The beliefs about the nature of learning and the achievement goal orientations of college students

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Abstract

This survey study investigated the relationship between achievement goal orientations and self-reported the beliefs about the nature of learning (beliefs about ‘ability to learn is innate’ and ‘learning is gradual’) among college students (N = 1415) enrolled in five different academic programmes in Thailand. We found significant differences in beliefs about the nature of learning across academic programs. For example, nursing students were significantly less likely belief about ‘ability to learn is innate’ and more belief about ‘learning is gradual’ than students in engineering, business, education, and vocational programs. Multiple regression analysis found a positive influence of both beliefs about ‘ability to learn is innate’ and ‘learning is gradual’ on the levels of mastery and performance approach goals and also found a positive influence of belief about ‘ability to learn is innate’ on the levels of performance avoidance goals. Student’ beliefs of the nature of learning were found to play important roles in their achievement goal orientation adoption.

Key word: achievement goal theory, beliefs about the nature of learning, epistemological beliefs, higher education
Background

Over the past two decades, achievement goal theory is a major socio-cognitive theory of motivation (Dweck & Leggett, 1988). This theory reflects the students’ motivational orientations toward achievement (Dowson, McInerney, & Nelson, 2006). The purpose of goal-orientation is to explain or reason for engaging in achievement behaviors (Schunk et al., 2008). There are different types of goal-orientations, but mastery and performance goals are two types which are always referred in many researches. A mastery goal orientation focused on learning or academic task, developing new skills, and personal improvement. On the other hand, a performance goal orientation focused on social comparison, demonstrating competence or ability and try to judge own performance with others (e.g. peer in the group or class). Some researchers have described performance goals in term of both approach-performances goals (outperform others, desire to demonstrating ability, and want to be superior performance) and avoidance-performances goals (avoid failure, looking incompetent and judgments of low ability) (Elliot & Church, 1997; Schunk et al., 2008).

The body of literature has described the features of these three types of goals and their effects on different achievement outcomes. It would seem that mastery goals and performance approach goals have been found to associate with many positive outcomes in learning (e.g., efforts, deep processing of task, deep learning, and grade performance). In contrast, performance avoidance goals have been related to many negative outcomes (e.g., low grade performance, low interest, and low intrinsic motivation; for reviews, see (Church et al., 2001; Daron et al., 2007; Daron et al., 2009). Awareness of students’ differences on goal-orientation adoption will make educators (teachers and instructional designers) more sensitive to their role in learning. As such, researchers must attend to the issue of what lead individuals to adopt each type of goal.

According to Schunk et al. (2008) and Elliot (1999), student’s goal-orientation adoption might be influenced by contextual and personal factors. Several researchers have studied on such contextual factors, and the results showed that types of students’ task and way by which students are evaluated affect their goal-orientation adoption (e.g., Ames, 1992; Church et al., 2001; Kaplan & Maehr, 2007). Other researchers emphasize the enduring personal characteristic factors such as students’ belief system.

The personal belief about ‘ability to learn is innate’ and ‘learning is gradual’ (called beliefs about nature of learning) is one of the belief systems. According to Schommer (1990), these beliefs are part of the personal epistemological belief models, which covers two dimensions (fixed ability and quick learning). The first type of belief, fixed ability, describes
the belief in which ability to learn is unchangeable and fixed at birth. The latter belief, quick learning, describes the belief in which learning is acquired quickly or not-at-all to learning is acquired gradually.

Although researches on epistemological beliefs documented the linkage between dimensions of the epistemological beliefs and achievement goal orientations (e.g., Braten & Strømsø, 2004; Paulsen & Feldman, 1999), few studies have been attempted to investigate on quick learning and fixed ability dimensions and most of existing studies has been concentrated only on one type of academic context.

**Objectives/Research Questions**

This paper reports the results of an investigation into Thai students’ belief about the nature of learning on two dimensions (‘ability to learn is innate’ and ‘learning is gradual’) Data for this study was collected from undergraduate students enrolled in several majors. Furthermore, our investigation was designed to answer the following research questions:

1. What are the predominant beliefs about the nature of learning of college students enrolled in five different academic programs?
2. What is influence of beliefs about the nature of learning on measures of achievement goal orientations?

