
Your answers must be based on the passage.*

Do you know that there are about 8,000 species of ants? They are found worldwide but are especially common in hot climates. They live in organized groups called colonies. It is because of this that ants, like their relatives, the bees and wasps, are said to be social insects.

All ants share common characteristics. The body of an ant is divided into three parts: a large head, a thorax and an oval abdomen. The thorax is separated from the abdomen by a slender waist. An ant uses its three pairs of jointed legs to move about. Ants are usually yellow, brown, red or black in colour.

Ants hatch from eggs as legless larvae or grubs. The queen is the only female in the colony which can lay eggs. The other females are worker ants which build nest, collect food and tend to the larvae. The large females, known as soldier ants, defend the colony. The function of the male ant is to mate with the queen. Only the queen and male ants have wings which are used during the mating ritual. Soon after mating, the male ant dies. The fertilized queen pulls off her wings and leaves to establish a new colony.

Ant colonies live in nests consisting of numerous chambers connected by tunnels. Some ants colonize tree trunks or live in mounds built of sticks and leaves. Some others secrete silk to sew together nests or leaves. They are also found under rocks or live underground.

Ants feed on both plant and animal matter. The Atta ant of South America builds its nest underground. Unlike other species of ants, it feeds differently. It chews off pieces of leaves which it then carries to its nest. The leaves are shredded into little pieces and left to rot. After some time, fungi grow on the decaying leaves. The Atta ant then feeds on this fungi.

The honey ant obtains its food in a rather unique way. This ant strokes the abdomen of an aphid to coax it to secrete a sweet liquid known as 'honeydew' which the honey ant then proceeds to eat.

Another species, the honey-pot ant, has adapted well to the dry condition in the desert regions of North America. This ant stores liquid in its abdomen much like the camel stores fat in its hump. Sometimes, the abdomen is so swollen that the ant can hardly move. When this happens, the ant will rest quietly while other members of the colony 'milk' the liquid from it.

1. Where are ants most commonly found?
2. Why are ants called social insects?
3. In what ways is the queen ant different from the other female ants?
4. What are functions of a worker ant?
5. What does the soldier ant do?
6. What happens to the queen and the male after fertilization occurs?

