Thinking Skills Course and Student's Academic Self-efficacy

1Yania A. Al-Shaibani and 2Jamal I. Daoud

1Institute of Education International Islamic University Malaysia.
2Department of Science in Engineering International Islamic University Malaysia.

Abstract: The purpose of this study is to examine the impact of thinking skills courses on undergraduate students’ academic self-efficacy. The study also examines the differences between students who have been involved in thinking skills courses and those who have yet to enroll in thinking skills course. The study also investigates the relationship between gender and students' academic self-efficacy. The study is limited to students of the Faculty of Islamic Revealed Knowledge and Human Sciences (KIRKHS), International Islamic University, Malaysia who have been enrolled in RKGS 2010 thinking skills course. Data was collected from 260 (male-female) undergraduate students. The College Academic Self-Efficacy Scale (CASES) instrument was used for data collection. The study used SPSS version 17 for the purpose of data analysis. The internal consistency reliability test was used to check the reliability of data measuring students' academic self-efficacy. The findings of this study support the hypothesis that thinking skills has direct relationship with academic self-efficacy. Thinking skills have influenced students' academic self-efficacy. In other words, the results support the effect of thinking skills courses on students' academic self-efficacy. Therefore, this study recommends that the duration of teaching thinking skills courses be lengthened as it has tremendous impact on students' academic self-efficacy.

Key words: Thinking Skills, Academic Self Efficacy, CASES, Learning Outcome.

INTRODUCTION

Thinking skills are necessary in any and all individuals when dealing with daily activities and with other people. Therefore, we need to ensure that our children are equipped with the right tools as they progress through their school years and into what is taking, the information age.

Perhaps most importantly in today's information age, thinking skills are viewed as crucial for educated persons to cope with a rapidly changing world. Many educators believe that specific knowledge will not be as important to tomorrow's workers and citizens as the ability to learn and make sense of new information (Gough, 1991 as cited in Cotton, 1991)

Many different people have suggested a variety of definitions and strategies concerning thinking and thinking skills, they all focused on mind activities, critical use of information, logic and reason. According to Beyer (1991) thinking is considered to be a mental manipulation of sensory input and recalled the perception (of thoughts and information stored in memory) or to find a way to reason about or to formulate thoughts and judge. While De Bono (1983) defines thinking as the skill with which the acts of exploitation of information on experience, he finds that perception and thinking have a crucial relationship, which is frequently and insufficiently explored. Abu Khalaf (2001) states that thinking involves the ability to operate the brain effectively, as with any skill there is opportunity for improvement, development and level of investment that involves the acquisition of knowledge and skills of others. Some educators originated their theories from works in psychology as in Feuersteins' 'Instrumental Enrichment Theory' which was initially developed in 1980. Others developed concepts taken from philosophy such as "Critical thinking and Philosophy for Children" and Matthew Lipman's thinking philosophy for "Children programme", which is very much related to the critical thinking practice Lipman (1991). On the other hand, some are hard to categorize, such as Edward De Bonos' works in lateral thinking and divergent thinking De Bono (1987). Meanwhile the multiple intelligences theory developed by Howard Gardner has been extremely significant and aims to develop different kinds of intelligences by implementing the process to teach thinking skills Gardner, 1993 as cited in Fisher (2005).
What the researcher ponders over more than what has been documented in line with thinking skills and self-efficacy is that students command varying backgrounds and these characteristics influence their efforts at realizing academic self-efficacy in the process. The study in question will attempt to examine the background characteristics in influencing the academic self-efficacy of the students.

Accordingly, attention to the use of thinking skills in learning and teaching is increasing. Studies and findings show that these thinking skills can develop the learning and intellectual abilities of students, employees and citizens as well. It is not startling therefore, that many educational thinking skills courses designed to teach different kinds of thinking programmes have been proposed in workshops and global conferences with the objective of establishing a strong base on which to use these skills in all aspects of life. Furthermore, many thinking skills activities and books have been published and can be used in different domains.

2. Thinking Approaches:

Imparting thinking skills to students can be done using different approaches. The teaching and learning report (2006) is dividing approaches into two principal categories, namely 'stand alone' and 'infusion'. In a stand-alone approach, pre-designed lessons are taught in parallel with the core curriculum, whereas the infusion technique incorporates thinking skills into curricular topics. Whether the thinking skills conveyed are subject specific or more general, they are classified as infused as long as they are taught within curricular topics.

McTighe (1985) recognizes an additional class of teaching approach and identifies these three as infused, direct, and teaching about thinking. These three approaches are considered distinct while also complementary. The infused approach engages students and gives them an opportunity to practice their newly acquired skills in context. The direct approach systematically identifies and develops thinking skills on their own, with the belief that these skills develop autonomously from learning subjects.

The teaching about thinking approach focuses on student self-awareness with respect to thinking. This approach encourages students to evaluate and monitor their own knowledge level in order to seek out the knowledge required to solve a problem or understand a difficult concept.

McGuinness (1999) describes the nature of ideal interactions between teachers, pupils, and technologies, regardless of the teaching approach taken. The goal is to foster a "constructivist environment" while focusing discussions and questioning onto the learning objectives so as to avoid a perception of threats to the teachers' craft knowledge.