**Research Methodology**

**Participants**

The volunteer participants were undergraduate students enrolled in six universities and one vocational/technical college in Thailand. The university students were majoring in computer, engineering, business, management, education, and nursing. The vocational college students were majoring in marketing, hotel management, computer graphic, visual arts, computer business, accounting, and food-nutrition. Our sample for analysis consisted of 1,415 respondents (males = 34% and females = 66%), enrolled in five different academic programs (computer & engineering = 32%; business & management = 25%; education = 14%; nursing = 17%; and vocational = 11%).

**Instrument**
The first section of the survey asked for the general information (e.g., gender, faculty, major, GPA). The second section of the survey measured students’ belief about the nature of learning (the belief about ‘ability to learn is innate’ and ‘learning is gradual’). The third section of the survey assessed students’ goal orientations. We used a 5-point (Linkert-type) response scale from strongly disagree (1) to strongly agree (5), with larger values indicating a stronger goal orientation, and the belief about nature of learning.

Analysis
To determine interrelationship among survey items, principle component factor analysis with Varimax rotation was performed on the goal orientation and the belief about nature of learning sections of the survey. Cronbach’s alpha, the most common measure of scale reliability, was calculated separately for each subscale. Factor loadings ranged from .472 to .877. Correlation analysis, analysis of variance, and linear regression analysis were used in this study. Table 2 shows descriptive statistics, the means averaged from the items associated with each factor.

Findings
After factor analysis of goal orientation items, the rotated matrix showed three factors accounting for 58.29% of variance: The ‘mastery’ goal orientation factor (6 items); the ‘performance approach’ goal orientation factor (4 items); the ‘performance avoidance’ goal orientation factor (6 items). Alpha values for the mastery goal orientation, performance approach goal orientation, and performance avoidance goal orientation subscales were .758, .819, and .874 respectively.

After factor analysis of the belief about nature of learning items, the rotated matrix showed two factors accounting for 62.76% of variance: The belief about ‘ability to learn is innate’ factor (5 items); the belief about ‘learning is gradual’ factor (3 items). Alpha values for the ‘ability to learn is innate’ view and ‘learning is gradual’ view subscales were .817 and .784 respectively.

Table 1 presents mean and standard deviations on each measure of the belief about nature of learning as a function of academic program. Compared with other programs, we found that vocational students had the highest level and nursing students had the lowest level of the belief about ‘ability to learn is innate’. The difference was statistically significant, F = 9.21, p < .01, eta squared = .006 and F = 10.73, p < .01, eta squared = .008, respectively. Vocational students had the lowest level and nursing students had the highest level of the
belief about ‘learning is gradual’. The difference was statistically significant, F = 5.93, p < .05, eta squared = .004 and F = 15.70, p < .01, eta squared = .011, respectively.

In order to find influence of the belief about nature of learning on achievement goal orientation variables (mastery, performance approach, and performance avoidance), we conducted enter linear-regression analysis. The two variables of the belief about nature of learning were selected to predict the achievement goal orientations of students presented in Tables 2, 3, and 4.

The regression models predicting “mastery”, “performance approach”, or “performance avoidance” goal orientations were statistically significant. The beta coefficient values and adjusted R2 value are presented in Tables 3-5. The belief about ‘ability to learn is innate’ and ‘learning is gradual’ had a positive influence on the levels of mastery goals and performance approach goals. The belief about ‘ability to learn is innate’ also had positive influence on the levels of performance avoidance goals.
Table 1: Descriptive statistics for academic program (N = 1415)

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<td>.90</td>
<td>2.91</td>
<td>.87</td>
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<td>.88</td>
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<td>Learning is gradual</td>
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<td>.64</td>
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<td>.91</td>
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<td>Learning is gradual</td>
<td>4.22</td>
<td>.55</td>
<td>4.08</td>
<td>.66</td>
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<td>.55</td>
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<td>Ability to learn is innate</td>
<td>2.78</td>
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<tr>
<td>Learning is gradual</td>
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<tr>
<td>Ability to learn is innate</td>
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<td>.91</td>
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<tr>
<td>Learning is gradual</td>
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<td>4.22</td>
<td>.55</td>
<td>4.25</td>
<td>.60</td>
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**p < .01