7. Name some of the places ants build their nests.

8. How does the Atta ant get its food?

9. What happens when a honey-pot ant's abdomen is swollen?

10. Explain the meaning of the following words as they are used in the passage.

- slender

- chambers

- secrete

- coax

- adapted

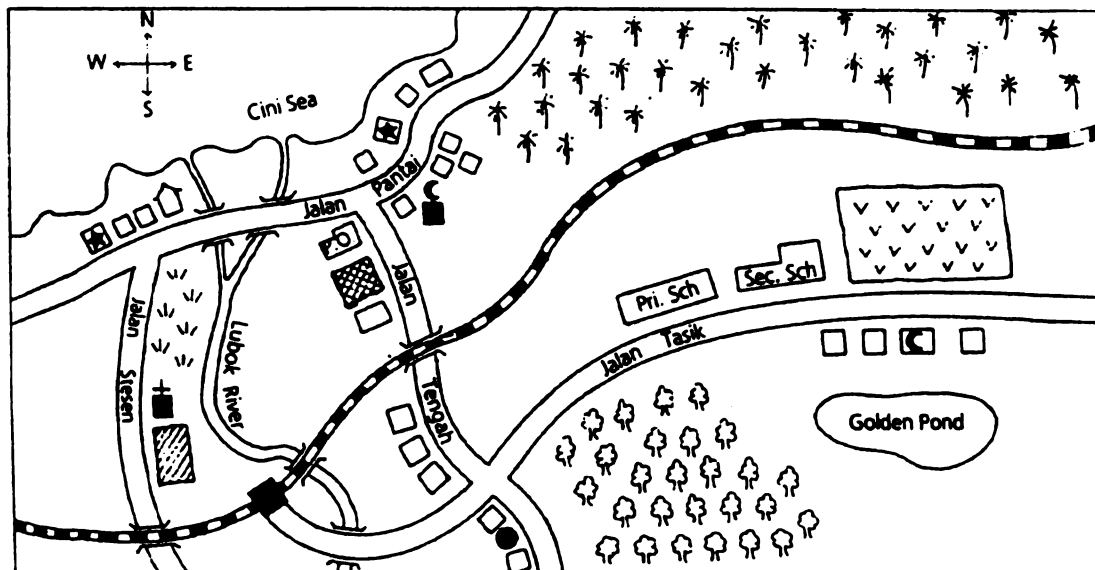
Form 2I

9

MAPS

PART I Comprehension

A Look at this map of Pantai Cini.



SYMBOLS

	building		church		market
	railway line		mosque		bank
	railway station		road		rubber estate
	padi field		temple		playing field
	hospital		police station		bridge
	hotel		coconut plantation		

ABBREVIATIONS

Pri. Sch. Primary school

P.O. post office

Sec. Sch. Secondary school

B Circle the best answer.

- 1 Both hotels in Pantai Cini are on. . .
 A Jalan Pantai
 B Jalan Stesen
 C Jalan Tengah
 D Jalan Tasik
- 2 The . . . is in between the padi field and the market.
 A police station
 B secondary school
 C church
 D mosque
- 3 The playing field is . . . the hospital.
 A before
 B opposite
 C next to
 D behind
- 4 To get to the railway station from the rubber estate, you have to. . .
 A go past Golden Pond
 B go along Jalan Tengah
 C cross Lubok River
 D turn into Jalan Pantai
- 5 The coconut plantation is . . . of the playing field.
 A north
 B south
 C east
 D west
- 6 There are . . . bridges in Pantai Cini.
 A four
 B five
 C six
 D seven
- 7 If you walked along Jalan Tasik, you will not see a. . .
 A school
 B rubber estate
 C padi field
 D hospital
- 8 There is a . . . across the road from the post office.
 A bank
 B hotel
 C mosque
 D bridge
- 9 The hospital is on . . .
 A Jalan Tengah
 B Jalan Tasik
 C Jalan Pantai
 D Jalan Stesen
- 10 The . . . is between two bridges.
 A church
 B temple
 C hospital
 D railway station
- 11 The coconut plantation is to the . . . of the rubber estate.
 A north
 B south
 C east
 D west
- 12 The . . . is on Jalan Pantai near a bridge.
 A temple
 B church
 C padi field
 D police station
- 13 Golden Pond is . . .
 A near the rubber estate
 B on Jalan Pantai
 C near Jalan Stesen
 D beside the river
- 14 The bank is . . .
 A near the school
 B next to the post office
 C beside the church
 D in the rubber estate

Form 2B (Exercises 2 & 3) - Form 2E (Exercises 2 and make sentences using five sentences from Exercise 2).

UNIT 11 - WARISAN BANGSA

A. Membaca dan Memahami

Keris ialah salah satu jenis senjata yang bersejarah dan bernilai yang dipamerkan di muzium. Keris juga merupakan warisan yang dipusakai sejak turun-temurun.

1. Baca dan fahami rencana berikut.

Keris ialah senjata yang terpenting bagi orang-orang Melayu pada masa dahulu. Keris juga melengkapi pakaian orang-orang Melayu terutamanya raja-raja atau pemerintah. Pada masa itu, terdapat sekurang-kurangnya sebilah keris di dalam setiap rumah orang Melayu. Sesiapa pun yang keluar dari rumah pasti memakai keris. Apabila dicabar, kerislah yang digunakan.

Tatkala memakai keris, si pemakai harus mengikut beberapa peraturan. Hulu keris harus dihalakan ke sebelah dalam. Semasa menghadap raja atau pada zaman aman, hulu keris hendaklah ditutup dengan kepala kain samping. Pada zaman dahulu, orang kebanyakan tidak dibenarkan memakai keris yang berhias cantik. Raja atau pemerintah sahaja yang boleh memakai keris seumpama ini.