What should worry the educational quality movement currently is that much of the time is vested in arguments over approaches than the objective and learning outcome of the teaching of such thinking skills courses. It follows mention therefore, that once the system and the instructors are committed to the teaching of thinking skills, then chances are that the approach will remain a small matter and yet even when they have the best approaches at their disposal, without commitment, things cannot work out at all and self-efficacy will remain elusive.

2.1. The Infused Method:

As described above, the infused method combines thinking skills into a curriculum topic. Teachers can teach the main curriculum topic while also imparting a pattern of thinking. Scaling this method up across the entire curriculum puts an equal emphasis on thinking as on the curriculum topics. Baumfield et al. (2004) studied the impact of the infused method on students' abilities. They summarized that no negative impact to students' results was reported and that a majority reported positive impacts on student achievement. A range of non-curriculum measures were used to determine student achievement.

Whilst thinking skills programmes and approaches can perhaps be characterized as having positive impact on cognitive abilities, they are not a panacea and can be expected to have differential effects depending upon the content of the programme and its implementation. Other studies conducted by Baumfield's group in 2005 confirmed positive results in pupils that were taught thinking skills Baumfield et al. (2005). Pupils reported improvement to their learning abilities as well as to their attitudes and beliefs.

Another research conducted by McGuinness et al. (1995), found that the infused approach had a strong impact on pupils, making them capable of mindfulness and resourcefulness in their learning practices.

Higgins and Hall (2004) bring further evidence of positive impacts from approaches where aspects of thinking were explicitly identified and focused on specific kinds of thought. Such methods successfully raised achievement in thinking abilities. Bao et al. (2009) compared Chinese and US students. Since the Chinese educational system, from kindergarten to 12th grade, exposed students to far more problem-solving instruction throughout their curriculum the Chinese students, were found to demonstrate higher critical thinking and reasoning skills than their US counterparts.
What the impending study adds to this already packed field of knowledge is the fact that improved results as a result of thinking skills instruction is only but one thing and therefore a step in the quest for the ultimate, which is transformation of the students' academic self-efficacy. Grades are actually one way to indicate it but not the most comprehensive.

Swartz and Perkins (1990) emphasized that teachers must use thinking map for activities of active organized thinking. It is not the only element that the teachers should incorporate into their lessons to make them good thinking skills lessons.

Duarte (2009) focuses on older students when he implemented a programme designed to promote reflection. He noted enhanced participation in online discussion forums related to "Contemporary Management Issues". These students were also able to express ideas with greater clarity during in-depth discussion sessions. Finally, the "Reflective Journals" that students submitted as course assessments presented a surprising level of excellence.

These examples support the effectiveness of teaching thinking skills using the infused method. Through this approach, students have the opportunity to better analyze their course subject information, rise to difficult challenges, and use new strategies in order to gain better understanding of the topic. Furthermore, infusion gives the students the ability to infer differently and develop abilities in analysis, synthesis, and imagination.

What this study brings into perspective is the need to establish whether there is any clear difference in terms of academic self-efficacy between the students who have been exposed to thinking skills and those who have not. The researcher posits that some students may look to possess academic self-efficacy but whose genesis may be natural as a result of exposure to various experiences not necessarily a making of the thinking skills they are exposed to from time to time.

2.2. The Direct Approach:

Modern societies place utmost importance upon disseminating information unfortunately for them though, without any accompanying skills that would focus on how to interpret and use that information.

Mercieca and Xerxen (2005) linked student improvement with the Thinking Skills Programme (TSP) that students attended. TSP consistently demonstrated a positive influence on pupils' ability to "think in different ways". Improvements were seen in three key areas: subject exploration, generation of new ideas or alternatives, and consideration of different viewpoints. The direct approach considers thinking to be an essential skill area deserving its own study programme and materials based upon one or more special course models. This approach would include lessons targeting instruction in a specific type(s) of thinking; with these lessons being organized in a systematic way. The exercises within the course materials are not sourced from a specific instructional subject but rather are included from any number of sources for the sole purpose of enhancing the understanding of a thinking skill.

As stated by Swartz and Perkins (1990), the main disadvantage of the direct approach, is that it requires additional course time outside the regular curriculum subjects.

Rule (2008) analyzes the integration of systems such as Talents Unlimited or CoRT Breadth into subject areas with both technology and thinking skills. These systems benefit teachers in the organization of their work and provide a framework for students to learn in manageable steps. For the students, the systems lead them to new perspectives and subsequently new gains in knowledge. It appears that student's further benefit from an increase in their verbal curiosity skills. Student self-efficacy becomes evident in areas such as science knowledge, computer self-efficacy, and vocabulary.

Despite the advantages and successes of the direct approach for teaching thinking skills, there are disadvantages to be considered as well. Direct approach teachers require specialized training and, as stated previously, stand alone classes may require more hours than can fit within an already-full school or college schedule. This last impediment is often the reason for not implementing stand alone thinking classes within educational institutions. In order for thinking education of direct or infused approach to become more widespread, there is a need for additional training for teachers and students. There is also a need for more facilities in which to practice and apply thinking skills. For their part, students who have benefited from thinking skills training can help persuade officials to offer more support for such classes by reporting their personal experiences in applying their newly acquired skills to their lives outside of school.

