

THE RELATIONSHIP BETWEEN STUDENTS' APPROACHES TOWARD LEARNING AND ACADEMIC ACHIEVEMENT IN THE CHINESE CONTEXT

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Abstract

This study examined the relationship between student's approaches toward learning and academic achievements of high school students in China. Participants were 14,021 11th graders from an eastern province in China. They took the National Standardized Test in three subject areas: Chinese language, mathematics, and English language. The total score was used as an indicator of their academic achievement. Students' approaches toward learning were measured in three aspects: self-confidence in learning, learning interest, and study habits. Questionnaires of self-confidence in learning and learning interest were adapted from PISA2012. Study habits were measured with the questionnaire adapted from Academic Adjustment Inventory (AAT). Results of Pearson correlation and hierarchical linear regression models showed that the dimensions of student's approaches toward learning were statistically significantly related to academic achievement. Results of analysis of variance after the control of student gender and socioeconomic status suggested that the top 25% students in dimensions of approaches toward learning scored statistically significantly higher than the bottom 25% students with small effect sizes in their performance on the final examinations. This study suggests that helping students build good approaches toward learning may improve their academic achievements.

Keywords: *Students' approaches toward learning, academic achievement, Chinese high school students.*

1. Introduction

The aim of education is to promote the comprehensive development of students (Anzai & Simon, 1979). Not only are learning outcomes important, but the quality of learning during the learning process is equally important. Shenzhen Education Bureau (2014) issued a guidance on further improving the comprehensive literacy of primary and secondary school students and clearly elaborated the importance of approaches toward learning. Approaches toward learning were defined as the relatively stable psychological characteristics of learners in the learning process, such as learning motivation, interest, habit and ability (Shenzhen Education Bureau, 2014). Other definitions of approaches toward learning include student essential characteristics for them to adapt to life-long learning and future development (Lu, 2017). Peng (2004, p. 75) referred approaches to learning as "the way for students to establish a connection with the learning content during learning period", which is one of the factors that affect how students achieve academic achievement and obtain study skills (Cutolo & Rochford, 2007; Kassab, Al-Shafei, Salem, & Otoom, 2015).

Education reform in sizeable countries over the world has shifted from focusing on academic performance to stimulating and cultivating students' approaches toward learning. For example, United Kingdom, Germany, Switzerland, Australia and other countries have begun new national curriculum standards development projects focusing on students' approaches toward learning. Many influential international organizations also have conducted empirical research on students' approaches toward learning and analyzed the influencing factors of students' approaches toward learning in different grades through large-scale assessment data. For example, PISA, TIMSS, PIRLS, NAEP have evaluated students' approaches toward learning on the strength of the content of a certain discipline or field, such as reading, mathematics and science.

Approaches toward learning can be appraised as a complex system with multiple levels and aspects (e.g. Ge & Yang, 1997; Lu, 2017). According to Early Learning and Development Benchmarks in Washington State in 2005, students' approaches toward learning can be divided into five dimensions: curiosity, interest, initiative, persistence and attention, reflection and interpretation (Kagan & Kauerz,

2012). Related to the High/Scope Educational Research Foundation in Michigan, students' approaches toward learning are sorted into the following six aspects: initiative, planning, participation, problem solving, use of resources, and reflection (Schweinhart, Berruetalement, Barnett, Epstein, & Weikart, 1985; Schweinhart et al., 1993; Schweinhart & Weikart, 1997).

Some scholars started to evaluate approaches toward learning according to the characteristics of Chinese students in recent years (e.g., Lu, 2017; Peng, 2004), which are reported to be in several dimensions such as learning motivation, learning habits, and learning methods (Zheng, 1996); learning motivation, learning tendency, learning monitoring, learning strategies, and learning ability (Peng, 2004); learning cognition and experience, learning motivation, learning ability and method, learning persistence, and learning outcomes (Lu, 2017). By integrating the definition and structure of approaches toward learning from domestic and foreign research, this study will measure students' approaches toward learning from three aspects: self-confidence in learning, learning interest, and study habits.