Kini keris tidak lagi digunakan sebagai senjata. Keris menjadi lambang keagungan raja dan kemegahan bangsa serta negara. Keris juga dijadikan hiasan di rumah-rumah dan pejabat-pejabat.

Salah satu keris yang terkenal di rantau ini ialah Keris Tameng Sari. Keris Tameng Sari wujud semasa zaman Kesultanan Melayu Melaka tetapi sehingga kini tiada seorang pun yang tahu di mana keris ini berada. Menurut Hikayat Hang Tuah, keris ini dianugerahkan kepada Hang Tuah setelah beliau membunuh Tameng Sari di Majapahit. Oleh itu, keris tersebut mengambil nama sempena orang yang dibunuh oleh Hang Tuah.

Keris terdiri daripada dua bahagian, iaitu hulu keris dan mata keris. Bahagian hulu keris dibentuk mengikut kegunaan, sama ada sebagai senjata atau perhiasan.

Mata keris diperbuat daripada pelbagai jenis besi atau logam yang berlapis-lapis. Bahagian ini boleh berbentuk lurus menajam atau berkelok-kelok seperti arus air mengalir. Kelok-kelok keris ini disebut lok. Lok ini berjumlah ganjil, iaitu tiga, lima, tujuh dan seterusnya.

Kebanyakan sarung keris diperbuat daripada kayu, gading dan perak. Namun sarung keris istiadat (untuk kerabat diraja) biasanya diperbuat daripada emas dan dihiasi dengan batu permata. Sarung keris

terdiri daripada dua bahagian, iaitu sampir dan batang. Sampir ialah bahagian alas sarung yang berbentuk seperti perahu, manakala batang pula membentuk bahagian bawah sarung.

Terdapat beberapa cara untuk mencuci mata keris. Keris yang berkarat haruslah digosok dengan getah pokok pisang terlebih dahulu. Selepas itu, barulah keris dilangir dengan limau nipis atau limau purut. Selain itu, keris boleh juga dicuci dengan nasi yang dicampur dengan belerang. Kebanyakan orang mengasah keris mereka sebelum disimpan.

2. Beri makna perkataan-perkataan yang berikut mengikut konteks rencana.

- | | |
|--------------|------------------|
| - warisan | - kemegahan |
| - dipusakai | - rantau |
| - dicabar | - berkelok-kelok |
| - diunjurkan | - dilangir |

3. Jawab soalan-soalan berikut.

- a. Mengapakah keris begitu penting bagi orang-orang Melayu pada masa dahulu?
- b. Jelaskan peraturan-peraturan memakai keris.
- c. Apakah yang menyebabkan Keris Tameng Sari begitu terkenal?
- d. Apakah kegunaan keris pada masa kini?
- e. Bagaimanakah sepemakai keris menjaga kerisnya?
- f. Pada pendapat anda mengapakah keris dijadikan lambang kemegahan kerajaan?

APPENDIX E
**(QUESTIONING -
SECTIONS OF INTERACTIONS)**

Form 2 A (Higher Level English Language class)

Date : February 25, 1997

Total time of the class: 1 hour 10 minutes

Total time of interaction and analysis: 18 minutes

T: When you read about the ants, what do you think about the ants?

Ss: Hardworking.

T: Hardworking..

S1: Bites.

T: Bites.. Ok. Others..

S2: Help each other.

T: Help each other. Yes. .. lain..

S3: Cooperative.

S4: Loyal to the queen.

T: Loyal.. Loyal to the queen. Ok. Next..

T: What do you know about ants? Some of you might know little bit about ants. So.. share with We have 'loyal to the queen'. What else?

S: A pest.

T: Yes, a pest. Ok..... Anything you know about ants.

T: You see it everyday.

Ss: Some of the are big some are small.

T: Some of them are big, some of them are small. Ok. And how is their color?

S1: Red.

S2: Gray.

S3: Black.

S4: White.

S5: Orange.....

T: Orange in color.. Ok. Now. Any specific name for those ants? What do you call the black one?

Ss: Black ant..

T: The black ant likes to eat what?