Indeed, shifting the emphasis of knowledge to all aspects of life, rather than just in the classroom, will have the effect of improving thinking in early years of childhood. Pupils can apply their thinking processes to better organize and retrieve information as well as problem solving in their day to day lives. The applicability of these skills to all facets of life has helped to place teaching thinking skills as a major educational objective.
Accordingly, the stand alone approach to teaching is particularly successful in developing an individual’s thinking skills in all facets of life, since it is not tailored to any specific subject matter.

Direct approach classes provide two types of interactions namely, between teacher and students and among the students themselves. Such interactions have both educational and social benefits. Unfortunately, since the direct method is in limited use in educational spheres, it has been challenging to use it as a basis for research since sample groups are difficult to find.

But what should be noted is that even conceiving a direct approach may not have a living impact on the students since in essence and reality, it might just add to the long subjects and hours of learning that students already have to endure at school. What matters is the package thereof and the teacher's beliefs about the impact since where there is a will, there is always a way.

3. Kinds of Thinking Skills:

Thinking skills can be divided into three broad categories: critical, creative, and learning. More specialized categories include decision making, problem solving in a daily context, and problem solving specifically for math and science subjects. Each of these specialized categories will be examined in the following sections.

3.1. Critical Thinking:

Explicit instruction in thinking can be a difficult notion to endorse among higher education authorities. While thinking skill itself is easy to endorse, many feel that thinking classes are a misguided effort Halpern (1999). However, numerous studies conducted to investigate the positive impact of critical thinking on students' thinking abilities noticed that students who had received instruction in critical thinking have a better level in their knowledge of critical thinking than those who did not receive any instructions MaNieto & Saiz, (2008).

Such a finding in reality passes without serious concern and attention of educators since it is ordinarily known that any instruction obviously increases knowledge in that particular area. What is of concern and what the study will thus bring itself to, is whether the teaching of thinking skills will transform the students' academic self-efficacy and general competencies. For this to be realized though, the researcher draws one of the questions to examine the underlying factors for academic self-efficacy of the students studied. Savich (2008) shows that teachers can increase student scores on tests and the level of student engagement by implementing critical thinking skills in an interactive teaching format.

Halpern (1999) believes that critical thinking instruction will remain important component in tertiary education curricula. According to him, the work place demands have increasingly become complex. He says that critical thinking as a desired outcome of higher education has become more important. This indicates the very point that when educators implement critical thinking skills within school curriculum, it will definitely improve students' thinking abilities which in turn reflect in their work.

Critical thinking is a perfect tool for responding to challenges in personal and professional spheres, even when problems are not well defined. Studies on strategic and specific methods for improving critical thinking abilities have shown that critical thinking skills may actually be disproportionately represented within primary and secondary science instruction. This subsequently affects the quality of thinking ability.

Kadir (2007) describes the challenge facing today's education system as needing to equip students with critical thinking skills that will turn them into "knowledge workers" and "symbol analysts" of the future's global economy. Influences such as the Information Age and the Internet put additional pressure on educators to include critical thinking education into their curriculum. These demands create sufficient agreement among education specialists. Although the exact language to convey that meaning may still be subject of debate.

Rising up to the occasion is the Faculty of Islamic Revealed Knowledge and Human Sciences KIRKHS at the International Islamic University Malaysia which designed a thinking skills course for all students in order to improve their performance. However what goes for enquiry is the extent to which this course has gone on to transform the academic self efficacy of the students thereto which the study focuses on.

Many scholars and educators identify performance with academic self-efficacy by cross examining students' scores(grades). But all this is a just a misnomer since self efficacy is much more than just academic grades in written examinations. The factors influencing students’ academic performance may differ from those influencing self-efficacy and this forms the basis of the study to rest such a contradiction.

3.2. Creative Thinking and Problem Solving:

As the general literature states that although creativity is poorly understood and difficult to teach there are positive techniques that everyone can learn. Edward de Bono (1993) notes creative techniques such as focusing, challenging, modelling alternatives, and concepts among others.
Creative thinking should take its place alongside other methods of handling information. A person sitting down with the deliberate intention of generating an idea in a certain area and then proceeding to use a creative thinking technique systematically should represent a normal state of affairs.

Some questions to be asked as guide to the study in offering:

- What causes creativity in the individual?
- Can the creative process be identified?

Answers to such questions will be sought in the study as a mechanism of filling the void left by previous studies by examining the underlying factors for the development of academic self efficacy of the students. Three creative abilities measured by the Torrance tests are originality, fluency and flexibility. These abilities are defined as, the ability to produce the uncommon or unique Awang, & Ramli (2008). Creative thinking will make students move "sideways" to try different perceptions, different concepts, and different points of entry. Students can use various methods including provocation to solve the problems. Creative thinking has very much to do with perception to put forward different views. The different views are not derived from each other but are independently produced. In this sense, creative thinking has to do with exploration just as perception has to do with exploration.