It has been unanimously affirmed in educational research that students' approaches toward learning significantly affect their academic performance (e.g. Hugener, Reusser, Lipowsky, Rakoczy, & Klieme, 2009; Jin & Si, 2004). For example, McDermott (1984) and his team demonstrated that approaches toward learning has a larger predictive effect on learning than intelligence. Most scholars believe that approaches toward learning such as self-efficacy, self-confidence in learning, learning motivation and study habit, are basic qualities closely related to learning and have a significant impact on learning (e.g., Bai, Chao, & Wang, 2019; Feng, 2002; Gorges, Maehler, Koch, & Offerhaus, 2016; Shen, Yang, & Fang, 2015).

Education in mainland China is academic achievement oriented, where students, schools, and parents only focus on academic performance, which leads to students' stress (Zhang, 2000). Moreover, their learning methods tend to be mechanical and passive. Students are taught to memorize and repeat teachers teaching content without in-depth understanding (Niu, 2010). Therefore, teachers and parents both pay attention to students' academic performance, but neglect the cultivation of students' quality of learning, which limits the comprehensive development of students. Based on the educational background in mainland China, it is crucial to explore the impact of students' approaches toward learning on students' academic achievements in schools.

2. Methods

2.1. Participants

A total of 14,021 11th graders participated in the current study from an eastern province in Mainland China. A stratified cluster random sampling was employed, through which, 100 schools from the 17 cities in the province were randomly selected to represent the student population in the province. Of the participants, 6794 (46.3%) were boys and 7527 (53.7%) were girls.

2.2. Instruments

The Self-Confidence in Learning scale was adopted from the Program for International Student Assessment (PISA) in 2012 (OECD, 2013), which aimed to measure students' self-confidence in learning with three items. The Cronbach's alpha of responses to this scale was .54. The Learning Interest Scale was developed by PISA (2012) (OECD, 2013), with the purpose to test students' interest in courses and reading contents. The internal consistency of the scale measured by Cronbach's alpha was .94, .96, .96 and .94 for learning interest of Chinese language, mathematics, English language, and overall learning interest, respectively. The Study Habit scale was adapted from Academic Adjustment Inventory (AAT). The scale has three dimensions: plan for learning, style of listening, and style of reading, with twelve items in total. Results showed high internal consistency with Cronbach's alpha for each dimension and the whole scale: .93, .90, .94 and .97, respectively.

2.3. Data collection and data analytic procedures

Preliminary analyses included the testing of reliability and validity of responses to the instruments. Descriptive statistics including mean and the standard deviation for the key variables. Pearson correlations and stepwise linear regressions were adopted to explore the relationship between approaches toward learning and academic achievements. Analysis of variance (ANOVA) were used to examine differences in academic achievements between the students on the top 25 percentile and those on the bottom 25 percentile based on self-reports on self-confidence in learning, learning interests, and study habits, when students' gender and SES were controlled. Effect sizes (η^2) were reported using Cohen's (1988) standards for small (.01), medium (.06), and large (.14).

3. Results

Results of Pearson correlation among variables were shown in Table 1. Students' dimensions of approaches toward learning were statistically significantly related to each other. Dimensions of approaches toward learning was also statistically significantly correlated with academic achievement. Table 2 described the relationship between dimensions of approaches toward learning and academic achievement. Self-confidence in learning, learning interest, study habit all significantly predicted students' academic achievement.

Table 1. Pearson Correlation Coefficients among Self-Confidence in Learning, Learning Interest, Study Habit and Academic Achievement.

	SCL	LINT	STAB	TTS
SCL	1			
LINT	.63*	1		
STAB	.58*	.70*	1	
TTS	.17*	.18*	.15*	1
<i>M</i>	3.23	4.02	4.23	249.90
<i>SD</i>	0.66	0.85	0.75	27.92

Note: (a) SCL = self-confidence in learning; LINT = Learning interest; STAB = Study habit; TTS = Total score in three subjects = Academic achievement; (b) * $p < .001$.

Table 2. Relationship between Academic Achievements and Self-Confidence in Learning, Learning Interests, Study Habits, and Academic Achievements.

