Chapter Two

Literature Review

The purpose of present research is to find out the relationships among self-concept, self-efficacy and achievement. This chapter is divided into four sections which are self-concept and its relationship with achievement, self-efficacy and its relationship with achievement, comparison between academic self-concept and academic self-efficacy, and comparison between the roles of self-concept and self-efficacy in achievement.

2.1 Self-Concept and Its Relationship with Achievement

In this section, self-concept is defined and its components are listed. The relationship of academic self-concept and academic performances are discussed below.

2.1.1 Definitions of Self-Concept

Self-concept has received a great deal of attention during the recent history of psychological researches. With different research traditions and assessment techniques, definitions of self-concept vary widely. Researchers in the fields differed in their views of self-concept:

1. Perspective of Social Psychology

    Cooley (1902) proposed the concept of "Looking-Glass Self", which means the process of developing a self-concept through the messages a person gets from others, as how he/she interprets them.

There are three components to the "Looking-Glass Self": 1. one imagines how he/she appears to others; 2. a person imagines what others' judgments of that appearance must be; 3. a person develop some self-feeling, such as pride or mortification, as a result of his/her imagining others' judgment (Hensley, 1992). As shown in Figure 2-1, we often see ourselves through the eyes of other people, even to the extent of incorporating their views of us into our own self-concept.
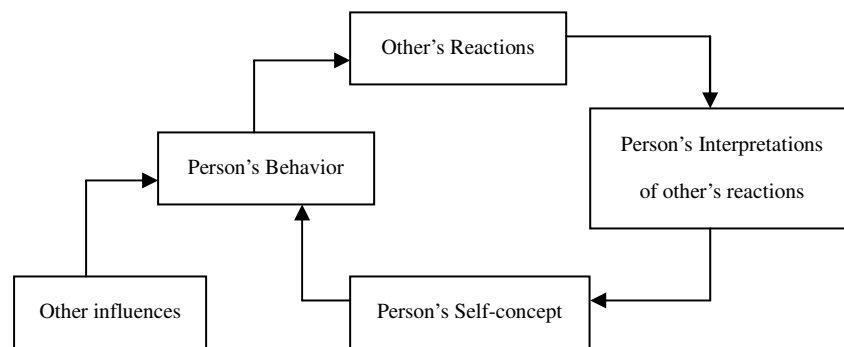
Figure 2.1-1 The process of developing a self-concept, "Looking-Glass Self"
Note. From "The theoretical intersection of the looking-glass-self and social penetration" by Hensley, W. E., 1992, Paper presented at the Annual Meeting of the Speech Communication Association, Chicago.

2. Perspective of Sociology

Sociologists emphasize that self-concept is the product of society. Self-concept is formed through the experiences that one interacted with others and the environment. Mead (1934) claimed that self is an internal conversation among "I" and "me". "The "I" is the response of the organism to the attitudes of the others, the "me" is the organized set of attitudes of others which one himself assumes." (p.175). Therefore, one

can have different kinds of self-concept depending on the environments such as family-self, school-self, and social-self.

3. Perspective of Psychology

Rogers (1951) proposed that self-concept is not innate; it is formed through experiences with environment.   Wh┠
 the infant interacts with his environment, he gradually builds up concepts about himself, about the environment, and about the relations between himself and the environment. Moreover, Rogers also stated that self-concept can combine with other's values.   The very young infant has some uncertainty in valuing so the evaluations from others come to form a large and significant part of the infant's perceptual field.

Shavelson et al.(1976) defined self-concept as perceptions of oneself. These perceptions are formed through experience and is influenced by environmental reinforcement, significant others and one's attributions for one's own behaviors.   Self-concept is multifaceted and hierarchical which is developed as the age increased.   The top of this construct is "General Self-Concept" and is divided into academic self-concept and non-academic self-concept.   Academic self-concept includes subject matters and non-academic self-concept includes social, emotional, and physical self-concept. At the bottom of the hierarchical model, there are evaluations of behavior in specific situations (Shavelson, Hubner & Stanton, 1976).

Bong & Skaalvik (2003) stated, "Self-concept is colloquially defined as a composite view of oneself (p. 2)." Some key terms to self-concepts are identified in the review:

(1) *Frames of reference*. Self-concept is strongly influenced by frame of reference that emphasized the importance of social comparison. By social comparison, one's academic self-concept is developed.

