

COMPARING EDUCATIONAL BELIEFS OF CHINESE AND AMERICAN
GRADUATE STUDENTS

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COMPARING EDUCATIONAL BELIEFS OF CHINESE AND AMERICAN
GRADUATE STUDENTS

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VITA

Fangxia (Sally) Zhao, daughter of Yumei Chen and Zhong Zhao, was born on May 13, 1960, in Qishan County, Shannxi Province, China, in China's Great Leap Forward Period and grew up during the Cultural Revolution. She graduated from high school in 1978 and went back home as a peasant. She went to college in 1983 and completed the degree of Bachelor of Arts in English from Xian International Studies University in 1987. She earned a Master of Education degree from Auburn University in 2001. She voluntarily went to Qinghai Province, one of China's educational and economic backward areas, looking for her career, after she graduated from college. She worked as a bilingual translator of English and Chinese, an English teacher, and was involved in international affairs in the Northwest Institute of Plateau Biology, the Chinese Academy of Sciences from 1987 to 1992. She was promoted as program leader in 1992 and was endorsed as the head of the Department of Education and International Affairs in 1993 and was in charge of adult education, graduate education, and international cooperation and exchange. She was qualified as an Associate Translator in 1996. She has been married since 1987 and has one daughter, Man (Rebecca) Cai.

DISSERTATION ABSTRACT
COMPARING EDUCATIONAL BELIEFS OF CHINESE AND AMERICAN
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In recent years an increasing number of Chinese international students have selected to come to the United States to pursue their academic studies. They have become one of the largest international student bodies at universities in the United States. This study examined the educational beliefs about teaching and learning of Chinese international and American-born graduate students in the disciplines pure and applied sciences and mathematics at Auburn University by comparing their similarities and differences. The study reported (a) participants' demographic characteristics, (b) the two groups' educational beliefs about teaching and learning, (c) the differences in beliefs about teaching and learning, (d) the differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who studied more than one year, and Chinese international graduate students in

their first year in the graduate program and those who studied more than one year, (e) the differences in beliefs about teaching and learning between male and female graduate students, (f) the differences in beliefs about teaching and learning between American-born male graduate students and female graduate students, and (g) the differences in beliefs about teaching and learning between Chinese international male graduate students and female graduate students.

One hundred and fifty-three graduate students who were in pure and applied sciences and mathematics participated in the study. There were 54 Chinese international students, and 99 American-born graduate students.

Results indicated there were more similarities in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines pure and applied sciences and mathematics than differences. No statistically significant differences were found within Chinese international students. However, Chinese female international students showed stronger emancipatory belief about teaching and learning. This study provided a new dimension in cross-cultural comparative investigation.

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I. INTRODUCTION

Over 30 years ago when U.S. President Richard Nixon arrived in Beijing, China, he found a nation that "... had been almost completely cut off from the United States for more than two decades, and most Chinese knew almost nothing about American culture" (Madson, 2002, p. A13; Leach, 2003). However, China has had a strong bond with Western countries for well over one hundred years. While western domination and exploitation in the eighteenth and nineteenth centuries had many negative effects, there were also strong positive contacts through education. For example, the first Chinese student graduated from an American institution in 1854 (Su, 1996). In 1872, China sent 30 students to the United States for technical learning (Leung & Leung, 1995). According to Lee (1960), about 22,000 Chinese students obtained American higher education degrees from 1872 to 1953. Timothy Richard, a British missionary, reflected in the year 1911 that the newly established modern colleges in China were so Western that the Chinese students were largely out of touch with native thought and feeling but in tune with Western thought and habits (Davin, 1987). John Dewey's reflection upon his visit in China in the 1920s was that in China, "[e]very articulate conscious influence [was] liberal" (cited by Saito, 2003, p. 1758). Dewey's impact and "influence was dominant in Chinese thought and in Chinese education in particular" (Clopton & Ou, 1973, p. 25).

Historically and culturally, Confucian, Taoist, and Buddhist values were the foundation of Chinese education. Some writers even described the three heritages of Chinese culture by saying that “every Chinese wears a Confucian thinking cap, a Taoist robe and Buddhist sandals” (Mah, 2001, p. 10). A Confucian perspective in education is based on a concern about the principles of good conduct, practical wisdom, and proper social relationships (Oldstone-Moore, 2002). Taoism emphasizes all elements of existence—heaven, earth, and man—in harmony through the Tao, the Way, and through nature (Guo, 2002). “Tao ... addresses the question of the ultimate meaning of human existence” (Tu, 1993, p. 1). Buddhism concentrates on the attainment of Enlightenment (wisdom) through virtue, meditation, and acceptance of suffering.

However, for half a century preceding the People’s Republic of China, Western education had been transplanted to China. Missionary schools and returned students from the West made great efforts to introduce western educational thought to China. Many institutions of higher education in China “followed the same credit system, offered the same series of courses, ... the same laboratory manuals, and many courses were taught in English or other languages by returned students or European or American professors” (Kan, 1971, p. 30). University graduates became the main source in the nation to fill key positions in industry, commerce, public service and professional roles. They shared values similar to their Western counterparts and “believed in democracy, personal advancement through education, individual freedom and choice of ways of life, religious or political beliefs” (Kan, 1971, p. 31).

The Cultural Revolution originally was called “The Great Proletarian Cultural Revolution,” which occurred in 1966, demolished the whole prior educational system in China. One of the purposes of the Cultural Revolution was to overthrow the so-called old world and to establish a new world in which the goal of education was to cultivate students with a revolutionary mindset to serve the revolutionary government (Singer, 1971). Intellectuals who were in academic professions were regarded as poisonous weeds (Chen, 2001). The three traditional cultural foundations—Confucianism, Taoism, and Buddhism—were classified as evil (Epoch Group, 2005). In the name of Marxism and Mao Zedong’s determination to succeed in creating a new China, these foundations of traditional educational thought and philosophies were forcibly exorcised. Thousands of intellectuals were persecuted and many of them lost their lives (Walder & Su, 2003). Learning from Confucianism was prohibited because “Confucius was criticized for trying to use education to restore a slave society that had declined in his times” (Wan, 2001, p. 27). In addition, “Confucian emphasis on order, discipline, work, obedience to hierarchical structure ...” (Forsyth, et al, 2000, p. 445), were contradictory to Mao’s thought about class struggle.