Variable	B	SEB	β	R2	$\Delta R2$
Step 1				.03*	
SCL	6.19	.32	.17*		
Step 2				.04*	.01*
SCL	3.11	.42	.09*		
LINT	4.29	.37	.14*		
Step 3				.06*	.02*
SCL	2.83	.43	.08*		
LINT	3.65	.44	.12*		
STAB	1.47	.54	.04*		

Notes. (a) SCL = Self-confidence in learning; LINT = Learning interest; STAB = Study habit; TTS = Total score in three subjects = Academic achievement; (b) * $p < .00$

In order to further explore students' academic achievements by different dimensions of approaches toward learning, we classified students into two groups according to the scores of each dimension of approaches toward learning by the upper and lower 25%. The top group represented students who were high in self-confidence in learning, learning interests, or possessed good study habits, and students in the bottom group were those with low self-confidence in learning, learning interest, or poor study habits.

Table 4 showed the results from ANOVA of students' academic achievements by approaches toward learning (here refers to self-confidence in learning, learning interests and study habits) after controlling SES and gender. Significant differences were noted in three domains: students who were higher in self-confidence in learning ($M = 255.25$, $SD = 26.02$) had higher levels of academic achievements than who were lower in self-confidence in learning ($M = 243.43$, $SD = 29.78$), $F(1, 6779) = 226.68$, $p < .001$, partial $\eta^2 = .03$ (small effect size). Students who possessed higher learning interests ($M = 255.43$, $SD = 25.89$) performed statistically significantly better on standardized tests than those with lower learning interests ($M = 243.22$, $SD = 29.18$), $F(1, 6980) = 211.83$, $p < .001$, partial $\eta^2 = .03$ (small effect size). Meanwhile, students who had better study habits ($M = 253.50$, $SD = 27.15$) also had higher academic achievements than those with poorer study habits ($M = 245.92$, $SD = 28.38$), $F(1, 7643) = 84.74$, $p < .001$, partial $\eta^2 = .01$ (small effect size).

Table 3. Relationship between Academic Achievement (TTS) and Approaches to Learning.

Indicator	SCL			LINT			STAB		
	SS	F	partial η^2	SS	F	partial η^2	SS	F	partial η^2
SES	74885.05	100.51*	.02	74734.07	101.40*	.01	82211.30	110.55*	.01
Gender	85990.14	115.42*	.02	103826.2 4	140.88*	.02	138916.8 5	186.80*	.02
Approaches	168885.6 0	226.68*	.03	156121.7 3	211.83*	.03	63017.75	84.74*	.01

Notes. (a) SCL = Self-confidence in learning; LINT = Learning interest; STAB = Study habit; TTS = Total score in three subjects = Academic achievement; (b) * $p < .001$.

4. Conclusions and discussions

The study was designed to explore the relationship between approaches toward learning and students' academic achievements for Chinese high school students. Results showed that the dimensions of approaches toward learning (self-confidence in learning, learning interest and study habit) significantly were all related to students' academic achievements. Moreover, statistically significant differences with medium effect size were also noted between various levels of self-confidence in learning, learning interest and study habit and students' academic achievement rent. These results echoed previous research (e.g. Chang, & Cheng, 2008; Kaur & Pathania, 2015; Xiu, 2009).

Approaches toward learning is of great importance to students' academic development (Hugener et al., 2009). It can reflect students' confidence, interest and other attitudes or behaviors in learning. Lu (2017) demonstrated that approaches toward learning is one of the most profound psychological characteristics that learners should have to contribute to their academic success. Poor learning outcomes are largely related to the absence of learning quality (Peng, 2004). Students with good approaches toward learning tend to show high interest and confidence in the learning process and have relatively viable study habits. They are interested in learning and believe that they are capable of learning, and regard learning as a pleasant behavior.

A stable automatic learning behavior pattern through better learning attitude and cognition enables students' learning proceeding smoothly (Feng, 2002). In order to improve students' academic performance, educators should put more efforts on helping students cultivate learning confidence. Educators should also help students develop interest in learning, love reading, and love their classroom teachers. Finally, classroom teachers could help students foster good study habits and establish appropriate plans for learning.

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