Originality in the technical context is the ability to find new ways to adapt existing ideas to new conditions. The habit of always asking questions about a situation will make students creative in thinking. They are always asking questions such as: "Why do we do this?" How can we improve this design?", Is this really safe for the building?" Originality is nurtured when students are willing to challenge the obvious. Wallace (2000) likens training of the brain with critical analysis skills with training the body for sports. In both cases, exercises and practice will result in improved performance. Learners should be aware that their thinking performance can be improved and that they are not permanently locked within their current levels. De Bono 1993 as cited in Awang & Ramly (2008) identifies two broad and distinguishable uses of creativity. One of these is "everyday" creativity in which creativity becomes part of normal thinking and can therefore be applied to any situations that require thinking. This should happen without any formal or deliberate effort. Then there is "specific" creativity where a definite need has been defined. In this case there is a formal and deliberate effort to use the systematic techniques of creative thinking to generate new ideas.

He also defines three aspects for creativity:

1. Defining the focus or creative task - There may be problems that arise and identify themselves. Individuals make definite creative focuses. There may be an obvious creative need. All these are ways in which creative focuses can emerge;
2. Structure for the deliberate application of the systematic creative thinking tools- Once the creative focus has been defined, it can be subjected to deliberate creative thinking. This can be done by groups or individuals or a combination of both in a discussion session among group members. It often happens that the group that has the concern or problem will organize its own deliberate creative thinking session to tackle the problem in question;
3. Evaluation and implementation of the output of the creative thinking- The group that has the creative focus may also be involved in evaluating the ideas that come out of the deliberate creative thinking. In such cases the process is continuous. If the "thinking" group is different from the "implementation" group, attention has to be paid to the transfer of ideas so that those expected to act on the idea are brought in at an early enough stage to feel some ownership in the new ideas. Other studies reinforce these analyses.

One such study was completed by Al Zyoudi (2009). His study, performed on students with learning disabilities, showed significant increase in creativity thinking skills after students attendance training programme that focused on creative thinking. Kwen and Cheng (2005) took the approach of using De Bono's tools in order for students to better answer MCQ questions. The benefits were twofold, giving an outlet for creative students to share alternate perceptions and giving teachers a chance to catch and correct erroneous student reasoning or misconception.

Sternberg (2006) states that many different approaches existed for teaching creative thinking and that any of these could yield improvements in the quality of instruction and understanding creativity. Combining creative and critical thinking is a crucial undertaking. Both creative thinking and critical thinking skills are valuable and neither is superior. In fact, it has been shown that when either is omitted during the problem solving process, effectiveness declines. For example you could focus on a subject in a logical, analytical way for some time, sorting out conflicting claims, weighing evidence, and thinking through possible solutions Coughlan (2008).
There are lots of studies that provide evidence that the use of Dacono's thinking skills has tremendous impact on students' academic performance and on the way they deal with their daily life situation. They can solve their problems in systematic ways, they can handle hard tasks without having the level of stress others may have. Also it is known that students who master thinking skills can accomplish their tasks efficiently. From this very point the link between thinking skills and academic self-efficacy occurs.

But this study will go an extra mile to examine the factors responsible for the development of self-efficacy of the students, as well as digging deep to investigate and thereafter prescribe whether some background characteristics of students do not actually play a role in influencing the academic self-efficacy in students irrespective of what thinking skills they are exposed to during the teaching and learning process thereby leading up to the intricate task of having to provide for the individual differences in each learner.

4. The Necessity of Thinking Skills:

Almost everybody agrees that one of the main objectives of education is to develop the thinking abilities of all learners. The teaching of thinking skills is, therefore, vital in preparing students for future employment opportunities and the ability to keep speed with the challenge of today's society.

During the late 1960s and early 1970s, researchers and educators started to raise the question of "if all education is simply the guidance of thinking into a discipline, why not teach thinking itself?" Lipman (1991). Accordingly, Lipman (1991) also mentions Gilbert Ryle, the British philosopher who conducted acute and perspective analysis of the thinking process when he acknowledges that there are specific thinking skills which can be cultivated by only "academic discipline". In addition, Lipman (1991) states that the very idea of teaching thinking skills arises as an essential to get better thinking in the classroom.

Thinking is a very broad and indefinable concept. In this sense there are many different definitions on thinking in the literature one of them is that 'thinking is vital in individuals lives'. Halpern (1998) explains that if people cannot think elegantly, then they are in danger of having all of the answers but still not knowing what the answers mean.

According to Wilson (2000) thinking skills is an ambiguous term and there is little consensus as to what should be included. However, It covers higher order thinking, "creative thinking", "critical thinking" and "constructive thinking".

Cotton (2001), underlines that some common terms in the field of thinking skills possess multiple definitions because there has yet to be universal agreement on their meaning. However, the researcher draws concern on whether there is any challenge on whether thinking has multiple dimensions and definitions or not; the real concern is whether the thinking skills package is causing impact on the students to whom it is exposed at various levels.

In summary, there are many reasons why the use of thinking skills is important in the educational domain. In times of fast changes, the main concern of an educational system is to teach students how to learn and how to reflect. Thinking skills improve educational learning in the sense they concentrate more on practical ways of teaching in comparison to previous methods of teaching such as teacher centered method of teaching. In addition, using thinking skills enhances students' thinking ability to search beyond the given knowledge produces their own synthesis and analysis according to their own perception. Consequently, thinking skills have immeasurable advantages in all disciplines.