Intellectuals such as “teachers, professors, writers, playwright editors, educational administrators, and cultural affairs and propaganda workers” (Kan, 1971, p. 42) were subjected to public condemnation, humiliation, and physical abuse known as struggle sessions. Many others were forced to receive re-education by working on farms and in factories or were imprisoned. Museums and libraries, artwork and books were sacked, temples and historic sites vandalized (Major, 1989). While destroying the traditional roots of educational thought, learning from other countries, labeled as the veneration of

the foreign, was also forbidden. The prevailing decree that academic knowledge was of no use was strongly enforced in every corner in China.

With the end of the Cultural Revolution in 1977, revolutionary class struggle was replaced with “four modernizations”: agriculture, industry, national defense, and science and technology. To carry out these goals, education became one of the priorities in China. All schools changed their goals and curriculum from cultivating revolutionary fanatics to developing students’ potentiality and capacity in learning and practicing in sciences and technologies (Lin, 1994). Meanwhile, China opened its door to the world. Many international experts and intellectuals came to China for business and education. Chinese students and scholars were allowed to go abroad for their academic study and research (Makerras, Taneja, & Young, 1993).

Chinese higher education today is based on a combination of the desire to maintain Confucian educational philosophy, the aspiration to adopt Western educational philosophies, and an urgent need to apply the best possible theories and philosophies to support Chinese education. Different thoughts co-exist in all educational fields. As a result, the juxtaposition of nostalgia for traditional Chinese culture and exposure to Western civilization has created conflict within Chinese students (Yang, 1997).

Since the formal re-establishment of diplomatic relations between China and the United States in 1979, and due to China’s open door policy of the 1980s, thousands of Chinese scholars and students have come to the United States of America for their academic development and cultural enrichment (Freeman, 1995; Orleans, 1988; Tan, 1994). According to statistical information from the Institute of International Education report (Open doors, 2004), China was the leading country of origin for international

students studying at American universities since the early 1990s. Chinese students at American universities numbered 45,126 in 1992/1993 (Open doors, 2004); the number reached 63,211 in 2001/2002 (Open doors, 2004).

The large numbers of Chinese students attending American universities have drawn the attention of many researchers. The question of how best to understand the beliefs about teaching and learning that these students bring to class has been an issue in the last twenty years. Writing about science education, W. W. Cobern (1998) expressed this concern, because “science education is successful only to the extent that science can find a niche in the cognitive and cultural milieu of students” (p. 8). Researchers, however, have focused on characteristics that highlight these students’ uniqueness. Many researchers have promulgated the image that Chinese students adhere to the concepts of collectivism, interpersonal harmony, interdependence, cooperation, conformity and self-sacrifice for the good of the greater society (Kim & Markus, 1999; Markus & Kitayama, 1991; Moy, 1992; Wang, 2001), while American students consider individualism, independence, personal achievement and self-advancement as equally important to any contribution they may make to their field of study or to society (Hofstede, 1980; Kodama, et al, 2002; Krumm, 1988).

It may be true to some extent that students are greatly influenced by their own culture. According to Ruben’s (1972) open systems theory, however, a human being is not a “static package of more or less stable internal structure,” but “a dynamic and self reflective system” that continually renews itself through interaction with the environment (Kim, 2001, p. 35). Additionally, global economic development and cooperation, scientific and technological research and exchange, along with the development and

utilization of computer networks, have connected people from all over the world as they migrate from one location to another and work together to overcome scientific and technological problems. Today, China is an integral part of the global community through international trade, industrial and other economic ventures, and through collaborative research.

When one considers the realities of Chinese social economic reform and innovation, social transformation, which includes alignment of China with the developed countries' social, economic, technological and cultural track, and when one utilizes a constructivist theory of culture learning and a theory of dynamic cross-cultural adaptation, it becomes apparent that there may not be such a great divide between Chinese and American graduate students as has been stated by earlier researchers. One way to assess the similarity between these two groups is to examine the educational beliefs about learning and teaching of Chinese and American graduate students attending American universities.

Several studies have looked at the effect of culture on students' belief systems, which in turn might have influenced the students' perceptions of and beliefs about knowledge and learning. Schommer (1997) reported that students' beliefs about the nature of knowledge and learning were related to academic achievement. King and Kitchener (1994) pointed out that students' epistemological beliefs were also related to reflective judgment. Solano-Flores and Nelson-Barber (2000) asserted that students' personal experiences and beliefs about the nature of knowledge, rather than formal instruction, influenced students' learning in science and mathematics.

In order to ascertain whether the differences between American and Chinese cultural backgrounds are so deep as to result in differences in educational beliefs, this study examined Chinese international and America-born graduate students' educational beliefs about teaching and learning. The study was based on Jürgen Habermas' philosophical thought about knowledge and human interests (Habermas, 1971) as interpreted by Shirley Grundy (1987).

Habermas described three paradigms of knowledge-constitutive interests, which have been categorized as technical, practical, and emancipatory. "The approach of the empirical-analytic sciences incorporates a technical cognitive interest; that of the historical-hermeneutic science incorporates a practical one; and the approach of critically oriented sciences incorporates the emancipatory cognitive interest ..." (Habermas, 1971, p. 308). The following describes Habermas' three categories of knowledge and interest.

The technical interest is "A fundamental interest in controlling the environment through rule-following action based upon empirically grounded laws" (Grundy, 1987, p. 12; Hultgren, 1982), with its related belief that education is a process of producing students by controlling both the learning environment and the learner.

The practical interest is "A fundamental interest in understanding the environment through interaction based upon a consensual interpretation of meaning" (Grundy, 1987, p. 14), with a resultant educational belief in the importance of understanding and interaction.

The emancipatory interest involves "A fundamental interest in emancipation and empowerment to engage in autonomous action arising out of authentic, critical insights into the social construction of human society" (Grundy, 1987, p. 19). A person with this

educational belief critiques and “seeks to expose that which is oppressive and dominating” (Schubert, 1986, p. 181).

This study utilized Stephen Butler’s (1997) Cognitive Interest Inventory, which was based on the model of educational beliefs about teaching and learning described above, to examine whether or not a difference existed between Chinese and American students’ educational beliefs about teaching and learning. This instrument allowed categorization of respondents’ self-reported preferences as technical, practical, or emancipatory.