Ss: Sugar.

T: Sugar. Ok. We'll call it sugar ant. How about the red one?

Ss: Fire ant.

T: Fire ant. Ok. Fire ant. We call it fire ant.the big one.....

S: Big Boy fire ant.

T: Big boy fire ant..

Ss: (Laughing)

T: In Bahasa Malaysia, it is called 'kerengga'. The name for this in English.... I'm not sure. But usually you have on rambutan trees.

T: Ok. Now about queen. How about the life of the queen? Do you know anything about the queen? What happens from.... ? Anyone knows?

T: Anyone knows?!!

T: Ok! I'll say the queen

T: The small, many ants, that are loyal to the queen, are called as what?

S: Soldier ants.

T: Yes. Soldier ants. These soldier ants, are female or male?

Ss: Male!!!

T: Female..! Those are female. Those ants are all female.

T: Male, are very rare. There are only one male. That is to mate with the queen. Now, this male is a king. It'll mate with the queen, but... What happens to the male?

S1: Dies.

T:.... Ok. Right after mating, it dies.

T: Ok. Who would like to?

T: Wrong , wrong..

.....(Laughters).....

T: Try. Cuba, cuba!

T: Now, Who can label the parts? Label the parts. Who would like to label the parts?

.....

T: Out of that, we have three main parts. Ok! The head, the thorax, and the abdomen. At the thorax, there are actually, one, two, three, we call,

T: That is roughly the parts of the ants. Ok. Lets start talking about ants.....

T: Todays passage is about ants.....

T: Ok! Who knows how many species are there?

S1: One thousand.

T: One thousand???

S1: No.no.. Several thousand.

S2: Several... Be specific. Be smart

S3: Forty, fifty thousand.

T: Forty..., fifty something. Fifty thousand. Fifty thousand species??

S4: 3000 species.

S5: 3000 species.

S6: Seven hundred species.

S7: 4,900 species

T: 4,900 species. Anyone else?

S8: 120,000.

S9: 120,000

S10: 3000.

T: Ok! Not anyone whoright. The exact number is 8000.

Form 2 B (Higher Level Malay Language class)

Date : March 11, 1997

Total time of the class: 1 hour 10 minutes

Total time of interaction and analysis: 25 minutes

T: Ok, ye. Kata kerja ye. Siapa tahu apa yang dimaksudkan dengan kata kerja? Apa yang dimaksudkan dengan kata kerja?

S: ... perbuatan.

T: Ye, kata perbuatan?

S: Perbuatan.

T: Perbuatan ye. Ok. Jadi kata kerja ni merupakan satu pendorongan kata yang digunakan untuk menunjukkan sesuatu perbuatan. Pendorongan sesuatu perbuatan ataupun keadaan melakukan sesuatu. Ye. awak tahu tentang kata kerja.

T: Ada berapa jenis kata kerja?

Ss: Dua.

T: Dua, Ok, yang pertama?

Ss: Kata kerja transitif.

T: Yang pertama ialah kata kerja transitif. Yang kedua?

Ss: Kata kerja tak transitif.

T: Kata kerja tidak transitif. Jadi dalam buku awak, muka surat 62, ialah kata kerja tidak transitif. Ataupun, kata kerja intransitif. Cuba bacamuka surat 62. Aaron Tan.

Aaron Tan: (He is reading from the book) (Not very clear what he reads, but he reads 8 sentences).

T: Jadi , semua yang dibaca oleh kawan awak itu, menunjukkan kepada kata kerja tak transitif. Itu..... contoh itu merupakan kata kerja tidak transitif. Ok, macam mana nak kenal kata kerja tidak transitif dengan kata kerja transitif?

S: Macam mana awak nak kenalkan? Daripada ayat-ayat yang ada ni, lapan ayat ni, macam mana boleh diklasifikasikan, ia kata kerja transitif ataupun kata kerja tidak

transitif? Raymond!

Raymond: Kata kerja transitif ialahsesuatu yang kita guna..