5. Teaching Thinking and Classroom Learning:

Nowadays there is a strong need to design education with several innovative skills that produce students with higher thinking abilities. It brings us to several questions such as how can teachers create and foster a learning environment that promotes creative thinking and problem solving skills in students what types of methods and classroom climates do teachers need to promote to face a challenging of this modern and technological world, and how are students supposed to react to such helpful and productive classroom environments? In order to answer these challenging questions some of the relevant studies should be cited.

Much like Feurstein, Lipman (1991) became convinced that thinking exercises and activities would lead children to achieve better performance levels. This belief had developed from dissatisfaction with the thinking skills of his university students, he felt that students were too willing to accept facts and opinions presented with authority. As a result, he went on to found the Institute for the Advancement of Philosophy for Children (IAPC) at Montclair State College, New Jersey. For forty years, the Institute has been developing thinking skills material for use by children from 6 years to adolescence (as cited in Paul and Ginnis, 2008).
Beyer (1985) sees the need for change in the classroom due to its inability to develop thinking skills in students. Although exercises such as journal writing, debating, and thought-provoking exercises do help develop reasoning skills, these are not sufficient. He suggests that thinking skills must be explicitly taught in the classroom and provides two models for introducing such skills into the classroom, both of which explain using the skill step-by-step.

Remarkably, some teachers use teacher-centred methods which in turn focus on them in the classroom. From here one can conclude that the student-centered methods are needed to improve learning. How can it be done? Certainly, through the use of thinking skills which is considered one of the innovative approaches. Thinking skills will enhance students' performance, participation and self-confidence which in turn will provide better outcomes.

Developing thinking is a main goal for schooling just as the development of subject specific knowledge is a goal. Thinking is not a subject in itself but a skill to be developed across subjects. But there is need to realize that the skills are one thing, teaching them to students is another, yet impacting the academic self-efficacy of students is the ultimate and major cause of the study in question.

The researcher, through this study, attempts to bring out the factors that influence academic self-efficacy, examine the differences between students who have had exposure to the teaching of thinking and those who have had no such opportunity as a mechanism for laying claim that thinking skills improve students' self-efficacy, as well as cross examine the background characteristics of students and their possible influence on academic self-efficacy.

Work by Kendall et al. (2008) attempt to identify thinking and learning skills that play a part in good decision making strategies. The study indicates the importance of self esteem as an underlying driver for motivation. The study also organizes thinking and learning skills into cognition, meta-cognition and attention to self for the learner (self system skills).

McKown (1997) highlights the synthesis of seven previous studies that identified the transfer effects on the cognitive function in mentally deficient children. Six of the previous studies showed that inclusion of self-management skills, in addition to training in specific skills, was the only way to ensure significant transfer. In each study, teachers designed a biology curriculum to develop specific critical thinking skills. These specific skills were then shown to improve all topics (not only biology), which suggested that the skills could be generalized across domains.

A programme entitled "The Thinking Skills Programme" (TSP), developed by Mercieca and Xerxen (2006), showed positive results on pupils in four key areas:
1. Subject exploration
2. Consideration for multiple facets of a topic
3. Creative effort generating new alternatives and ideas
4. Consideration of multiple points of view

The researcher opines that whereas these are skills or competencies reported to have been gained from the teaching of a thinking skills programme, what remains clear in the education system is that such qualities can easily be possessed by someone who has not even attended an elementary class on thinking skills if such an individual is naturally gifted. What the study will therefore bring to the fore is an examination of the underlying factors for academic self-efficacy irrespective or respective of the teaching of certain thinking skills.

Another study by Dimech, and Pace (2005) the implementation of Edward de Bono's programmes in early primary students, shows that the pupils have retained the knowledge of the CoRT Thinking Skills. The ability to remember and to think is highly improved.

The researcher however opines that whether the schools conceive of many categories and approaches to the teaching of thinking, what matters is the attitude and therefore commitment of those charged with the task of imparting the thinking skills within the students and this is viewed within the significant changes in the academic self- efficacy of the students.

6. Teaching of Higher Thinking in Malaysia:

In order for one to understand the importance of the use of thinking skills by students in Malaysia one should have a general view of the Malaysian education system, its policy and reforms. Nagappan (2001) gives much detail information about the educational policy and curriculum of Malaysia. Further, the author gives a brief account about why and how teaching skills have become necessary for Malaysians.

Accordingly, Malaysia is a multiracial country with a population of 22 million consisting of three main races: Malays, Chinese and Indians. The country has a centralized education system with all the funding for public schools coming from the Federal Government.
The national philosophy of education states that 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 component, 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, as cited in Nagappan (2001).

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. It is necessary therefore to teach thinking skills in schools.

To further emphasize the importance of teaching thinking skills, the contents of the college curricula should promote the development of thinking capabilities to enable learners to analyze, synthesize, explain, draw conclusions and produce ideas in amore constructive and useful ways. Nagappan (2001). The ministry of Education, in 1993 implemented the thinking skills programme in schools in a more systematic manner and to streamline the existing thinking skills programmes, identified four models which could be used in the classrooms Curriculum Development Center, (1989). The focus of current classroom teaching in Malaysia is the utilization of meta-cognitive strategies, especially the thinking skills Nagappan (2001).