Statement of the Problem

Many previous studies have highlighted the differences between Chinese students and American students attending graduate schools in the United States (Heggins & Jackson, 2003; Johari, 2004; Wang, 2004; Zhang & Watkins, 2001). Several researchers focused on Mainland Chinese students and scholars who studied at American colleges and universities at the beginning of China’s Open Door policy in the 1980s. These researchers found that scholars and students who were from Mainland China were less sociable than their American peers, and had poor English language skills (Cai, 1993; Jin, 1982; Lay, 1979; Mohan & Au-Yeung 1985; Spinks & Ho, 1984). Most of the subjects of their research, however, had grown up during the Cultural Revolution and during China’s closed-door policy of the 1960s and 1970s, when foreign languages were eliminated from all school curricula, and Western information was completely blocked. The study of English was formally added to the curriculum during the 1980s for junior school, senior school, and college. Some elementary schools did not add English language study to their

curriculum until the 1990s. Thus, many scholars and students who came to American colleges and universities in the 1980s, and even in the beginning of the 1990s, had less formal English language study than do Chinese students today. Snapshots based on Chinese students from this earlier era include culture shock, anxiety, and depression (Henderson, Milhouse & Cao, 1993; Leong & Chou, 1996; Lewthwaite, 1996; Lin & Yi, 1997).

Few studies, however, have recognized these Chinese students as a specific and special group with a unique educational preparation that was influenced by the upheaval of the Cultural Revolution, the closed door policy, and political unrest. There have been even fewer studies on the newer generation who are not only the products of the Open Door policy, but also of the present-day pressure to catch up with developed countries. “The literature addressing work with this population is sparse” (Zhang & Rentz, 1996, p. 322). Another difference between the students in the earlier studies and those in this study is that many of the scholars coming to and studying in the United States and other Western countries in the 1980s had been selected under Chinese government policy, which required that the person must be over 35 years old, be married, perform excellently, show much potential in his/her scientific and technological research, and be a loyal Communist Party member. Most of these individuals were selected to study in America as visiting scholars in the disciplines of science and technology rather than as students. These scholars were in their later 30s and 40s and they did not have an opportunity to learn English thoroughly due to the timing of their schooling, which occurred just as China was rebuilding its shattered educational system after ten years of chaos (Huntly, 1981). So the difficulties and pressures the students were exposed to in

their study and work in the United States was understandable. The previous studies may have accurately reflected conditions at that point in time, but these studies do not represent present Chinese international students who are obtaining their academic degrees in the United States of America today.

Earlier researchers also ignored the actuality of the innate capacity of humans to adjust to new environmental challenges (Kim, 2001, p. 35). According to Piaget's cognitive adaptation theory, "all organisms have an innate tendency to adapt to the environment" through assimilation and accommodation (Miller, 1993, p. 67). The process of adaptation, however, is through hardships and challenges. New "experience is a good teacher, but she sends in terrific bills" (Antrim, 1901, p. 99). "[New] experience is [also] a hard teacher because she gives the test first, the lesson afterwards" (Simpson, 1964, p. 314).

Finally, much existing literature on Chinese international students was based on work with Chinese students from areas such as Hong Kong and Taiwan. Hong Kong had been under British administration and system for one hundred years and did not come back to China until 1997. Taiwanese Chinese students' experiences have diverged from those of the mainland in the last hundred years — first because Taiwan was colonized by Japan between 1895 and 1945, and secondly because since 1949 it has had a separate government and educational system. Further, although both Hong Kong and Taiwan maintain traditional Chinese culture and teach standard Mandarin language in school, those students did not have any experiences of the Cultural Revolution. These differences and other aspects of culture, such as political, economic, social, and geographical factors,

have resulted in a certain degree of difference between Chinese students in mainland and Chinese students in other districts and countries.

Young Kim reveals in his research on becoming intercultural that international students' formal schooling itself could enhance their overall cognitive capacity "to [understand] the language, culture, geography, and history of the particular host society or community to which they are migrating" (Kim, 2001, p. 166). Previous studies, therefore, may be out of date or may not reflect the dynamic and changing attitudes and beliefs of contemporary Chinese graduate students in light of their educational preparation, coupled with their eagerness to absorb, understand, and thrive within American culture while studying in the United States. All of the above factors justify the need for a study of contemporary Chinese international students from mainland China.

Since Chinese international and American graduate students study as a mixed cultural group at American universities, it is possible to study similarities and differences between the two groups. While their present experiences are similar, we can assume that these groups have been influenced by their different cultural and political experiences. In order to determine to what degree Chinese and American graduate students are similar or different in regards to their educational beliefs about teaching and learning, an exploratory study needed to be performed. There is no previous research comparing the educational beliefs of Chinese students attending American graduate school to those of their American counterparts. Such a comparison served as the focal point for this study.

Purpose of the Study

The purpose of this study was to identify educational beliefs (technical, practical, and emancipatory) of Chinese international and American-born graduate students in order to establish whether or not Chinese and American graduate students had similar or dissimilar educational beliefs about teaching and learning. It is the first known study of its kind to be undertaken.

Need for the Study

Many researchers have found that Chinese students in American colleges and universities were strongly influenced by their home culture and Confucian philosophy. Chinese students, as well as other Asian students, have been stereotyped as quiet, reserved and non-assertive (Lin & Yi, 1997); docile, studious, and obedient (Chen & Lan, 1998). If this is true to any significant extent, Chinese and American students' teaching and learning experiences would differ significantly because their expectations for education would differ as students, as teachers, and as global citizens. For future economic and political cooperation between China and the United States, it would be valuable to understand in what ways beliefs about teaching and learning are similar and different among their students at the start of the twenty-first century.