T: Sesuatu yang kita.. bukan. Kata kerja semuanya melibat..... perbuatan. Semua kata kerja.. macam mana awak tengok ayat kata kerja.. semasa dia kata kerja yang melibat kepada perbuatan. Macam mana kita nak tahu yang ini transtif, atau ini tidak transtif?

T: Macam mana awak nak fahamkan Ini ialah kata kerja transitif dan ini kata kerja tidak transitif. Macam mana? Siapa boleh jawab? Dah kita belajar dulukan.....

T: Kata kerja. Macam mana, soalan yang pertama tu? "Lagu raya berkumandang di udara". Kenapa ia merupakan kata kerja tidak transitif?

S1:

T: Bukan

S: Sebab ia tidak perlu objek.

T: Ia tidak perlu kepada objek. Ya. Jadi..... Kata kerja tidak transitif ni, bentuk ayat "Lagu raya berkumandang di udara". Iaitu, kata kerja tidak transitif ni, dia tidak memerlukan objek. Tidak perlu?

S: Objek.

T: Objek. Mesti dis tidak perlukan objek. Kalau adapun objek dalam ayat ni, contohnya "Lagu raya berkumandang di udara". Lagu raya.., berkumandang.., Jadi dalam ayat ni, berkumandang ialah kata kerja. Jadi, andaikata awak titikkan sahaja di sini, selepas kata kerja. Selepas kata kerja awak titikkan ayat. Jadi, ayat ini tetap Tetap ada subjek, tetap ada Tetap ada. Ayat ini tidak, tergantung. Tetap lengkap ye. Cuba tengok, "Lagu raya berkumandang". Ayat ini tidak, tergantung. Tetapi, kehadiran 'di udara' ini, ayat seterusnya kata kerja, hanyalah bertujuan untuk melengkapi ayat tersebut. Tanpa ayat-ayat ini, ayat yang sebelum dia ini, tetap lengkap. Tetap tidak tergantung. Jadi, 'di udara' Lagu raya berkumandang di.. corong-corong radio. Lagu raya berkumandang di pusat membeli-belah. Lagi, "Lagu raya berkumandang.., di mana?"

S: Rumah..

T: Di rumah saya. Jadi ini, ayat selepas kata kerja ni, hanyalah sebagai.. dikata 'kata penjelang'. Ayat penjelang. Tujuannya hanya untuk melengkapi lagi ayat. Tanpa ayat ini, ayat-ayat "Lagu raya berkumandang." tetap dramatik. Lengkap. Dia boleh berdiri dengan sendirinya. Tanpa ayat-ayat ini, dia boleh berdiri dengan sendiri. Ayat ini tidak tergantung. Ok, tapi, bagi contoh. "Ahmad.. menendang..

S: Bola.

T: Bola. Ok. "Ahmad menendang bola." Jadi dalam ayat ini, di mana pula kata kerjanya?

Ss: Menendang.

T: Menendang, ialah kata kerja. Jadi kalau ditiikkan ayat selepas kata kerja menendang. "Ahmad menendang." Bola tu saya lupakan. Kita lupakan tentang bola. "Ahmad menendang." Adakah ayat ini lengkap? Adakah ayat ini lengkap?

Ss: Tak..

T: Tidak lengkap. Kenapa ayat ini tidak lengkap?

Ss:

T: Kenapa? "Ahmad menendang." Adakah ayat ini lengkap ataupun tidak?

Ss: Tidak.

T: Tidak lengkap. Baik, kenapa awak kata tidak lengkap.

S: Ayat itu tergantung.

T: Ia tergantung. Baik. Jadi ayat ini tergantung. Ia mesti menerima satu objek. Objek. Mesti menerima objek untuk menyambut kata kerja di sini. Untuk menyambungkan kata kerja di sini memerlukan penyambut. Penyambut itu ialah objek. Jadi bola dimasukkan sebagai objek, kepada ayat, Ahmad menendang. Menendang bola. Jadi di sini,perkataan. Ahmad memendang. Menendang apa? Menendang bola. Jika dia boleh ditanya dalam .. tu boleh menjadi, ayat kata kerja transitif. Ini ialah kata kerja.transitif

Ss: Transitif.