(2) *Causal attributions*. The ways that people attribute to their successes and failures can have influences on their descriptive and affective aspects of self-concept. "Self-concept and attributions are related in a related in a reciprocal manner (Bong & Skaalvik, 2003, p.3)."

(3) *Reflected appraisals from significant others*. Many researchers have claimed that people view themselves as they believe how others think about them. Cooley (1902) proposed the concept of "Looking-Glass Self" that individuals form self-concept through the reflected appraisals from others. It is also referred to Mead's conception that we take the role of the others (Mead, 1934).

(4) *Mastery experiences*. Self-schemas are formed from the past experiences of an individual in a particular domain. "Prior mastery experiences might be comparable importance to the formation of self-concept (Bong & Skaalvik, 2003).

(5) *Psychological centrality*. Bong and Skaalvik (2003) noted that effects of psychological centrality on self-concept are important. "Self-esteem is based on self-assessment of qualities that are perceived as psychologically central by individuals (p. 4)."

Based on the definition of self-concept and the literature reviewed, self-concept can refer to self-perceptions form through experience with environment, environmental reinforcement and the reflected appraisals

from significant others.

2.1.2 Components of Self-Concept

Shavelson's Multifaceted, Hierarchical Model of Self-concept

Shavelson (1976) defined self-concept is a person's perceptions of himself which are form his experiences with the environment and are influenced by values of others. Shavelson, Hubner & Stanton (1976) used multitrait-multimethod approach to test the construct validity of self-concept and assumed that self-concept is a hypothetical construct. They brought up seven features of self-concept:

(1) *Organized or Structured*. An individual uses his perceptions of himself in constituting the amount of data and recodes his experiences into simpler categories. "The categories represent a way of organizing experiences and giving them meaning (p. 413)."

(2) *Multifaceted*. There are many facets of self-concept and each of these facets can reflect individual's experience or the category system shared by groups. Such as physical-self, social-self, school-self.

(3) *Hierarchical*. Facets of self-concept may form a hierarchy from individual experiences in specific situations at the base of the hierarchy to general self-concept at the top. As shown in Figure 2-2, general self-concept can be divided into academic self-concept and non-academic self-concept. Academic self-concept can be divided into subject matters such as English, Math, History, and Science. On the other hand, non-academic

can include social self-concept, emotional self-concept, and physical self-concept and then divided into more specific facets.

(4) *Stable*. The stability of self-concept is descends from the top of the self-concept hierarchy to the bottom of the hierarchy. In other words, general self-concept is the most stable in the apex of hierarchy and self-concept varies greatly with different kinds of situation in the base of the hierarchy. Changing in general self-concept, many situation-specific would be required.

(5) *Developmental*. Self-concept becomes increasingly differentiated as increasing of age and experience. Infants can't differentiate themselves from their environment until they mature and learn from their experiences.

(6) *Evaluative*. Self-concept includes self-description and self-evaluation. Individual can evaluate himself in diverse ways according to different standards and situations.

(7) *Differentiable*. Self-concept can be differentiated from other constructs.

However, Hatrter (1990) pointed out that researchers do not always agree on the structure of Shavelson's multifaceted, hierarchical model of self-concept, even though the model is rarely disputed (citied from Bong & Skaalvik, 2003). Shavelson et al. (1976) hypothesized that a general self-concept would include more area-specific self-concepts. There are still research supported the basic concepts of multidimensionality and hierarchy of self-concept. For example, Marsh(1990b) proposed that if the multidimensionality of self-concept was ignored, self-concept would