Significance of the Study

It is no understatement to say that, "The cultural and historical backgrounds of people in America and China differ dramatically" (Chen & Lan, 1998, p. 385). A statement such as this helps foster the prevailing attitude among researchers, professors,

and educational policymakers that Chinese graduate students are significantly different from their American counterparts. Researchers such as Suzuki (1983) noted that these attitudes could have undesirable results. Many educators stereotype Asian students as “quiet, hardworking, and docile, which tends to reinforce conformity and stifle creativity” (Lee, 1996; Suzuki, 1983, p. 9) and as “‘problem-free’ high achievers” (Lee, 1996; Suzuki, 2002). This perceived difference often translates into different attitudes toward and treatment of Chinese and American students, which in itself may be a significant obstacle to Chinese students’ adaptation. Being treated differently may inhibit Chinese students’ academic flexibility and creativity when attending classes with American students. It may also continue to produce the undesirable consequence of alienating Chinese graduate students from on-campus and off-campus communication and interaction with their American counterparts.

The study is important in a number of ways. First, it has the potential to break down the established stereotypes about Chinese students. Second, it has the potential to give insights into the beliefs of students from different cultural groups, which could be used to guide teachers who are teaching them. Third, the results of this research could assist teachers to modify or change their teaching techniques and /or attitudes about students from different cultures. Fourth, it has the potential to help graduate students become aware of their own educational beliefs. This awareness may increase their communication skills with their peers, their teachers, and their own students and improve their ability to cooperate and collaborate in their teaching and their learning.

Sample Population

Participants included 188 Chinese international graduate students and 987 American graduate students at Auburn University who were in pure and applied sciences and mathematics in the College of Agriculture, College of Engineering, College of Sciences and Mathematics, College of Veterinary Medicine, and Department of Nutrition and Food Science in the College of Human Sciences. Because there were some schools or departments whose programs were a combination of applied sciences and management, such as Fisheries and Aquaculture, Forestry, and Pharmacy, and because it was not possible to easily determine any individual student's program focus, those schools and departments were excluded from the study. In this study, the terms 'Chinese international graduate students', 'Chinese graduate students', 'Chinese students', and 'Chinese college students' refer to non-immigrant Chinese graduate students who were from Mainland of China, were enrolled in Auburn University's graduate school, and pursued their master's/doctorate degree in pure and applied sciences or mathematics. American graduate students refer to American citizens who were born in the United States, were enrolled in Auburn University's graduate school, and pursued their master's/doctorate degree in pure and applied sciences and mathematics.

Setting

The setting was the graduate program at Auburn University, Auburn, Alabama. Auburn University is a land grant institution of higher learning. According to Auburn University's Institute Research and Assessment, its enrollment for spring 2005 was 3,026 (2005 spring term summary, 2005). Among these graduate students, there were 214

Chinese citizens and over 1000 American-born citizens. The Chinese students seemed to favor natural science programs with 97% enrolled in these types of programs. Less than 4% were in social sciences, education, and the humanities.

Research Questions

This study addressed the following research questions:

1. What are the dominant beliefs about teaching and learning of Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
2. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
3. To what extent do Chinese international graduate students differ from American-born graduate students in the disciplines of pure and applied sciences and mathematics in terms of their beliefs about teaching and leaning?
4. Are there any statistically significant differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?
5. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure sciences and mathematics at Auburn University?

6. Are there any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

7. Are there any statistically significant differences in beliefs about teaching and learning between American-born male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

8. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

Variables in the Study

Independent Variable(s)

The independent variable was dichotomously categorized by student citizenship, with the attribute variable being either a Chinese graduate student or an American graduate student in the disciplines of pure and applied sciences and mathematics attending Auburn University.

Dependent Variable(s)

Survey results about educational beliefs. The survey scores classified graduate students as having the primary educational belief of technical, practical, or emancipatory as defined by Jürgen Habermas (1971).

Design

This study utilized a quantitative design. It included a two-group assessment of educational beliefs based on the attribute variable of participants' nationality (Chinese international graduate students at Auburn University compared with American-born graduate students at Auburn University). Since the independent variable is dichotomous, and the dependent variable is categorized into three types of responses (technical, practical, or emancipatory), the chi-square test was employed. Additionally, since the overall score on Butler's instrument constitutes a continuous dependent variable, One-way ANOVA was employed to compare the mean score of each group.

Data Collection

The data were collected utilizing a Web-based electronic survey. The access link to the online survey questionnaires was sent to participants along with the Institutional Review Board (IRB) Information Sheet. The Institutional Research and Assessment Office (IRA) of Auburn University helped to send out the survey link from their official e-mail account to participants in order to maintain participants' privacy, and to avoid having the mass mailing labeled as "Spam" by the university computer system.

Methods and Procedures

Sources of Data

The target population included a total of 188 Chinese and a total of 987 American graduate students who pursued their Master/PhD degree in pure and applied sciences and mathematics at Auburn University. Participants in the study were a sample of that

population. They included all Chinese international graduate students and all American-born graduate students who were in pure and applied sciences and mathematics at Auburn University of 1175. Information about American-born graduate students' and Chinese international graduate students' discipline and numbers enrolled were obtained from the Auburn University Institutional Research and Assessment (IRA) (<http://www.panda.auburn.edu/>).

The researcher employed the "Cognitive Interest Inventory" instrument that was developed by Stephen Butler at Auburn University and described in more detail in Chapter 3. This instrument yielded the respondents' overall scores regarding their educational beliefs and allowed respondents to be classified as holding technical, practical, or emancipatory beliefs as their primary beliefs about education, that is beliefs about teaching and learning, also referred to as belief paradigms.

Instrumentation

A suitable survey instrument was already in existence and could be appropriately used for this study. The researcher used Stephen Butler's (1997) "Cognitive Interest Inventory" to examine whether or not a significant difference existed between Chinese and American graduate students' educational beliefs about teaching and learning. This instrument has demonstrated sufficient psychometric properties (i.e., content validity, construct validity, concurrent validity measured with Zinn's Philosophy of Adult Education Inventory (1994), and internal consistency) to serve as an indicator "for measuring the cognitive interests of students and teachers in an adult education setting" (Butler, 1997, p. 65). This instrument allowed categorization of respondents' educational beliefs as technical, practical, or emancipatory.

