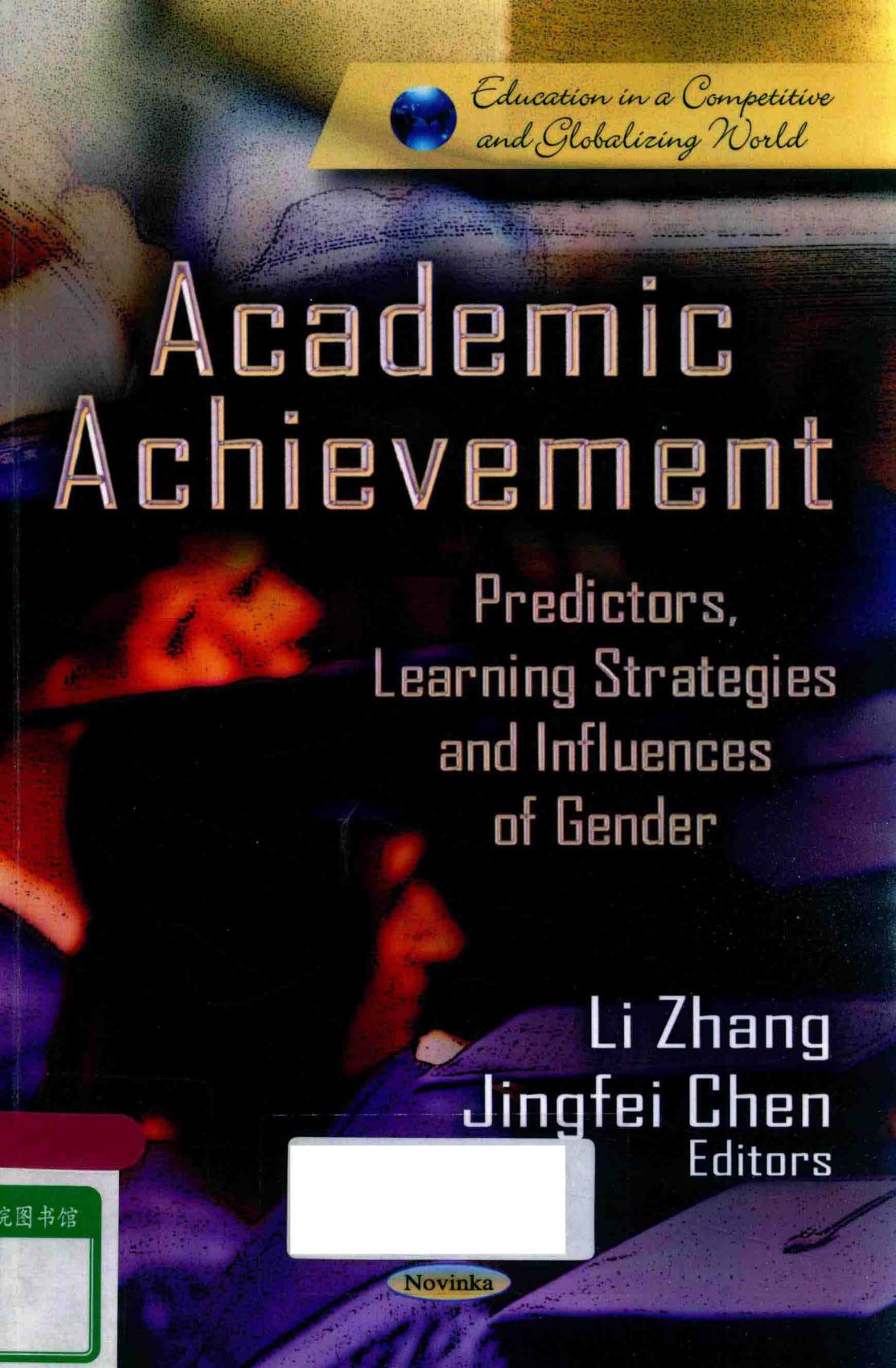
Education in a Competitive and Globalizing World
Academic Achievement
Predictors, Learning Strategies and Influences of Gender
Li Zhang
Jingfei Chen
Editors
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EDUCATION IN A COMPETITIVE AND GLOBALIZING WORLD

ACADEMIC ACHIEVEMENT

PREDICTORS, LEARNING STRATEGIES AND INFLUENCES OF GENDER

LI ZHANG
AND
JINGFEI CHEN
EDITORS

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PREFACE

In this book, the authors present current research in the study of the predictors, learning strategies and influences of gender in academic achievement. Topics discussed in this compilation include the interlay between cognitive and non-cognitive processes; elementary school students' achievement emotions and influences of gender to motivation achievement; understanding inclusive learners' perceptions of their own academic ability; and the gender aspect of justice about grades.