It is imperative for thinking skills to become an educational goal for Malaysian education (schools and universities). This will train students to make sense of new information rather than just acquire knowledge through memorization. It is therefore up to education to see that all students receive training in and master creative and critical thinking. Students' ability to think creatively and critically help students a to make decisions, solve problems, and understand language(s).

Furthermore, their commitment to lifelong learning will offer intellectual, physical, emotional, and spiritual balance to their lives. Mahyuddin et al. (2004) conducted a study which used a self-designed inventory based on the Ministry of Education Malaysia's (MOE) model on thinking skills The Critical and Creative Thinking Skills (1996). Their findings showed that the teaching of creative thinking was less implemented than other thinking skills and that it should therefore receive more attention.

Consequently, using thinking skills is a crucial need not only within the Malaysian context but it should be global concentration in using thinking skills to face the rapid development. People now rely on computers to think and as such, there will be no thinking minds. Accordingly, the practice to use thinking skills as joyful and useful tools can bring the change to our societies.

But having said that, the researcher still considers that certain background characteristics may influence the academic self-efficacy of individuals in this respect, students at an undergraduate programme. The International Islamic University Malaysia provides for a multi-cultural setting with students from all walks of life and investigating background characteristics in such a setting can only get more and more intriguing as it can get interesting and descriptive, and this is what the current study will seek to bring to the fore as much as possible.

7. Bandura's Social Cognitive Theory:

Social cognitive theory is based on a model of reciprocal triadic causality, as illustrated below. It explains human psychology via three determinants: behaviour, environment, and personal factors. Within the framework, conscious thought processes such as reason, problem resolution, evaluation, and decision are emphasised Applebaum (1996).

![Bandura's Social Cognitive Model](image_url)

Fig. 2.1: Bandura's Social Cognitive Model.
Within the reciprocal model, all three determinants interact and influence each other. According to Bandura (1997), the environmental determinants are of three forms: imposed, selected, and constructed environments. In his later work, he acknowledged that an individual would have to deal with "gradations of changeability" within the three forms Bandura (1999).

Causality has been extensively researched in a variety of studies. It is central to any theory of cognitive regulation of motivation and action. Essentially, one seeks to answer if an individual's belief in personal self-efficacy actually affects the way the individual functions in a given situation. The answer to such a question is complex. If an individual has a perception of high self-efficacy, this will have different impacts on the preparatory aspects as on the performance aspects of functioning. In preparation for a task, for example, a reasonably low level of self-doubt can act as an incentive to master a challenge. Bandura, and Locke, (2003) assert that this perception of self-efficacy has four core features: intention, forethought, self-creativity and self-reflectiveness.

7. Self-Efficacy:

Educators are familiar with the notion that students' perception of their capabilities are essential to their motivation to achieve, but this notion can be difficult to quantify scientifically. Initial efforts at quantification neglected to account for environmental influences. By late 1977, researchers finally began to assess students' self-worth in more task-specific ways, focusing now on self-efficacy. Bandura (1977) introduced 'personal efficacy mediating mechanisms' and guidelines for measuring this self-efficacy within different function domains (as cited in Zimmerman, 2000).

An individual's judgement of his/her capabilities to complete a task is the definition of self-efficacy. Bandura claimed that a positive self-judgement will make individuals attempt to execute a given task or activity (as cited in Chacon, 2002).

Although self-efficacy can be a good predictor of outcome, Bandura (1986) cautioned that the accuracy of such a prediction should be based on proper measurement of self-efficacy specifically related to the task at hand. Otherwise, a student's generalized self-perception may not adequately take into account the criteria task at hand.

Nilsen (2009) echoes Bandura's thoughts on self-efficacy in that people who believe they can succeed in completing a task will tend to be more positive in working that task. Similarly, a task that is deemed likely to end in failure will meet with avoidance and lower energy is channelled into that task. Furthermore, self-efficacy can 'correct itself', since an individual that over-estimates his self-efficacy may meet with failure and thereafter reduce his assessment of themselves. However, an individual that under-estimates their self-efficacy may become stressed and see less success in learning.

Researchers often try to discover the relation between motivational variables and failure to meet performance. Unfortunately, this is often done without the identification of a specific criteria task. In other studies, confidence is mistakenly equated to self-efficacy. The results of such studies obscure the actual relationship between self-efficacy and academic performance.

What the study in offering tries to bring out as a concern is that making presumptions about self-efficacy may lead to contradictions in findings. This the researcher will do by examining the factors thoroughly without referring to any particular one and come up with logical conclusions and description of factors and their clinical attachment to the academic self-efficacy of students.

Hu, Liang et al., (2007) examined the effects of self-efficacy with respect to enjoyment of physical activity. As with thinking exercises, low self-efficacy participants reported lower enjoyment for the maximal exercise test. Moderate exercise showed similar levels of enjoyment for both high and low self-efficacy. The results for the higher-intensity workout align with Bandura's (1997) results for how self-efficacy perception affects social-cognitive tasks.