Pilot study and instrument revision. The target students in the survey were American-born and Chinese international students who were in disciplines of pure and applied sciences and mathematics, excluding the social sciences. Five American graduate students and five Chinese graduate students were randomly selected from physics, agriculture, animal sciences, chemistry, and computer science to pilot the instrument with the target population. These students were asked to complete the survey. They were also asked to mark any terms, expressions, and statements in the survey that did not make sense to them. After the ten pilot surveys were returned, the researcher found that a few items in the survey needed to be revised. For example, one student marked in the survey sheet that he did not understand the term “learning community” in statement 6. One student marked that he did not understand the term “Socratic dialogue” in statement 33. Another student marked that he didn’t understand the term “practitioner” in statement 35.

Under the rule of revising survey statements without changing the original meaning, the three statements that the students mentioned in the pilot study were revised or defined without changing their original meaning. The original statements and the revised versions are shown below:

Original: “6. In education, authority resides in the learning community.”

Revised: “6. In education, authority resides in the learning community, the academic “home” where students and faculty collaboratively share knowledge in the process of learning and teaching.”

Original: “33. Among key concepts for effective education are: access to alternatives, Socratic dialogue, and awareness of the role of ideology.”

Revised: “33. Among key concepts for effective education are: access to alternatives, reflection, and awareness of the role of ideology.”

Original: “35. In education, authority resides in the practitioner.”

Revised: “35. In education, authority resides in the practitioner, a person who practices a profession.”

The survey instrument was returned to the pilot group again after the items were revised. The students responded that they understood the revised items and no further revisions were made.

Data Collection Procedures

The Institutional Research and Assessment (IRA) office facilitated the research by sending the Institutional Review Board (IRB) Information Sheet with a link to the electronic survey instrument to the selected participants’ Auburn University’s e-mail accounts: this procedure secured students’ privacy. When students opened their e-mail and clicked the survey link, a clear and brief introduction directed them to start the survey. After they completed the survey and clicked the “Send” button, an e-mail containing the responses was generated from the Auburn University Website, which was developed by the researcher for the survey. This e-mail went through Auburn University’s FrontPage server to the researcher’s e-mail account, thus ensuring that participation in this study was voluntary and anonymous.

Data Analysis Procedures

Demographic Information

The following demographic information from the survey was analyzed and reported by frequencies and percentage: gender, age, nationality, ethnicity, the state of residency, the specific state where the participant attended high school, academic degree sought, years at Auburn University, program name, college or school name, place where undergraduate degree was earned, and career goal(s).

Chi-Square Analysis and Results

Responses from individuals were analyzed to classify each respondent's educational beliefs as technical, practical, or emancipatory. The chi-square test was selected because the data consisted of frequencies that fell into three categories. The chi-square test for goodness of fit was run for both Chinese graduate students and American graduate students to determine whether there were any preferences for one category compared to the others. In addition, the chi-square test for independence was used to examine whether or not there was a relationship between Chinese and American graduate students' preference for technical, practical, and emancipatory educational beliefs.

One-way ANOVA and Results

One-way ANOVA was used in order to assess whether or not there were statistically significant differences in the scale scores between the Chinese and American graduate students' beliefs for specific category of educational beliefs.

Limitations of the Study

This study was subject to the following limitations.

1. The study was limited in scope to only Chinese international and American-born students attending a graduate program at Auburn University, thus the results might not represent the educational beliefs of the whole population of American and Chinese graduate students studying in the United States.
2. Since most Chinese international graduate students at Auburn University are in the sciences and engineering programs, the educational beliefs of the sample did not represent the educational beliefs of graduate students from all disciplines.
3. Chinese students were defined as those who grew up and came from the mainland of China excluding Chinese international students from other places, including Hong Kong, Macao, and Taiwan, whose cultural influences may be different from those of students from Mainland China.
4. American students were defined as those who were born in and have grown up in the United States. The sample might include Chinese-Americans. They might be influenced by their parents' or grandparents' Chinese culture.
5. By using this instrument, we were looking at only a limited picture of students' beliefs about learning and teaching.

Assumptions of the Study

Several assumptions were implicit in the study.

1. Mainland Chinese graduate students' experiences were sufficiently distinctive to allow them to constitute a unique group, distinguishable from Chinese-American and other ethnic Chinese graduate students.
2. The educational beliefs of students were independent of the specific disciplines in which they were enrolled as graduate students.
3. Being born, raised, and educated in the United States or in China results in a stronger influence on educational beliefs than any other factors such as home culture or students' earlier education.
4. Respondents would answer the instrument honestly.

Conclusion

This chapter briefly described the historical background of Chinese students' experiences under China's past and present policies and the research findings about Chinese students' experiences as students at universities in the United States. The problem statements, need for the study, purpose of the study, and significance of the study were stated in this chapter. The research design, procedures, limitations, and assumptions were also described.

The following literature review chapter will focus on the existing literature about how motherland traditional culture has affected Chinese students studying at American universities. The literature review includes a discussion of the following: the influences of Confucianist, Taoist, and Buddhist philosophies on traditional Chinese education

including a critique of these philosophies' effects; the influence of returned overseas Chinese students especially American-educated Chinese students on traditional Confucian culture; the effects of the Chinese Cultural Revolution on educator during the years of 1966 to 1976; the effects of China's Open Door policy at the end of 1970s and the beginning of 1980s on Chinese students and scholars; the research studies on contemporary Chinese college students' attitudes to Western education; statistics on Chinese students studying at American universities from the beginning of the 1990s to the beginning of the 2000s; previous studies about Chinese students in America; theory and research regarding cultural adaptation; and Habermas' knowledge-constitutive interests (technical, practical, and emancipatory) as the underlying theory explaining educational beliefs about teaching and learning, as defined in this study.

II. LITERATURE REVIEW

This chapter provides information on the historical development of the Chinese education system and its effects on Chinese international students, in order to place Chinese international students' cultural educational beliefs and attitudes in context. The review of literature begins with a discussion of traditional Chinese philosophy regarding education, including the Confucian perspective, Daoism, Neo-Confucian thought, and Zen Buddhism, and their influence on education in China over the last century. The literature review explores the radical changes in China's traditional education philosophy with the abolition of China's last feudal domination, the Qing Dynasty: the new ideas introduced by Chinese students returning from their studies abroad, especially in the United States of America at the beginning of the 20th century; the political and social upheavals created by the Cultural Revolution; and the results of China's Open Door policy and experiences of the new group of Chinese students study in the United States in the late 20th century.