T: Baik, bagaimanakah nak kenalkan ia kata kerja transitif?

S: Ia memerlukan objek.

T: Ya. Yang pertama tadi, ia mesti memerlukan objek. Ya. Ia perlukan objek. Tanpa objek, ayat ini akan..

Ss: Tergantung.

T: Dan satu lagi, ayat ini boleh diasingkan. Cuba bacaini.

Ss: Bola ditendang oleh Ahmad.

T: Bola ditendang oleh Ahmad.

T: Baik. Bola di tendang oleh Ahmad. Yang pertama ini ialah ayat, aktif. Ia ayat aktif. Dan bila ditukarkan, jadi, ia ayat aktif. Perbezaan di antara ayat aktif dan ayat pasif, kalau aktif dia

T: Dengar ye. Bila..... huruf besar.. ia boleh masuk 'mem'. Boleh jadi, 'meng'. Boleh jadi, 'membe'. Apa lagi? Membekan.... Membeki, apa lagi?

T: Jadi, bilamem.... ..bergantung imbuhan-imbuhan yang me,mem,meng,

.....

Kalau imbuhanhuruf besar, jadi hurufnya membawa..... Imbuhan pe..., peng.. Macam mana kita baca pun, kalau jumpa imbuhan-imbuhan macam ni, kita sebut imbuhan-imbuhan... huruf besar ye. Ataupun huruf besar lain-lain. Jadi, ayat ini, ayat pasif, bila ia ada imbuhan 'men' ni. Ada imbuhan 'men'. Menendang. Kemudian bila ditukarkan jadi ayat aktif, jadi..

Ss: Ditendang.

T: Jadi dia berubah ayat menjadi, ayat aktif. Jadi, inilah cara untuk mengenal ayat ini transitif ataupun tidak transitif. Iaitu bila ia ayat transitif, bermaksud, ia boleh di pasifkan. Tapi kalau ia tidak transitif.. cuba awak pasifkan ayat ini. "Lagu raya berkumandang di udara".

Ss: Berkumandang lagu raya di udara.

T: "Di udara lagu raya berkumandang." Adakah itu ayat pasif?

Ss: Tidak.

T: Bukan.

S: Berkumandang lagu raya di udara.

T: Berkumandang lagu raya di udara.', awak masih lagi menggunakan subjek dan Masih lagi awak tidak ubah berkumandang di udara.....

S: Kumbangannya...

T: 'Di udara, lagu raya berkumandang.', ayat itu masih lagi Tetap... subjek dia tetap berkumandang di udara..... Jadi, untuk ayat yang mempunyai kata kerja tidak transitif, bagaimanakah sekalipun awak baca, ia tidak boleh dipasifkan. Ia tidak boleh dipasifkan. Tapi, kalau awak cuba ayat, selepas kata kerja di sini, selepas kata kerja ni, juga dengan ayat-ayat seterusnya, maka ia menjadi, ayat pemenerang. Ayat pemenerang ni dia menerangkan lagi. Melengkapkan lagi sebuah ayat. Tanpa adanya ayat-ayat ini, ayat yang ada ini, masi lagi lengkap. Boleh berdiri dengan sendiri. Tanpa bantuan ayat yang seterusnya ini, ayat ini boleh berdiri dengan sendiri. Tetapi, kalau awak bandingkan dengan ayat di sini, tanpa kehadiran perkataan ataupun objek, selepas kata kerja, ayat ini tidak boleh berdiri dengan sendiri. Ayat ini akan tergantung. Andaikata awak pastikanpun. 'Ahmad menendang.' Tiada objek. Jadi macam mana awak nak pasifkan ayat tersebut?

S: Ditendang....

T: Ditendang Ahmad apa?

S: Ditendang oleh Ahmad.

T: Ditendang oleh Ahmad.

S: Ahmad ditendang.