not be adequately explained.　However, if mathematics self-concept and verbal self-concept was assumed to be correlated in order to make the description of the apex of hierarchical model, students' academic self-concept in verbal and mathematics are found to be nearly uncorrelated so that they cannot be represented by a single general academic self-concept (Byrne & Shavelson, 1986; Marsh 1990).　As the result, the academic portion of the Shavelson hierarchy was revised.
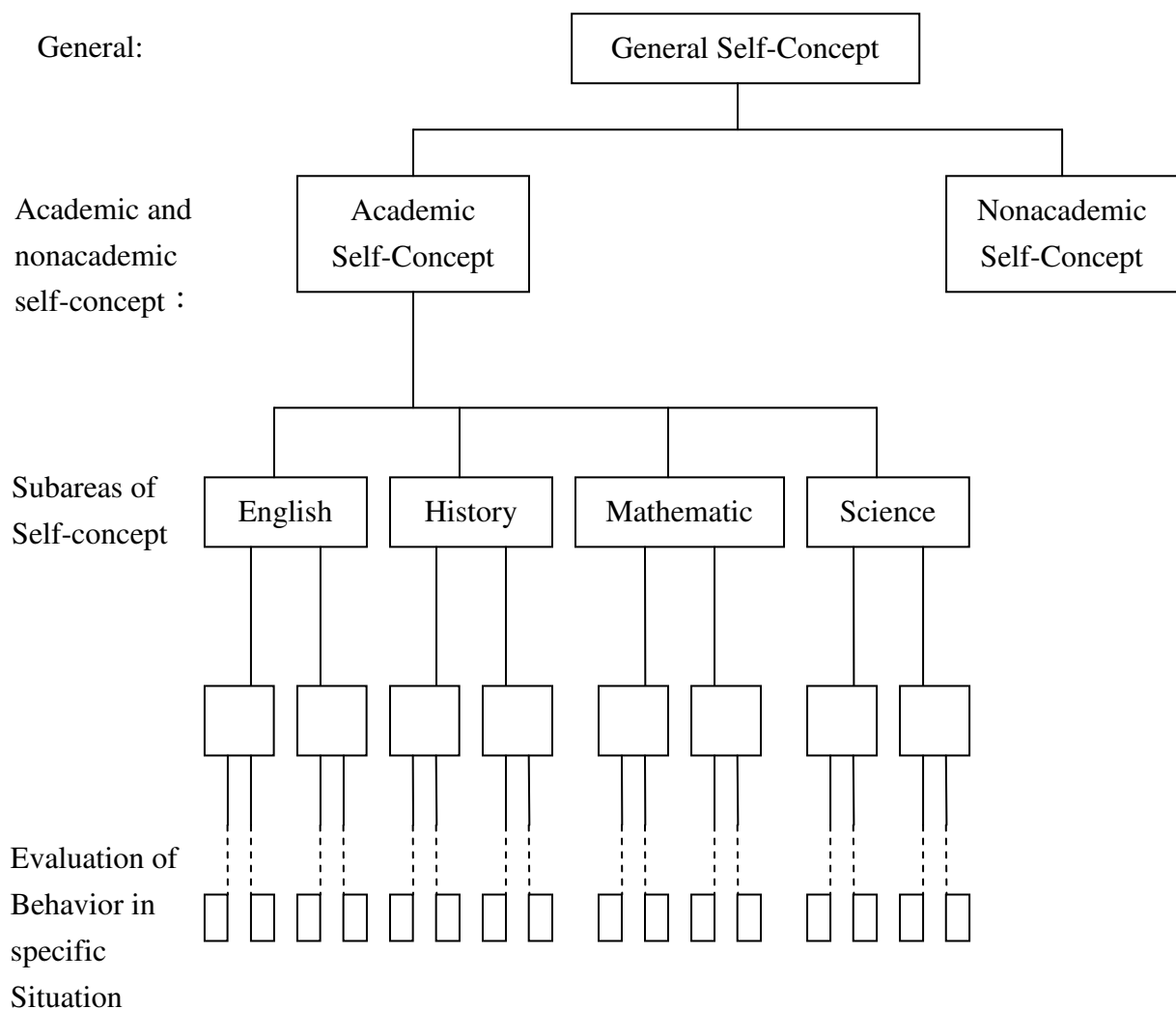
General:
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                      ┌─────────────────────┐
                      │ General Self-Concept │
                      └─────────────────────┘
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Academic and
nonacademic
self-concept：
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       ┌────────────────┐                    ┌────────────────┐
       │   Academic     │                    │  Nonacademic   │
       │ Self-Concept   │                    │ Self-Concept   │
       └────────────────┘                    └────────────────┘
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Subareas of
Self-concept
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   ┌─────────┐  ┌─────────┐  ┌────────────┐  ┌─────────┐
   │ English │  │ History │  │ Mathematic │  │ Science │
   └─────────┘  └─────────┘  └────────────┘  └─────────┘
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Evaluation of
Behavior in
specific
Situation

Figure 2.1-2.　Structure of academic self-concept

Note. From "Self-concept: Validation of construct interpretation." By Shavelson, R. J., Hubner, J. J., & Stanton, G. C., 1976, *Review of Educational Research*, *46*, 413.