Table 2
Linear regression: Influence of the belief about nature of leaning and academic majors on mastery goal orientation

<table>
<thead>
<tr>
<th>Influence variable</th>
<th>Parameter estimates</th>
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<tr>
<td>Ability to learn is innate</td>
<td>beta: .074, t: 2.885, p: .004**</td>
</tr>
<tr>
<td>Learning is gradual</td>
<td>beta: .378, t: 14.832, p: .000**</td>
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</table>

**p < .01  adjusted R² = .141
Table 3
Linear regression: Influence of the belief about nature of leaning and academic majors on performance approach goal orientation

<table>
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<th>Influence variable</th>
<th>Parameter estimates</th>
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<td>Ability to learn is innate</td>
<td>.305</td>
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<td>Learning is gradual</td>
<td>.194</td>
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<td><strong>p &lt; .01 adjusted R² = .117</strong></td>
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</table>

Table 4
Linear regression: Influence of the belief about nature of leaning and academic majors on performance avoidance goal orientation

<table>
<thead>
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<th>Parameter estimates</th>
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<td>Ability to learn is innate</td>
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<tr>
<td>Learning is gradual</td>
<td>.020</td>
</tr>
<tr>
<td><strong>p &lt; .01 adjusted R² = .193</strong></td>
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Discussions

First, the results of the present study showed the significant differences across academic programs on students’ beliefs about nature of learning for both belief about ‘learning is innate’ and ‘learning is gradual’. The results of the present study seem partially consistent with Paulsen and Wells’ (1998) work which found the significant differences across academic programs for only quick learning dimensions and also seem to be totally inconsistent with other studies which did not find significant differences about quick learning and innate ability (i.e. Schommer-Aikins et al., 2003).

Several studies have also recognized that academic domains are different on several aspects, such as knowledge structure, the nature of the problem-solving activities and so on (Eynde et al., 2006). Therefore, we can presume that differences in each academic program might influence student’s beliefs about nature of leaning. These findings suggest that curricular context should be considered as one of the factors that contribute the students’ view of learning differences.

Second, past studies have identified an association between beliefs that the ability to learn is fixed at birth and the learning is acquired gradually and goal orientations.
Our investigation in Thailand reported that academic programs and beliefs about ‘ability to learn is innate’ and ‘learning is gradual’ are the predictor of achievement goal orientations. We also found that among three variables, the belief about ‘learning is gradual’ has the most significant effect on mastery goal orientations both males and females. These results provide the evidence to support the past studies which have been found to be positively related to mastery goals and the beliefs that learning is a gradual process requiring both time and effort (Braten & Strømsø, 2004). Presumably, students who were mastery goal orientations may consider increasing new skills, and their competence to be a taking time process.

Another result of the present study was that the belief about ‘ability to learn is innate’ was the most significant predictor of performance approach and performance avoidance goal orientations. Our results seem consistent with the Paulsen and Feldman (2005)’s study. They found that students with the more naïve belief that the ability to learn is fixed are less likely to maintain an extrinsic goal orientation. Presumably, students who believe that their ability to learn is innate and cannot be increased more tend to operate from an extrinsic orientation than intrinsic orientation. They focus on the adequacy of their ability and avoid giving evidence of its inadequacy.

In conclusion, the results of our investigation added to our understanding about the antecedents of student’s achievement goal orientations. We investigated association between the belief about nature of leaning and the goal orientation of students enrolled in five academic programs. The present findings suggest that students’ beliefs about nature of learning vary with the field of their study, and such beliefs may predict students’ goal orientation adoptions. In particular, the belief about ‘learning is gradual’ may play more important roles in mastery goal adoption and the belief about ‘ability to learn is innate’ also may play more important roles in performance approach goal and performance avoidance goal adoption. Therefore, educators should try to encourage students to believe that learning is gradual and it takes time, and in the meantime, the belief that ability to learn is innate or fixed at birth should be eliminated from students’ belief.

References