Perceived self-efficacy is concerned with people's beliefs in their capabilities to produce given attainments Bandura (1997). One cannot be all things, which would require mastery of every realm of human life. People differ in the areas in which they cultivate their efficacy and in the levels to which they develop it even within their given pursuit. It is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective and selection processes.

According to Bandura (1997), individuals construct their self-efficacy from four sources of information:
(i) Enactive mastery experiences (performance accomplishment)-efficacy beliefs are generated from successes and failures when performing task.
Success tends to strengthen beliefs in one's efficacy while failures tend to weaken them; (ii) Vicarious learning experiences (modelling) - While observing others' attainments, individuals compare themselves as performers in the same situation; (iii) Verbal persuasion - strengthens peoples' beliefs on the capabilities they have to achieve what they want; (iv) Physiological arousal - effective states influence peoples' beliefs of self-efficacy. Mood, stress and subjunctive threats affect people performance.

Bandura (1993) postulates three theories of motivation in which self-efficacy beliefs operate. The first one is the Attribution Theory which concentrates on how attributions act as cognitive motivators for people who consider themselves as highly efficacious. High efficacy individuals perceive their failures as lack of effort whereas low efficacy people perceive their failures as low ability. The second theory is Expectancy-value Theory where motivation is guided by outcome expectancies where people take into account their self-beliefs of capability to pursue outcomes. The third theory is goal oriented and conceived in terms of cognized goals. Here motivation is guided by one's performance, perceived self-efficacy and readjustment of personal goals based on one's progress.

Results from a study by Roberts and Dyer (2005) describe the interplay between motivation, self-efficacy, and critical thinking with student attitudes and results. They mention that computer proficiency and motivation influence attitudes prior to, and while, performing a task. They conclude that, for a study that uses an illustrated web lecture, students that are more motivated tend to achieve higher results.

7.1. Academic Self-Efficacy:

As previously defined, self-efficacy is an individual's assessment of their ability to complete a task with success. DeWitz, Woolsey and Walsh (2009) also considered students' goal orientation, or their reasons for approaching a given task, in evaluating success in various areas, including at college. College students may feel an affinity with their educational institution, their peers, and even their faculty but may still lack a sense of personal meaning if they are not targeting some goal or purpose.

Zimmerman (2000) also notes the importance of self-efficacy on student performance, linking this belief with key academic motivation indices such as level of effort, persistence, choice of activities, or emotional reactions. Zimmerman acknowledges the work of Bandura (1970) which showed many positive aspects of self-efficacious students such as their desire to work harder, persist longer, participate more, and have fewer emotional reactions when they encounter challenges and problems.

Using benchmarking methods and incentives to encourage students to set short time goals will help them develop academic self-efficacy (Bandura, 1997). In order to continue to build cognitive skills and academic self-efficacy, students must take what they have learned in one area and repeatedly attempt to apply learned skills in another area. Through a widening of experiences, collaboration and corroboration with knowledgeable individuals, students can transfer cognitive skills to other areas and situations and this may help to continue to build personal self-efficacy Bandura (1997).

However there is need to recall that students are not proto-types and therefore differ in many ways. This does not only divorce the idea of benchmarking of methods but also the assessment dished out on to the students. What ought to be actually thought of for action is how to help individual students and the study shall examine influences of background characteristics on academic self-efficacy of students.

Generally, research has shown that higher levels of self-efficacy correlate positively with increased academic achievement Chemers, Hu, and Garcia (2001). Researchers found that students with higher levels of academic self-efficacy achieved higher grades and persisted in their academic major longer than those with lower perceived academic self-efficacy Lent et al., (1984). Lent and colleagues' study also revealed that academic self-efficacy was related to standardized tests and high school rankings; the researchers also found a significant correlation among levels of academic self-concept, self-efficacy and achievement.

Maizam (2009) focuses on determining the links between confidence-inducing stimulus, academic self-assurance, and academic performance for engineering students. The study shows that positive stimulus coincide with significantly higher self-confidence and cognitive performance. Positive verbal input is the key to the engineering students' cognitive performance and negative verbal input has an equally significant effect in reducing cognitive performance. The mechanism for this is determined to be the verbal input that affectes academic self-confidence which then affectes the students' performance. This finding should be considered when managing assessments for teaching and learning.

Golightly (2007) seeks to further define components of self-efficacy that had been proposed by Bandura (1997). The components in question are: past success, modelling, verbal persuasion, and emotional arousal. Two relationships are of interest: that between academic hardiness and modelling and that between self-efficacy and verbal persuasion. Verbal persuasion proves to be a predictive indicator for self-efficacy.
Academic hardiness, however, was not a good indicator. But since students differ in background and experiences they go through then they may respond to various life situations quite differently and this may cause problems when it comes to interpreting their competencies and in this respect, academic self-efficacy. This will be a guiding principle in the current study to bring out the background characteristics and their influence on academic self-efficacy of students.

7.2. Academic Self-Efficacy and Students Learning Outcomes:

Joo, Bong, and Choi (2000) carried out a study in Korea which aimed at examining the abstract effects of student motivation on performance in Web-based instruction (WBI). In particular, the applicability of the self-efficacy theory to WBI contexts was tested. A total of 152 junior high school students in Seoul, Korea, participated in WBI during regular science classes. Participants completed motivational surveys before the onset of WBI and took the written and search tests at the end of WBI. Path analyses revealed that students' self-efficacy for self-regulated learning positively related to their academic self-efficacy, strategy use, and Internet self-efficacy.