2.1.3 Academic Self-Concept and Academic Performances

A complex question in academic self-concept research is whether or not academic self-concept contributes to the prediction of academic achievement. The results of the studies are not entirely consistent, most longitudinal studies support a reciprocal effects model in which prior academic achievement influences subsequent self-concept and prior academic self-concept influence subsequent achievement (see Byrne, 1984, 1996; Marsh & Hattie, 1996; Marsh & Yeung, 1997). Skaalvik & Hagtvet (1990) summarized four possible patterns of causation between academic self-concept and academic achievement; which are achievement causes self-concept, self-concept causes achievement, self-concept and achievement influence each other in a reciprocal manner, and "third variables" causes self-concept and achievement. In the pattern of achievement causes self-concept, one may predict that academic achievement will influence academic self-concept through the evaluation of significant others. Scheirer and Kraut (1979) suggested that academic self-concept change is an outcome of increased achievement rather than a necessary variable for achievement to occur. However, on the basis of self-consistency theory (self-concept causes achievement), one should expect low self-concept of ability to result in lower academic achievement. In the study of Marsh, Kong, & Hau (2000), the result also showed that self-concept has a "causal" effect on achievement. Self-concept and achievement relations are larger if the self-concept measures reflect academic rather than nonacademic or general component of self-concept (Marsh & Yeng, 1997; Marsh, Byrne, & Shavelson, 1988).

Bandura(1986), Shavelson et al. (1976), and Marsh (1990a, 1993a)

hypothesized that academic self-concept in particular school subjects influences subsequent task choice, motivation, sustained effort, and persistence, which lead to improved academic achievement and academic self-concept. Although research on the relation between academic self-concept is positively related to achievement and performance in school, the relationships are low. Correlations between subject-specific self-concept and performance on achievement test in the corresponding subject area typically range from .2 to .4 (Strein, 1993). Specifically, Shavelson & Bolus (1982) proposed that academic achievement in mathematics should correlate highest with self-concept in mathematics. This correlation, however, should not be so close to unity that make the constructs of self-concept and achievement indistinguishable.

2.2 Self-Efficacy and Its Relationship with Achievement

In this section, definition of self-efficacy is introduced first and the relationship of academic self-efficacy and academic performances are discussed below.

2.2.1 Definition of Self-Efficacy

Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances (p. 391)." The choices people make, effort they exert, and how long they persist in a challenge task are strongly influences by self-efficacy. While self-concept represents one's general perceptions of the self in given domains, self-efficacy would be individuals' expectations and convictions of what they can accomplish in

given situation (Bong & Skaalvik, 2003). Therefore, self-efficacy belief is a primarily cognitive assessment of competence (Bandura, 1997; Bong & Clark, 1999). Self-efficacy is a context-specific assessment of competence to perform a specific task, a judgment of one's capabilities to execute specific behaviors in specific situations. Self-efficacy perception does not necessarily encompass affective reactions as its components. Pietsch, Walker & Chapman (2003) also suggested that efficacy judgment considers more about what individuals believe they can do with whatever skills and ability they have and it is less involved with what skills and abilities individuals possess. For example, efficacy beliefs are formed by asking "can" questions ("Can I do this mathematical problem?"). Self-efficacy also relates to cognitive appraisals of competence.

According to Bandura (1986), people's beliefs about their own abilities are a better predictor for how they behave and these beliefs help to determine what individuals do with the knowledge and skills they have. Therefore, the influences of self-efficacy judgments are largely due to the confidence with which individuals approach a task (Bong & Clark, 1999). Self-efficacy deals primarily with cognitive perceptions of capability (Bong & Clark, 1999) and are formed through reflecting on enactive mastery experiences, vicarious experiences and physiological information. Information for shaping self-efficacy beliefs comes from the following four major sources (Bandura, 1986, 1997):

(1) *Enactive mastery experience*. One's prior experiences with the tasks in question provide the most reliable source of information for efficacy beliefs. Self-efficacy strengthens when succeed and repeated failures weaken it.