Chapter 1 – There is a voluminous body of research studies that detail, in totality, the combined positive effects of cognitive and non-cognitive processes in learning. Quantitatively, for example, there is evidence arising from causal modeling procedures to show the intricacy of learning and students' adaptive behaviors in various educational levels. This line of inquiry (e.g., cognitive influence of a performance-approach goal orientation) has important implications, theoretically and for applied teaching practices. Consequently, arising from this acknowledgment, we introduce in this chapter an overview of three major psychological orientations: *personal self-efficacy*, *student approaches to learning*, and *reflective thinking practice*. Our synthesis of the literature, in particular, scopes the nature and interrelations between the three mentioned constructs. This review of the literature provides a basis for us, in the latter section of the chapter, to articulate a hierarchical model for research development. The authors attempt to situate this multi-level conceptualization within various psychosocial layers of society: the community, the family, and the individual.

Chapter 2 - Emotions are important determinants of motivation, behavior, and learning at all educational levels. Surprisingly, apart from studies on test anxiety, research on achievement emotions has been largely lacking until recently. Furthermore, there are only a few studies on students' achievement emotions in the elementary school years. The present chapter draws attention to the importance of achievement emotions and reviews findings on important antecedents and consequences of achievement emotions, particularly among elementary school students. Findings on gender differences concerning emotions and their impact on learning and achievement will specifically be attended to.

Chapter 3 – From the perspectives of Hong Kong's parents and their children, academic achievement is commonly identified as the main goal of education. Against this background, the Hong Kong government is also concerned whether the education system meets the affective and social needs of all students. In this chapter, a study is performed on the affective and social outcomes of low achievers who are also regarded as students with special educational needs. 152 elementary level students, age ranged from 8-11 were studied on their affective and social domains of development in Hong Kong. Five questionnaires were selected from the Assessment Program for Affective and Social Outcomes (APASO) (EMB, 2001) to measure students' attitude to school, self concept, attitude to learning, interpersonal competence, and problem solving strategy. 16 inclusive students, who are with different learning difficulties and engaging in the government remedial teaching scheme under the inclusion policy, were extracted for a close examination. The differences between normal student group (N=136) and inclusive group (N=16) were examined in a series of one-way ANOVA tests. The outcome is triangulated with teachers' perspective through a teacher conference and school profile report to finally reach a descriptive account. The two groups had significant differences on social integration and academic self concept which are explained by a "positive discrimination" perspective to suggest a gap between what students perceived and what teachers thought.

Chapter 4 - Grading students on a standardized hierarchical scale (usually numerical) is an institutionalized means of evaluating their academic performance and a very meaningful signpost in students' educational experience: Grades have a gatekeeping function, providing or withholding access to particular classes and schools; Grades affect students' self-image, motivation, and expectations, ultimately affecting future learning behavior and the probability of dropping-out or graduating from high school; They create a status hierarchy within the classroom, affecting social acceptance, friendship

formation, and the student's "popularity; Finally, grading practices have a latent effect: it inculcate important values and norms of behavior that prevail in the wider society. "Unfair" distribution of grades, not only increases sense of injustice among students, but may also contribute to the shaping of their world views and the "social map" they construct in their mind. Therefore, grades are a highly 'valued good' and the process of their allocation looms large in student's justice life. Students evaluate the "fairness", or "unfairness" of their rewards in general, and grades, in particular vis-à-vis their constructed perception about their deservedness. When actual reward matches the expected, just reward, a sense of justice will result; conversely, when there is a gap between the actual and the perceived deserved reward, a sense of injustice will sensibly follow. Congruent with the meritocratic ethos, equity – differential reward allocation, proportional to investment or product - is the guiding principle of grades' distribution. Even though idiosyncratic and school policy differences might affect the weight given by teachers to specific criterions in the grading process, it is accepted that ascriptive characteristics like, beauty, gender, skin color, ethnic origin and the like should not become a criteria in teachers considerations when distributing grades.