T: Ahmad ditendang. Sebab itu, bagi ayat.. untuk penggunaan kata kerja transitif, ia mesti memerlukan objek. Tetapi kalau kata kerja tidak transitif, ia tidak memerlukan objek. Ataupun, penyambut. Ok. Jadi awak tidak perlukan objek, ataupun penyambut, untuk melengkapkan ayat ini. Sebab ayat ini telah lengkap. Ayat yang telah lengkap. "Lagu raya berkumandang.", lengkap.

T: Ok. berikan contoh yang menggunakan kata kerja tidak transitif. Bukan daripada

bukan buku awak ambil tu. Contoh. Kata kerja tidak transitif.

S: Setiap hari Ali bemyanyi rumah itu.

T: Setiap hari Ali bemyanyi di tepi rumah itu. Ok. Jadi, "Setiap hari.. Ali.. bemyanyi.. di rumah itu. Bagi ayat ini, kata kerja ialah?

Ss:

T: Bemyanyi. Ok! Jadi kata kerja ini ialah kata kerja tidak transitif. Kerana, 'di rumah' itu adalah bertugas untuk melengkapkan lagi ayat. Stiap hari Ali bemyanyi. 'Di rumah itu.', apadia, dipanggil apa ayat ini?

S: Ayat penerang

S: Penyambut.

T: Ayat penerang. Untuk melengkapkan ayat yang ada ni. Ok. Ayat penerang untuk melengkapkan ayat yang ada ini. Tanpa ayat ini, ayat ini dapat berdiri dengan sendiri.

T: Setiap hari Ali bemyanyi di dapur. Itu ayat yang saya ubah nilah daripada sini. Jadi, rumah boleh diubah lain. Sebab ayat ini hanyalah penerang, boleh ubah. Setiap hari Ali bemyanyi, di mana?

S: Di tepi sungai.

T: Di tepi sungai.

S: Di karaoke.

T: Setiap hari Ali bemyanyi di karaoke. Ok.

T: Ok! Contoh lain lagi. Kata kerja tidak transitif.

S:

T:bagi contoh lain. Salah takpe, saya tak marah.

S: Setiap hari Rabu Ali berjalan di tepi taman.

T: Setiap hari Rabu, Ali berjalan di..

S: Tepi taman.

T: Di tepi taman. Tepi taman? Tepi-tepi aja dia jalan.

S: Di taman.

T: Setiap hari Rabu, Ali berjalan di taman. Ok, di taman bunga.

S:

T: Ok! Cuba ubah lain lagi. Setiap hari kubang. Cuba tukar nama Ah Chong ke?

S: Ah Kau.

T: Cuba

T: Kamu ikut aje, kawan-kawangagal...

T: Saya tidur. Aduhai itu tidak transitif. Tidur! Tidur tu kata kerja. Ok, "Saya tidur ayam". Saya tidur bila terjatuh dari katil. Ia menunjukkan saya tidur ayam. Saya tidur berdengkur.

S: Ahmad sedang.

T: Ahmad sedang..., Ahmad sedang.. belajar. Ahmad sedang belajar. Belajar ialah kata kerja transitif atau tidak transitif?

Ss: Transitif.

T: Apa?

Ss: Tidak transitif.

T: Tidak transitif. Baik, boleh ke tak ayat tersebut diasingkan.

Ss: Boleh.

T: Boleh??

Ss: Tak boleh.

T: Tidak boleh. Ahmad sedang belajar. Kalau awak buat begitu..... ayat tidak boleh diasingkan. Ok. Lain. Isaac?

Isaac: Saya makan di restoran Adnan.

T: Saya makan di restoran Adnan. Saya makan boleh masuk dalam kata kerja tidak transitif. Ok. Lain. Cuba beri contoh kata kerja transitif.kata kerja transitif boleh diasingkan. Cuba beri contoh kata kerja transitif.

S: Ahmad mencampakkan bukunya..

T: Ahmad mencampakkan bukunya... ke atas katil. Ahmad mencampakkan bukunya ke atas katil. Baik, cuba pastikan ayat kawan awak tadi.