Academic self-efficacy predicted students' performance on the written test, which comprised of problems on topics covered during the previous WBI sessions. Students' scores on the WBI search test were significantly and positively predicted by their self-efficacy in using the Internet. More interestingly, students' academic self-efficacy beliefs were not able to predict their search test performance, whereas students' Internet self-efficacy beliefs were not able to predict their written test performance Joo, Bong, and Choi, (2000).

Self-efficacy is related to self-regulate learning variables. Findings in this area suggest that students who believe they are capable of performing academic tasks use more cognitive and meta-cognitive strategies and persist longer than those who do not. Students with stronger academic self-efficacy make better use of cognitive strategies and self-regulatory practices through use of meta-cognitive strategies.

Pintrich and De Groot (1990) reported a relationship between academic self-efficacy and both cognitive strategy use and self-regulation through use of meta-cognitive strategies. Academic self-efficacy also correlated with semester and final year grades, in-class seatwork and homework, exams and quizzes, and essays and reports. The researchers concluded that self-efficacy played a "facilitative" role in the process of cognitive engagement, that raising self-efficacy beliefs might lead to the increased use of cognitive strategies and, thereby, higher performance, and that students need to have both the 'will' and the 'skill' to be successful in classrooms.

In the third area, researchers have reported that students' academic self-efficacy beliefs are correlated with other motivation constructs and with students' academic performances and achievement. Constructs in these studies have included attributions, goal setting; modelling, problem solving, test and domain-specific anxiety, reward contingencies, self-regulation, social comparisons, strategy training, other self-beliefs and expectancy constructs, and varied academic performances across domains.

Research findings have strongly supported Bandura's contention that efficacy beliefs mediate the effect of skills or other self-beliefs on subsequent performance attainments. Researchers have also demonstrated that self-efficacy beliefs influence these attainments by influencing effort, persistence, and perseverance.

A Malaysian study by Rahil Mahyuddin et al. (2004) sought to discover the relationship between student self-efficacy and achievement in English language. A correlation between high self-efficacy and high achievement in English, as well as in general performance, was found. The study proposed that influential persons in the students' lives, such as parents and teachers, should help to enhance self-competence and thusly self-efficacy in order to achieve the best results, be they in English language studies or in other fields of study.

7.3. Sources of Academic Self-efficacy:

According to Fencle and Skeel (2005) there are four sources of self-efficacy. Teachers can use strategies to build self-efficacy in various ways. These four sources are:

1. Mastery experiences - Students' successful experiences boost self-efficacy, while failures erode it. This is the most robust source of self-efficacy;
2. Vicarious experience - Observing a peer succeed at a task can strengthen beliefs in one's own abilities;
3. Verbal persuasion - Teachers can boost self-efficacy with credible communication and feedback to guide the student through the task or motivate them to make their best effort; and finally
4. Emotional state - a positive mood can boost one's beliefs in self-efficacy, while anxiety can undermine it.
A certain level of emotional stimulation can create an energizing feeling that can contribute to strong performances. Teachers can help by reducing stressful situations and lowering anxiety surrounding events like exams or presentations. It is particularly exciting to note that teaching strategies used in the classroom can and do make a difference to students' self-efficacy (Fencl, and Scheel, 2005).

**Conclusion:**
A survey questionnaire has been designed and the validity has been tested which was quite good. Then the major study started by distributing 260 questionnaires. The study focusing on the importance of teaching thinking skills courses on the students academic efficacy, and therefore we have selected two samples each of size 130 students. The first sample was for students who have taken the course of teaching thinking skills which was purposive sample and the other sample has been taken randomly from students with no background of teaching thinking skills.

The conclusion remarks are as following:
1. There is a significant difference between students who have taken the course of teaching thinking skills and those who haven't taken the course with regard to academic self-efficacy. Those with background in teaching thinking skills were shown more self-esteem and more confidence in dealing with various subjects and problem solving.
2. It is recommended to enhance the current teaching thinking skills courses and increase the contact hours for such courses.
3. To have well trained academic staffs in the teaching thinking skills courses and have continuous training for such courses for all academic staff.

**REFERENCE**
De Bono, E., 1983. The direct teaching thinking as skill.
Higgins, S. and E. Hall, 2004. Picking the strawberries out of the jam: thinking critically about systematic reviews and meta-analysis. Centre for Learning and Teaching School of Education, Communication and Language Sciences, University of Newcastle upon Tyne. BERA Manchester Metropolitan University.
McGuinness, C., 1999. From thinking skills to thinking classrooms. School of Psychology, Queen's University, Belfast P1.
Mercieca, T. and S.P. Xerxen, 2006. Report on the direct teaching of thinking, research projection the implementation of a thinking skills programme in years 4-6 in primary schools in malta.
Rahil, M., A. Zaidatol, P. Lope, E. Habibah, M.K. Mohd, 2004. The incorporation of thinking skills in the school curriculum, Faculty Of Educational Studies, Universiti Putra Malaysia, kajian malaysia, jld. xxii, 2, disember