International testing show an advantage of girls over boys in verbal tests and their lagging behind boys in mathematics and science, although gender gaps in these subjects are constantly narrowing. However, evidence suggests that girls are getting better grades in school, even in mathematics and science. If the actual higher grades, that girls get are not accompanied by perception of a higher entitlement, it can be expected that boys will show a greater sense of deprivation, i.e., will feel more strongly than girls that they were under-rewarded.

This chapter focuses on gender differences in grades and the sense of (in)justice about grades in school. It will review the research in this domain relating specifically to the following questions: Are boys and girls getting different grades? Are grades' differentials universal to all subject matters? How is it related to "objective" academic achievement (e.g., in international testing)? What are the resultant gender differentials in sense of justice about grade?

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Chapter 1

INTERPLAY BETWEEN COGNITIVE AND NON-COGNITIVE PROCESSES: REVIEW, IMPLICATIONS, AND DIRECTIONS

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ABSTRACT

There is a voluminous body of research studies that detail, in totality, the combined positive effects of cognitive and non-cognitive processes in learning (e.g., Elliot, McGregor, & Gable, 1999; Fenollar, Román, & Cuestas, 2007; Liem, Lau, & Nie, 2008). Quantitatively, for example, there is evidence arising from causal modeling procedures to show the intricacy of learning and students' adaptive behaviors in various educational levels. This line of inquiry (e.g., cognitive influence of a performance-approach goal orientation) has important implications, theoretically and for applied teaching practices. Consequently, arising from this acknowledgment, we introduce in this chapter an overview of three major psychological orientations: *personal self-efficacy*, *student approaches to learning*, and *reflective thinking practice*. Our synthesis of the literature, in particular, scopes the nature and interrelations between the three mentioned constructs. This review of the literature provides a

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basis for us, in the latter section of the chapter, to articulate a hierarchical model for research development. We attempt to situate this multi-level conceptualization within various psychosocial layers of society: the community, the family, and the individual (Bronfenbrenner, 1989; Vygotsky, 1978; Wertsch, 1985).

Keywords: reflective thinking practice, self-efficacy, learning approaches

1. INTRODUCTION

The scope of student learning is complex and entails a number of interests, notably one of which concerns our understanding of how and why students excel in their studies. Apart from research purposes, it is prudent that we inform educators of psychosocial facets (e.g., the classroom environment) that may explain and predict academic achievements. Why does a particular student, Thomas, always succeed in mathematic with a casual teacher? Why does verbal discourse (e.g., ability feedback) assist some students to do well in their studies, but not others? Emphases pertaining to positive learning outcomes may also provide educators with insights into different pedagogical strategies that cultivate intrinsic motivation for mastery and deep learning.

There is a voluminous body of literature in recognized journals, such as the *Journal of Educational Psychology*, *Contemporary Educational Psychology*, *British Journal of Educational Psychology*, and *Educational Psychologist* that documents a variety of theoretical frameworks and their effectiveness in accounting for individuals' academic success and learning outcomes. Specifically, in the context of quality learning and positive anticipatory outcomes, notable theoretical orientations that have been researched extensively include personal self-efficacy (Bandura, 1977, 1986, 1997), student approaches to learning (Biggs, 1987; Entwistle, 1981; Marton & Säljö, 1976), and reflective thinking practice (Kember, et al., 2000; Leung & Kember, 2003; Phan, 2007, 2010a).

Similar to Andrew Martins' (e.g., Marsh, Martin, & Cheng, 2008; Martin, Colmar, Davey, & Marsh, 2010; Martin & Dowson, 2009), Herb Marsh's (e.g., Marsh & Köller, 2004; Marsh, et al., 2008; Marsh & Perry, 2005; Marsh & Yeung, 1997), Frank Pajares' (e.g., Pajares, 1996, 1997; Pajares & Schunk, 2001) and others' theoretical trajectories of cognition and motivation in learning, we take this opportunity to articulate our own theoretical perspective for empirical consideration and implementation. In particular, congruent with

existing cognitive-motivational studies, our examination of the literature details the intricacy of both cognitive and non-cognitive psychological dimensions and how this interplay facilitates positive learning outcomes. Our own research investigations, reviewed in this synthesis, also depict and illuminate the interrelations between the three aforementioned constructs. Consequently, yielding from this examination, we propose a cohesive multi-level framework for advancement in research development. Specifically, our discussion focuses on the different hierarchies of society that may overarch individuals' personal self-efficacy beliefs, and engagement in cognitive motives and strategies, for example: the community, the immediate family, and the individual as a whole.