The literature review also describes cross-cultural adaptation theories of stress, assimilation, and accommodation to show how this process affects international students' beliefs and attitudes. The last part of the literature review introduces the three paradigms of Habermas' technical, practical, and emancipatory cognitive interest and how each of them functions effectively in education.

The Influence of Confucius

Confucius, the latinized name for Kong (family name) Qiu (given name), was the founder of Confucianism. His literary name was Zhong Ni. He is also called in Chinese as Kong zi, Kong fu zi, or Grand Master Kong, as his honorific titles. Confucius was born into an aristocratic family in 551 BCE in the State of Lu. At the time of his birth, China was a loose conglomeration of states, and each state had its own king. “The various states were in effect miniature kingdoms, each with its own ruler, court, bureaucracy and army” (Mah, 2001, p. 49). Wars frequently took place among the states, while oppressive and merciless taxes made survival hard for the people. Historically, this period of time is known as the Spring, Autumn, and Warring States period (722-221 BCE).

Confucius’ family had lost their wealth as a result of the domestic political and social turmoil and the wars among the co-existing states; however, because of his family’s background, he was appointed as a local minor official responsible for supervising several vassal lords. Taking this opportunity, Confucius tried to persuade the vassal lords and rulers to restore social order by returning to the earlier Zhou dynasty’s civilization and social structure. However, even after many years’ effort of itinerant persuasion, constantly moving from state to state, Confucius was unable to persuade the rulers and the other politicians he served to adopt his teaching, advice, and proposals (Wang, 1946). Frustrated that there was no audience for his ideas, he went back to his own home town in his 50s and spent the rest of his life teaching and writing. Confucius died at age 73.

Confucius's Teaching and Confucianism

Prior to Confucius' birth and throughout his life, the king of each state claimed to be "the Son of Heaven" (天子) and the one who had been "entrusted with the Mandate of Heaven (天命) (Lin, 1979, p. 12), and this belief was deeply rooted in the mind of the people. The king was both the highest sovereign over all people, and also the intermediary "who stood as the chief priest of the people of all [the] civilized world" (De Bary, 1991, p. 31) between the cosmos and the people. According to the Classics, "under the wide heaven, there is no land that is not the emperor's; within the sea-boundaries of the land, there is none who is not a subject of the emperor" (Xu, 1960, p. 6). Therefore, the king was in an extremely exalted position to govern his nation. In addition, the Chinese term for state (country) is a combination of nation (国) and family (家), so the king simultaneously played the role of father to his people. Confucius' ideal rulers and scholars were the ones who possessed "inner sageliness and outer kingliness" (Yee, 2002). For Confucius, the ideal king rules through the power of moral charisma, like the polestar, which maintains its unmoving position while all the other stars revolve respectfully around it (Confucius, trans. 1997, Analects 2:1).

Confucius claimed that he was a transmitter rather than a creator and that all he did reflected his trust and love for the past (Confucius, trans. 1997, Analects 7:1). To transmit and to restore the Zhou dynasty's civilization, which had ended about 600 years before Confucius' time and time of the Warring States society, became his lifelong pursuit.

Confucius taught that if the ruler of the society lost his virtue and the people forgot their position, the society would be in an unhealthy state. In his own words, “let the lord be a lord, the subject a subject, the father a father, and the son a son” (Confucius, trans. 1997, Analects 12:11). As a result, Confucius’ thought and teaching focused on hierarchical social relations and social harmony. The social relations are known as the three bonds and the five relationships. The three bonds represent “the authority of the ruler over the minister, the father over the son, and the husband over the wife” (Tu, 1993, p. 26). The five relationships are of “emperor to subject; father to son; husband to wife; elder brother to younger brother; and friend to friend” (Oldstone-Moore, 2002; Tu, 1993, p. 26). Under this system, the emperors were to be examples of proper behavior, inspiring their subjects to do likewise; fathers were to be models of behavior for their sons who, in turn, were to honor their parents during their life and revere their memory after death. Husbands were the heads of the households and were responsible for upholding family honor and preserving the memory of the ancestors. Wives were to bear sons to carry on the family name. Younger brothers were to accept and respect the position of the elder brother who would one day become the head of the family. People were to practice humanity toward each other in their daily life.

Confucius’ curriculum and teaching included the six arts that became the cornerstone of Confucian education. These were knowledge of rites, music, archery, charioteering, writing and mathematics. Confucius emphasized four subjects in his teaching: culture (文), conduct (行), living up to one’s word (信), and doing one’s best as oneself (忠). A gentleman, a person who was virtuous and well educated, should study

music and poetry, engage in self-cultivation, and possess the basic virtues of respect, love of one's parents, loyalty, obedience, humility, and trustworthiness. For Confucius, "If you do not study the Poems, you will not be able to hold your own in any discussion... If you do not study the ritual, you will not be able to take your stand in society" (Confucius, trans. 1997, Analects 16:13). The purpose of learning, according to Confucius, was moral training aimed at producing officials as models whom people were expected to imitate in a reciprocal relationship of correct behavior. The six moral precepts, which focused on the three hierarchical bonds and the five relationships in Confucius's teaching, are Ren (仁), Li (礼), Xiao (孝), Yi (义), Zhong (忠), and Xin (信).

Ren (仁) stresses benevolence, compassion, humaneness and kindness towards others, and the love for all fellow human beings. To use Confucius' own words, "To love all men" (Confucius, trans. 1997, Analects, 12:22) and "Tame the self and restore the rites" by following the steps of not looking at anything improper; listening to anything improper; saying anything improper; or doing anything improper (Confucius, trans. 1997, Analects, 12:1). The Golden Rule, do not do to others what you do not want them to do to you (Confucius, trans. 1997, Analects, 15:24) reveals the reciprocity of humaneness of Confucian thought. Thus a person should treat his ruler as he expects his ministers to treat him; treat his father as he expects his son to treat him; treat his older brothers as he expects his young brothers to treat him; and treat his friends as he expects his friends to treat him.

Li (礼) corresponds to ritual. During the Zhou dynasty this meant "to sacrifice." Specifically, the head of the ruling house or clan would preside over the traditional rites.