- S: Buku dicampakkan di atas katil oleh Ahmad.
 T: Buku dicampakkan oleh Ahmad ke atas katil. Ok! Yang lain?
 S: Ahmad meniup seruling.
 T: Ahmad meniup seruling. Tuan-puan. Ahmad meniup seruling. Pastikan ayat
 S: Seruling ditiup oleh Ahmad.
 T: Seruling itu ditiup oleh Ahmad. ...
 S: Ah Chong menampar..
 T: Ah Chong menampar Ali..
 S: Ah Chong menampar Ali.
 T: Asingkan.
 Ss: Ali ditampar oleh Ah Chong.
 S: Arul menjaringkan gol.
 T: Arul menjaringkan GOL.
 Ss: Gol dijaringkan oleh Arul.
 T: Gol dijaringkan oleh Arul..... Siapa yang tak faham tentang kata kerja transitif dengan tidak transitif?
 T: Baik, cuba sekali lagi. Kata kerja tidak transitif. Ia berkenaan dengan kata kerja yang apa?
 Ss: Tidak perlukan objek.
 T: Ok, jadi ia tidak perlukan objek.Yang kedua?
 Ss: Tidak boleh diasingkan.
 T: Tidak boleh diasingkan.
 T: Ok! Yang kedua, kata kerja transitif.kata kerja transitif. Awak....
 S: Ia mempunyai objek.
 T: Ia.. memerlukan objek. Ok, jadi ia boleh diasingkan. Itu bagi kata kerja transitif. Ok! Padam papan hitam.

APPENDIX F
(APPROVAL LETTERS)

**MICHIGAN STATE
UNIVERSITY**

September 24, 1996

TO: Rajendran Nagappan
1635 B Spartan Village
E. Lansing, MI 48823

RE: IRB#: 96-537
TITLE: HOW DO TEACHERS TEACH HIGHER-ORDER THINKING
SKILLS?: THE CASE OF MALAY AND ENGLISH LANGUAGE
ARTS CLASSROOMS IN MALAYSIA
REVISION REQUESTED: N/A
CATEGORY: 1-A, B, C
APPROVAL DATE: 09/24/96

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.



OFFICE OF
**RESEARCH
AND
GRADUATE
STUDIES**

**PROBLEMS/
CHANGES:**

Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

University Committee on
Research Involving
Human Subjects
(UCRIHS)

Michigan State University
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Sincerely,

David E. Wright
David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Maria Teresa Tatto



BAHAGIAN PERANCANGAN DAN
PENYELIDIKAN PENDIDIKAN
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16 Ogos 1996

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Tuan,

**Kebenaran Bagi Menjalankan Kajian Ke Sekolah-Sekolah.
Jabatan-Jabatan Dan Institusi-Institusi Di Bawah
Kementerian Pendidikan Malaysia**

Adalah saya diarah untuk memaklumkan bahawa permohonan tuan untuk menjalankan kajian mengenai

"How Do Teachers Teach Higher-Order Thinking Skills ? : The Case Of Malay And English Language Arts Classrooms In Malaysia".

telah diluluskan.

2. Kelulusan ini adalah berdasarkan kepada hanya apa yang terkandung di dalam cadangan penyelidikan yang tuan kemukakan ke Bahagian ini. Kebenaran bagi menggunakan sampel kajian perlu diperolehi daripada Ketua Bahagian/Pengarah Pendidikan Negeri yang berkenaan.

3. Tuan juga dikehendaki menghantar senaskhah hasil kajian tuan ke Bahagian ini sebaik sahaja selesai kelak.

Sekian.

"BERKHIDMAT UNTUK NEGARA"

"CINTAILAH BAHASA KITA"

Saya yang menurut perintah.

(HJ. MOHD. TAJUDIN BIN HJ. ABD. RAHMAN)
b.p. Pengarah Perancangan dan Penyelidikan Pendidikan.
b.p. Pendaftar Besar Sekolah-Sekolah dan Guru-Guru.
Kementerian Pendidikan.

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