2. A Theoretical Framework of Quality Learning

The notion of quality learning is prominent, especially in relation to one's ability to construct meaning and apply his/her understanding of a subject matter in an authentic context. In the area of teacher education, for example, educators and institutional organizations (e.g., NSW Department of Education and Training, 2003) have developed theoretical frameworks that emphasize the constituents of quality teaching and learning. The NSW model of pedagogy is relatively unique, focusing on three major dimensions for cultivation and implementation: intellectual quality (e.g., encouraging deep learning), quality learning environment (e.g., stimulating a positive classroom climate), and significance (e.g., promoting meaningful learning). Other models of teaching and learning also share similar attributes, and suggest a restructuring of how we view learning in educational settings.

There are issues and questions in relation to student learning that have been considered and asked by educators and researchers – for example, how do internal processes, cognitive and/or motivational, interact to account and predict quality learning outcomes? There is evidence to suggest that, extraneously, the social milieu (e.g., the classroom environment) contribute to students' learning and other achievement-related behaviors in different subject areas (e.g., Dart, et al., 1999; Phan, 2008a; Rana & Akbar, 2007; Wong & Watkins, 1998; Yuen-Yee & Watkins, 1994). In a similar vein, there has also been an emerging interest in the study of sociocultural influences (e.g., Phan, 2008b, 2010c; Walker, Pressick-Kilborn, Arnold, & Sainsbury, 2004) and how we, as individuals, position ourselves within different layers of society. This line of inquiry reflects existing theoretical tenets that pertain to the

co-construction of knowledge and information by the individual from the environment (Bronfenbrenner, 1979, 1989; Vygotsky, 1978; Wertsch, del Rio, & Alvarez, 1995). The bio-ecological theory, for instance, has provided us with an in-depth understanding of how individuals situate themselves within different multi-level systems (e.g., the immediate family).

The potency of the theoretical tenets pertaining to the co-construction of one's knowledge within different sociocultural layers has been researched to include other conceptualizations (Okagaki, 2001; Okagaki & Frensch, 1998; Phan, 2012c; Phan, Maebuta, & Dorovolomo, 2010). The work of Phan (e.g., Phan, 2010c; Phan, 2012c), for example, details the intricacy of individuals' cognitive development within three distinctive levels of society: (i) *individuals' sociocultural and historical origin*, (ii) *the community*, in general, and (iii) *individualized learning and achievement* obtained by the individual. This avenue of research development is significant, and emphasizes a myriad of facets that are structured, accounting for the overall variance of an individual's repertoire of learning. Similar to Okagaki's (2001) conceptualization, the emphasis in Phan's research suggests one's own genesis, derived from sociocultural and historical contexts, serves as the overarching system of change. An individual's personal philosophy, arising from his/her custom and cultural values, may place more weighing in a belief for sharing and collectivism between people (Markus & Kitayama, 1991; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). There may be, for instance, a compelling initiative for individuals to impart and share more altruistic values and beliefs with each other (e.g., "I think it is important that we assist Mary and her family, financially, given they have just arrived"). From an educational perspective, there may be more emphasis towards collaborative learning and a need for mastery in terms of competence and self-improvement.

The situational placement of a community within the wider historical-sociocultural contexts at large may also espouse philosophical beliefs, ideas, and values for action. An individual's desires for change may arise from his/her current status, such as an alignment to family commitment (e.g., "I feel really good with this graduation; my parents are very proud of my achievements"), expectations, and aspirations (e.g., "I want to become a medical doctor and help my family"). The Asian cultures, for instance, emphasize the importance of values that pertain to filial piety (Chow & Chu, 2007), wherein personal achievements (e.g., graduating with a Liberal Arts degree) indicate and reflect a degree of family pride, dignity, and positive values (e.g., "My parents are very proud that I have achieved and graduated"). Research involving participants from developing regions seems to indicate that, perhaps,

individuals' future orientations (e.g., "What do I want to do in life?") and development are, in part, drawn from their personal contexts and situations (Phan, 2009a; Phan & Deo, 2007; Vázquez & Rapetti, 2006). For some individuals, for example, financial hardship, poverty, and family expectations may instill a sense of intrinsic motivation, wherein education serves to perpetuate economic vibrancy and social mobility (e.g., "I need to study hard as my family relies on me to do well")(Phan & Deo, 2008).