The purpose was to regulate and adjust the relations among nobles. De Bary (1991) briefly described this early ritual in Chinese life:

...a kinship system [was] grounded in the agricultural community, with an overlay of military and bureaucratic administration. Ostensibly the enfeoffment system of the Zhou embodied familial ties, and the sacrificial rites, participated in by the 'feudal' nobility, celebrated the ties and feelings of kinship shared through joint worship of a common ancestor. (p. 30)

According to Analects, one of Confucius' students asked him the fundamentals of ritual, and he replied, "In ceremonies, prefer simplicity to lavishness; in funerals, prefer grief to formality" (3:4, Analects) Later, the meaning of Li (礼) extended to include secular ceremonial behavior, and then took on an even more diffuse meaning, that of propriety or politeness which is a part of everyday life. Li (礼) began to include some quasi-religious solemnity, such as court audiences, the reception of envoys from other states, challenges to battle, archery contests, and the like (Dawson, 1981). Such events had their own ritualized procedures and required specific behaviors; public social manners and human relationships became critical. Li (礼) has been further extended to everyday 'propriety,' 'politeness,' 'etiquette,' and 'good form', and the manner in which a person governs his own body in actions, though Li (礼) still emphasizes sacrificial ceremonies. According to Confucius, ritual was critical to being a gentleman and running a good government.

Xiao (孝) represents love, respect, obedience, and service, filial piety and support of one's parents. Filial piety is considered among the greatest of virtues, and has to be shown towards both the living and the dead. When Confucius talked about Xiao (孝) he said, "When your father is alive, watch the son's aspirations. When the father is dead, watch the son's actions. If three years later, the son has not veered from the father's way, he may be called a dutiful son indeed" (Confucius, trans. 1997, Analects, 1:11). Another anecdote was that Ziyou, one of Confucius' students, asked him to define Xiao (孝). Confucius responded that it would not be called Xiao (孝) if one were just to provide food to feed his parents without respect, because one also provided food to feed one's horses and dogs. One must also obey and respect one's parents (Confucius, trans. 1997, Analects, 2:7). So, a filial son should not only faithfully copy his father's way of life but also should he respect and obey his parents. Confucius even taught students that "a father covers up for his son, a son covers up for his father" (Confucius, trans. 1997, Analects, 13:18) no matter what ever one of them has done. Another aspect of Xiao (孝) that Confucius firmly believed in was good family relationships. For Confucius, good family relationships were the key to reforming society and thus to reforming government. Confucius believed that if people could learn to carry out their family affairs properly, they would in turn be able to perform their roles in society and government equally well. The emperor's role was like that of a father: he should love his subjects as if they were his children, and they in turn would show loyalty and respect to him.

Yi (义) denotes justice and righteousness. It is the virtue of knowing and acting according to what is right and human-heartedness. Rather than pursuing one's own selfish interests, Yi (义) means that one should do what is right and what is moral. In the interest of collective and societal well-being, a righteous person does what she/he knows ought to be done without thinking about how they will profit or gain any personal benefits. "A gentleman considers what is just; a small man considers what is expedient" (Confucius, trans. 1997, *Analects*, 4:16).

Zhong (忠) means loyalty. Zhong (忠) is the equivalent of filial piety, but focused on the relationship between ruler and minister. Loyalty has at least three dimensions of relationship: to social superiors, to friends, and to subordinates (Norden, 2002). Master Zeng's words in *Analects* (1:4) shed light on how Confucius thought of loyalty. Zeng said that he examined himself three times a day to determine whether in dealing on behalf of others he had failed to be loyal whether in intercourse with his friends he had failed to be faithful and whether he had failed to practice what he taught. "Dealing on behalf of others" implies the role of a minister in relation to his superior, and here the relevant virtue is loyalty. "Intercourse with his friends" suggests an equal relation under the social hierarchy, where the relevant virtue is faithfulness and trustworthiness. Finally, a teacher's students are his subordinates, and the relevant virtue is to be a good role model. In turn, the students' obligation is obedience or submission. Consider Confucius' reaction in the *Analects* (3:19) when one of his students asked about this:

Duke Ding asked: “How should a ruler treat his minister? How should a minister serve his ruler?” Confucius replied: “A ruler should treat his minister with ritual, and a minister should serve his ruler with loyalty.”(Confucius, trans. 1997, p.12)

According to Pines (2002), an administrator was considered loyal based on at least the two conditions: first, whether he had a long-term interest in his position and acted accordingly; second, whether he was selfless and treated the state’s interests as his own. In three different verses in the Analects, Confucius stresses loyalty and faithfulness (Leys, 1997). So loyalty to one’s lord could be considered the core of Confucius’ Zhong (忠).

Xin (信) stands for honesty, trustworthiness, integrity, sincerity, and good faith.

Using Confucius’ own words, Xin (信), which occurs some forty times in Analects (Hall & Ames, 1987), means to live up to one’s word. Xin (信) claims that one has the acquired ability, acumen and resources to enact and make real what one says. Xin (信) is an essential factor in establishing interpersonal credibility that makes one a reliable and trusted human being.

Confucius’ core virtues of Ren (仁), Li (礼), Xiao (孝), Yi (义), Zhong (忠), and Xin (信) work reciprocally and simultaneously. Together, these virtues formed Confucius’ philosophy and thoughts and since his death have been developed by his disciples and followers through the many dynasties that came after.

When Confucius died in 487 BC, China was still engaged in the war among the states of Qi, Chu, Yan, Han, Zhao, Wei, and Qin, known as the “Seven Overlords.” Very soon, two major schools of Confucian thought emerged: One was led by Mencius (372-289 BCE), known as Menzi (Meng Tzu, Master Meng); the other was led by Xun Kuang (298-238 BC), known as Xunzi (Hsun Tzu, Master Xun). Succeeding Confucius’ ethical teachings and thought, Mencius stressed the innate goodness of human nature. “Mencius is the first Confucian who put forward the four-virtue framework of Ren (仁) [benevolence]-Yi (义) [righteousness]-Li (礼) [propriety]-Zhi [wisdom]” (Liu & Ivanhoe, 2002, p. ix). Like his master Confucius, Mencius viewed human nature as fundamentally good with moral behavior demonstrating the goodness. However, for Mencius, only through continuous and consistent self-cultivation through pain and suffering can the highest level of morality be reached. Mencius commented that if Heaven conferred a great office on a man, it first exercised his mind with suffering and his sinews and bones with toil; it exposed his body to hunger and subjected him to extreme poverty; and it confounded his undertakings. In all these ways it stimulated his mind, hardened his nature, and compensated for his incompetence (Tu, 1993).