(2) *Vicarious experience*. Modeling is hypothesized to be an important source of information about one's level of efficacy because people can learn new skills from observing others (Schunk, 1984). People also establish their self-efficacy beliefs on the basis of perceiving similarity between the model and themselves (Schunk & Hanson, 1985).

(3) *Verbal persuasion*. One's efficacy judgment is influenced by persuasive communication and evaluative feedback from significant others. Verbal persuasion is most effective when people who express the efficacy information are viewed knowledgeable and credible and realistic (Bong & Skaalvik, 2003).

(4) *Physiological reactions*. Sweating, heartbeats, fatigue, aches, pain, and mood changes send a signal to people that affects their efficacy appraisal. Recognition of these somatic symptoms leads to self-efficacy adjustments through their effects on cognitive processing (Bandura, 1977; Bong & Skaalvik, 2003).

Self-efficacy has always been assessed more specifically at task levels and self-concept is usually tapped at subject levels. As can be seen above, self-efficacy can be defined as the beliefs in one's feelings of confidence about being able to solve specific problems.

2.2.2 Academic Self-efficacy and Academic Performances

Self-efficacy has been hypothesized to influence choice of behavioral activities, effort exertion, persistence in the face of difficulties and task performance (e.g., Bandura, 1993; Bandura & Schunk, 1981; Multon, Brown, & Lent, 1991; Pajares & Miller, 1995). Many researchers found

the relevance of self-efficacy theory to understand and predict the academic achievement. Bandura (1982) has found that academic self-efficacy is strongly related to actual (future) task performance more strongly than to past performance. He also claimed that self-efficacy is a causal variable that effects on performance directly and indirectly. In contrast, Lent et, al (1997) and Locke et, al (1984) proposed that self-efficacy was more strongly related to past performance than to future performance and it remained a best predictors of future performance. However, self-efficacy theory has been found to be powerful in explaining and predicting academic performance variables among students. Different perceptions of academic self-efficacy will be reflected in subsequent performance of the task (Wood & Locke, 1987). Locke, Frederick, Lee, and Bobko (1984) found that both goals and academic self-efficacy had independent, complementary effects on task performance. Students reported with strong academic self-efficacy generally achieved higher grades and were much more likely to persist in majors over a 1-year period than were those with low academic self-efficacy (Lent, Brown, & Larkin, 1986). Moreover, Hackett and Betz (1989) reported that mathematics performance, achievement, mathematics self-efficacy measures were significantly and positively correlated with attitude toward mathematics. Randhawa, Beamer, & Lundberg (1993) postulated that mathematics self-efficacy as a mediator between mathematics attitude and achievement. Multon, Brown, & Lent (1991) also found that the relationship between self-efficacy and performance is varied by students' achievement status. Stronger relations were found among low-achieving students than among those average

students which pointed to the value of further development and evaluation of method to promote the academic self-efficacy percepts of such student. They also found out that students' age is also involved in efficacy-performance relations. The older students possess greater school experience and more well-defined perception of their academic strengths and weaknesses so they have a better basis for making accurate self-efficacy appraisals.

As outlined previously, however, children who have strong sense of efficacy in a given subject would be expected to have strong achievement. In contrast, children who have low self-efficacy would avoid achievement tasks (Schunk, 1981) or give up readily when they face obstacles. In other words, the higher the perceived efficacy, the greater is the persisted involvement in the activities and subsequent achievement. Relatively consistent evidence exists for academic self-efficacy and students' beliefs about their capability to succeed in specific academic areas. Therefore, academic self-efficacy directs and mediates effects on student performance and persistence (Bong & Clark, 1999; Multon, Brown, & Lent, 1991).

2.3 Comparison between Academic Self-concept and Academic Self-Efficacy

Academic self-concept and academic self-efficacy received much attention from educational researchers because they may have influences on students' academic functioning. For example, many findings suggested that positive self-concept or self-efficacy have positive influences in students' academic engagement, goal-setting, task choice, persistence and

effort, intrinsic motivation, performance and achievement. The conceptual between self-concept and self-efficacy applies equally to these academic self-perceptions (Bong & Skaalvik, 2003). Academic self-concept and academic self-efficacy refer to individuals' self-concept and self-efficacy beliefs that are formed specifically toward academic domain. This section includes both constructs and their differences.