From a psychological perspective, in contrast, there have been extensive research studies that document the internal cognition and motivational processes of learning. This sense of individualization signifies the intricate processes that predict individuals' learning in achievement contexts. The concurring of research in educational psychology has led to recognition that there are a number of theoretical orientations, which explain the complexity of individuals' cognitive (e.g., effort expenditure) and non-cognitive (e.g., self-esteem) processes. In the context of this chapter, we discuss three major frameworks for consideration in terms of implementation for applied teaching practices and research development: *personal self-efficacy* (Bandura, 1977, 1986, 1997), *learning approaches* (Biggs, 1987; Marton & Säljö, 1976), and *reflective thinking practice* (Dewey, 1933; Kember, et al., 2000). Our purpose in this section of the chapter entails a synthesis and review of the research into the potency of these three theoretical frameworks, focusing in particular at the contemporaries, current challenges and, consequently, new directions for contemplation in research development.

2.1. Internalized Processes of Learning

In our discussion of effective learning, we need to consider the potency of three major theoretical orientations, as outlined previously: personal self-efficacy, learning approaches, and reflective thinking practice. In the articulation of this chapter, we contemplated in the selection of specific tenets that would interest scholars and educators in implementation and research development. There is a continuing interest in the study of student learning, with researchers focusing on the interrelations and intricacy of the mentioned variables within complex causal models of learning and behaviors. The scope of our review and synthesis of the literature extends to include an identification of contemporary issues and challenges for us to advance in research development.

We agree that the aforementioned theoretical orientations have been in existence for more than three decades and, in many cases, have served to help educators and researchers comprehend and understand human behavior in various sociocultural milieus. Evidence from empirical research, entailing both quantitative and qualitative methodological approaches, has provided substantial grounding for further analyses into individuals' learning experiences in achievement contexts.

2.1.1. Interrelatedness of Processes for Effective Learning: A Brief Overview

Personal self-efficacy, a tenet of Bandura's (1997) social cognitive theory (Schunk, 1991, 1995; Schunk & Zimmerman, 1998), is defined as beliefs in one's capability to execute required courses of actions at different levels of specificity (e.g., "I believe I have the competence to solve this algebra problem involving an unknown, *x*").

Self-efficacy, as an important education-psychological variable, assists in the governing of individuals' choice of behaviors and aspirations, and the mobilization and maintenance of effort and time. Furthermore, Bandura's theoretical tenets suggest that self-efficacy, differing from other related conceptions of personal competence that form the core constructs of other theories, deals primarily with individuals' capabilities to produce results and attain designated types of performance (Bandura, 1986, 1997).

Self-efficacy integral to human agency determines individuals' own levels of resilience in face of adverse situations, and influences thought patterns and emotional reactions (e.g., "I'm very anxious with this particular task"). Individuals with low personal self-efficacy, for example, may envisage and believe things are tougher than they really are, a belief that nurtures stress, depression, and a restrictive vision of how best to solve a problem. Individuals with high self-efficacy beliefs, in contrast, approach difficult tasks and activities with feelings of conviction and serenity (Pajares, 1996, 1997).

Since Bandura's (1977) seminal publication made in the late 1970s, there has been extensive research documenting the potency of personal self-efficacy in educational and non-educational settings (Pajares, 1996; Pajares & Schunk, 2001; Schunk, 1995). In the contexts of academic learning, for example, there is substantial evidence to indicate that self-efficacy beliefs (e.g., "I am sure I can learn the skills taught in Economics class well") contribute to the prediction of achievement outcomes (Diseth, 2011; Fast, et al., 2010; Liem, et al., 2008; Pajares & Miller, 1994; Phan, 2012b). Similar to personal self-efficacy, there is considerable interest in research pertaining to the theoretical