Academic self-concept can include English, history, science, or math self-concept. Academic self-concept refers to individuals' knowledge and perceptions about themselves in achievement situations (Bong & Skaalvik, 2003; Byrne, 1984; Shavelson and Bolus, 1982). Academic self-concept represents mixture of self-beliefs and self-feeling that relative to one's intellectual or academic skills. It emphasizes self-evaluative questions by asking student to rate their skills or their satisfaction with themselves academically (Lent, Brown & Gore, 1997). If individuals have higher self-concept in believing t`¨ir own ability, they are more likely to look for more learning opportunities and vital to successful learning (OECD, 2003). In the present study, academic self-concept is individuals' knowledge and perceptions about themselves in learning a subject. Mathematics self-concept is referred to as perceived ability in mathematics.

Academic self-efficacy often refers to one's perceived capability to successfully perform given academic tasks at desired levels (Schunk, 1991). Many researches proved that students who have strong sense of academic self-efficacy are willing in taking challenging tasks, expanding their effort for reaching goal in a given task, and persisting longer in the

difficulties (Bandura & Schunk, 1981; Schunk, 1982; Bong, 1997). Zimmerman (1995), Bong and Skaalvik (2003) suggested that academic self-efficacy focuses on expected confidence in performing particular academic tasks successfully, without activating feeling of self-worth. Students not only need to feel able to reach specific learning objectives, they should also have confidence in their ability to solve the problems. Academic self-efficacy has been connected with improving learning that helps students to acquire new knowledge and skill in school. Increasing in self-efficacy is associated with improvement in student's performance (OECD, 2003). In PISA 2003, the questions related to self-efficacy examine students' confidence in their ability to master a number of specific mathematics tasks.

By comparing the academic self-concept and academic self-efficacy, Bong and Skaalvik (2003) summarized the key dimension of comparison between these two constructs as shown in Table 2.1. The natures of self-concept and self-efficacy evaluations are different from each other. Assessing one's capability in academic self-concept relies heavily on social comparative information and reflected appraisals from significant others. However, some self-concept researchers also suggested that students compare their academic capabilities in one domain to another (Marsh, 1990; Marsh & Craven, 1997; Pietsch, Walker, & Chapman, 2003). For example, item such as "I have always believed that mathematics is one of my best subject" (OECD, 2005). In contrast, self-efficacy items are more about goal-referenced evaluation and do not directly ask students to compare their ability to those of others. It is noticeable that academic self-concept items are lack of context-specific

information that makes students to make judgment of their competence in given area. Self-efficacy items provide respondents with a specific description of specific performance in a given context (Bong & Skaalvik, 2003).

Academic self-concept items typically refer to knowledge and perceptions of individuals in a specific subject, whereas academic self-efficacy is a faith for performing given academic tasks at a desired level successfully (Bong & Clark 1999). The most similar conception between academic self-concept and academic self-efficacy is the central role that is played by one's competence perceptions. Perceived competence is defined with an emphasis on academic performance which is the single most critical element of both self constructs (Marsh, 1990a; Harter, 1982). Moreover, many researchers found out that academic self-concept includes a self-efficacy component which may be the most building block in academic self-concept. These two self-beliefs might not be separable at the domain level of specificity. (Bong & Clark, 1999; Pietsch, Walker, & Chapman, 2003). Bong and Skaalvik (2003) viewed academic self-concept as perceived competence; whereas academic self-efficacy as perceived confidence.

Although perceived capability is views as a core of academic self-concept, self-concept has been found to reflect more than one's competence perceptions. Bong and Clark (1999) suggested that academic self-concept consists of cognitive and affective dimensions and predicted that the cognitive dimension of self-concept gives rise to the affective/motivational reaction. It seems reasonable to say that academic self-concept measures tend to reflect multiple aspect of the self, including

forms of cognitive evaluation and affective reaction. In contrast,

Table 2.5-1 Comparison between Academic Self-Concept and Academic Self-Efficacy

Comparison dimensions	Academic self-concept	Academic self-concept
1. Working definition	Knowledge and perceptions about oneself in achievement situations	Convictions for successfully performing given academic tasks at designated level
2. Central element	Perceived competence	Perceived confidence
3. Composition	Cognitive and affective appraisal of self	Cognitive appraisal of self
4. Nature of competence evaluation	Normative and ipsaive	Goal-referenced and normative
5. Judgment specificity	Domain-specific	Domain-specific and context-specific
6. Dimensionality	Multidimensional	Multidimensional
7. Structure	Hierarchical	Loosely hierarchical
8. Time orientation	Past-oriented	Future-oriented
9. Temporal stability	Stable	Malleable
10. Predictive outcome	Motivation, emotion, and performance	Motivation, emotion, cognitive and self-regulatory processes, and performance

measures of academic self-efficacy never refer to affective or motivational responses directly and it relates to cognitive appraisals of competence (Bong & Skaalvik, 2003; Pietsch, Walker, & Chapman, 2003). However, both constructs are associated with certain degree of domain-specificity; Pajares (1996) suggested that academic self-concept and academic self-efficacy are measured differently with respect to the level of specificity. Academic self-concept is measured students' overall feeling of doing well or poorly in a given subject area; whereas academic self-efficacy examined at more specific levels in the context of performing specific tasks in a specific domain (e.g., Pajares & Miller, 1995; Randhawa, Beamer, & Lundberg, 1993)

Most academic self-concept items begin the phrases with "How you feel …?" "I learn mathematic quickly." Or "I understand…" (OECD, 2005, p. 293). Academic self-efficacy items usually start with "How confident are you that you can . . .?" "How well can you . . .?" or "I am confident that I will be able to . . ." (Pajares, 1996; OECD, 2005, p. 292). The words that are used in academic self-concept items tend to direct the respondents' attention toward their past achievement; whereas those of academic self-efficacy items focus on students' future expectancies (Bong & Skaalvik, 2003). Markus and Nurius (1986) pointed out that academic self-concepts are past-oriented because self-schemas are formed by individuals' past experiences in a particular domain. Academic self-efficacy perceptions are future-oriented because they represent individuals' confidence for successfully accomplishing the coming tasks.

2.4 Comparison between the Roles of Academic Self-Concept and Academic Self-Efficacy in Achievement

Much research attempts to compare the predicative utility of academic self-efficacy and academic self-concept. Studies incorporating measures of academic self-concept and academic self-efficacy have revealed conflicting results. For example, self-concept theorists argued that an individual's self-concept is a mediator that influences other determinants on subsequent performance and is a stronger predictor of that performance when those determinant are controlled (Bandura, 1986). On the other side, social cognitive theorists proposed that these are functions of self-efficacy (Pajares & Miller, 1994). However, many evidences suggested that the causal relationship between academic self-efficacy and academic performance is more consistent than that for academic self-concept. Since judgment of self-efficacy are task specific, Bandrua (1986) cautioned that different ways of assessing confidence will differently correspond to the assessed performance. Therefore, self-efficacy must be specifically assessed and correspond directly to the criterial performance task as closely as possible in time to that task. According to Marsh et al.'s (1991) finding, they compared the direct effect of achievement on mathematics academic self-concept and academic self-efficacy on fifth graders and found that achievement correlated equally strongly with self-efficacy and self-concept. Specific performance on the division task was more strongly correlated with specifically assessed self-efficacy than with mathematics self-concept. These results provide support for the task-specific nature of efficacy

measurement. Moreover, studies by Pajares and his colleagues (Pajares et al., 1999; Pajares & Miller, 1994) consistently showed that academic self-efficacy is a better predictor of specific task performance than is domain specific academic self-concept. Self-concept is more likely to indicate a more generalized perception of one's competence and self-worth and has limited utility in predicting specific task performance. Predicting students' performances on specific school tasks, assessing task-specific, academic self-efficacy will provide better prediction (e.g., Bong & Clark, 1999; Hackett, 1985; Pietsch, Walker & Chapman, 2003; Randhawa, Beamer, & Lundberg, 1993).

As outlined above, many studies found that self-efficacy predicts mathematics-relate choice and performance criteria better than self-concept. The general academic self-concept is the more efficient predictor when the criterion is related to global indicator of performance. Also, mathematics self-efficacy is an especially good predictor of performance on a problem-solving task.