framework of learning approaches. The qualitative work of Marton and Säljö (1976) established a premise for researchers to explore the different learning strategies and motives that individuals may adopt in their learning. Marton and Säljö's preliminary findings identified two major learning approaches, namely deep and surface-level. The coining of the term deep approach refers to individuals who are intrinsically motivated to seek meaningful knowledge and relating interpretation and meaning to their prior experiences. In contrast, individuals who adopt a surface learning approach are concerned, extrinsically, with the notion of passing examinations with minimal time and effort expenditure. Biggs' (1987) conceptualization of learning approaches included an achieving-level dimension, wherein this approach suggests that individuals are motivated to compete and to obtain high academic grades. Furthermore, this conceptualization suggests that this achievement-approach may associate itself with both surface and deep-level approaches. For example, a student may systematically rote learn in order to obtain high academic grades or, alternatively, to gain deep meaning of contents, thereby constituting correspondingly the terms "surface achieving" and "deep achieving", respectively.

The SAL framework (Biggs, 1987; Marton & Säljö, 1976) has led to the development of various inventories, such as the Learning Process Questionnaire (LPQ) and the Study Process Questionnaire (SPQ)(Biggs, 1987), the Approaches to Studying Inventory (ASI)(Entwistle & Ramsden, 1983), and the Motivated Strategies and Learning Questionnaires (MSLQ)(Pintrich, Smith, Garcia, & McKeachie, 1991; Pintrich, Smith, Garcia, & McKeachie, 1993). Statistical analyses of students' responses suggest some anomalous findings, with an indication of a preference for two major learning approaches, namely 'reproducing' and 'meaning' (Kember & Leung, 1998; Phan & Deo, 2008; Richardson, 1994). More importantly, as we discuss in the subsequent sections, the findings reported from the use of these inventories accentuate the distinctive characteristics of each learning approach. A 'meaning' approach, equivalent to a deep learning approach emphasis, for example, is associated closely a number of adaptive strategies and behaviors (e.g., more effort expenditure in learning a particular task).

Another theoretical framework that makes a major contribution is reflective thinking practice, a term that is coined by John Dewey (1933) to mean the following: "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the conclusion to which it tends" (p. 9). Reflective thinking, according to Dewey's (1933) original writing, involves two major aspects: (1) a state of

doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and (2) an act of searching, hunting, inquiring, to find material that will resolve the doubt, settle and dispose of the perplexity." (Dewey, 1933, p. 12). This mentioning, in brief, entails the notion that reflective thinking is a non-superficial cognitive process, enabling individuals to consider and participate actively in the learning process. Analogous, in part, to a surface learning approach, reflective thinking practice consolidates individuals' knowledge and in this process, draws them to partake and think at a higher-order level (e.g., "I wonder what would happen if gravity was at a different value than 9.8 m/s^2?").

Reflective thinking, quantitatively, may be difficult to define and ascertain as a theoretical construct. There have been attempts, notably the work of Kember and his colleagues (Kember, et al., 2000; Leung & Kember, 2003) to define and research reflective thinking from a quantitative methodological approach. The work of Kember, et al., drawing from other related theoretical premises (Mezirow, 1991, 1998), posits that the construct of reflective thinking may be categorized into four distinct components: habitual action, understanding, reflection, and critical thinking. Habitual action is a mechanical and automatic activity that is performed with little conscious thought (e.g., "When I am working on some activities, I can do them without thinking about what I am doing").

Understanding is learning and reading without relating to other situations ("This course requires us to understand concepts taught by the lecturer"). Reflection concerns active, persistent, and careful consideration of any assumptions or beliefs grounded in our consciousness ("I sometimes question the way others do something and try to think of a better way"). Critical thinking is considered a higher level of reflective thinking that involves us becoming more aware of why we perceive things, the way we feel, the way we act, and what we do ("As a result of this course I have changed the way I look at myself"). Furthermore, critical thinking enables us to use analytical and evaluative processes to interpret and enhance meaningful understanding of classroom materials.

The ability to synthesize information analytically and evaluative suggests the use of cognitive reflection (Leung & Kember, 2003; Phan, 2008d, 2009b, 2009c). Finally, critical thinking provides us with relevant hindsight to avoid misinterpretation of information that may arise from bias based on prior opinion and belief (Kish, Sheehan, Cole, Struyk, & Kinder, 1997). The complexity of critical thinking, especially its higher-order processing has led researchers to contend that this skill is part of individuals' regulatory processes (Norris & Ennis, 1989; West, Toplak, & Stanovich, 2008).