Xunzi, the founder of the legalist school, took a more sophisticated line, saying that human beings are born evil but this can be converted to good through moral education. Everyone is born with a certain level of self-interest. This could consist of a wish for material profit or some degree of emotional desire for love that could drive people to take impulsive actions. He considered that people's own self-interest generally

dictates their actions, and it is only through education and by obeying laws established by the government that people are able to accumulate virtue.

Xunzi's two students, Han Feizi (280-233 BCE) and Li Si (280-208 BCE) developed these teachings, but believed that a person's "evil" nature can never be changed. According to them, a man is always going to have some degree of self-interest from the day he is born to the day of his death. Consequently, there is no point in trying to change people. Thus they must be dealt with through harsh punishments.

Later, during the Han dynasty, Dong Zhongshu (195–115 BC) developed his philosophical theory of yin and yang based on Confucianism and ancient Chinese cosmology. According to this theory, the ruler was perceived as the pivotal point between the triad of Heaven, Earth, and humanity (Oldstone-Moore, 2002). This philosophy ensured that order and harmony was "all under the heaven" as proposed by Confucius. As a result, Confucius' teachings became the national creed (Wang, 1946) and the standard for selecting and promoting officials and scholars in the Han dynasty.

Ancient education in China focused on orientation to officialdom. The purpose of Confucian education was to cultivate officials to serve their ruler. The ruler possessed supreme power because he was beatified and was trusted as the mediator between heaven and earth. Meanwhile the social system formalized the three bonds and the five relationships among those on the upper level society and those at the bottom of the society. Education was to train docile tools for the ruling class. Confucian education reflects ancient China's feudal hierarchical regulation and relationship among people in different positions. It is the product of their social, cultural, economic, and governmental reality.

Daoism and Chinese Education

Daoism refers both to a Chinese system of thought and to one of the major religions of China. Laozi created Daoism, and he was literally known as the Old Master. According to Wing (1986), Laozi worked as the Custodian of the Imperial Archives during the reign of the Zhou Dynasty. Laozi was not satisfied with the separation of the provinces and their competition for political supremacy. He left his position and lived in a mountain, where he wrote the anonymous masterpiece “The Classic of the Virtue of the Dao,” also known as Dao De Jing / Tao Te Ching.

Daoism is based on the idea that all substantive things and all the change in the world rests on one fundamental and universal principle: The Way, or Dao. The Chinese word Dao (道) is a combination of two symbols, a head and transportation, “which means something or someone must travel a path, or a road.”(Chan, 1963, p. 6) Later it expanded to mean “method,” “principle,” “truth,” and “reality” (Chan, 1963). According to Laozi, if you can dao (say it or express it), it is not Dao; if you can name it, it is not the Name (McNaughton, 1971; Wing, 1986), because before the existence of Earth and Heaven, Dao existed (25, Dao De Jing), “the nameless originated Heaven and Earth. The name is the Mother of All Things” (Wing, 1986, p. 27). In its substance and physics, Dao is invisible, inaudible, indescribable, and it is above shape and form. Dao is the ultimate reality of the universe. It is non-being (Wu). “All things in the world come from being. All being comes from non-being” (Chan, 1963, p.7).

According to Laozi, Dao can be used to understand the universe and nature as well as the human body. For example, “The Tao produced the One. The One produced

Two. The Two produced Three. The Three produced All things. All things carry the Yin and the Yang, their blended influence brings Harmony” (Wing, 1986, Chapter 42). Thus, Daoism begins with one (Dao) and develops the two, know as yin and yang (earth and heaven), the two opposite and balanced forces that bring harmony for human beings. The learning of Dao extended to the triune concept of humans, the earth, and ethics, and then to the four, elements of earth, plants, fire, and water. And finally, it is completed by the teaching of five, which adds metal to the previous four and becomes earth, plants, fire, water, and metal. The relationship among the five elements is supplementary, that is each one produces the next one, such as wood (plant) produces fire, fire produces earth (soil), earth (soil) produces metal, and metal produces water, and water helps the growth of wood. But there is also conflict among the elements: Water overwhelms fire, fire melts metal, metal prevents wood, wood drains off earth, and earth discontinues water. The five factors coexist simultaneously in harmonious and conflicting world.

The basic subject of Daoism is to teach people how to live, including how to govern and conduct diplomacy. Daoism prefers minimal government involvement. For Daoism, the purpose of human life is to live life with an attitude of passivity, calm, non-action, humility, and lack of planning, because to plan is to go against the Dao. Therefore governors should act as a guide rather than a governor for the people, following these summary principles from *Dao De Jing*:

Do not emphasize status, intelligence or possessions;

Govern with the least visibility and with a serving attitude;

Reduce laws and govern lightly;

Take few actions that involve the people.

The main object of Daoism is to teach people how to cultivate personal virtue, or Te. Virtue means “the perfection of personality” (Chan, 1963, p. 11), and “personal power” (Wing, 1986, p. 10). Since human life constitutes only a small part of the natural world, students should act in harmony with nature. “Only the knowledge which is intuited by oneself is true knowledge or personal knowledge which can be called Tao or great wisdom” (Kuo, 1996) since Dao is inside one’s self (Hanse, 1983). To be skillful and creative, students must focus on their inner spiritual life and ignore (avoid) external issues, such as material stimulation, fame, praise, or competition. Students of Daoism aim to build a sense of the oneness of me-earth-nature that harmoniously corresponds with Dao. Many ancient Chinese paintings reflect the essence of oneness. Other aspects of life such as Chinese calligraphy, mental health, medicine, and the selection of a residence also show a strong influence from Daoism.

Another Daoist perspective that is particularly relevant to education is that it teaches student to pursue an imaginative utopian life instead of facing the real world and challenging society and authority. One writer who represents this was Tao Yuanmin (365-427CE) and his writing titled “Peach Blossom Spring” typically reflected this thought. His writing described a fisherman who was fishing in a river. He was rowing upstream when he suddenly came to a grove of blossoming peach trees lining each bank for hundreds of paces. He went on for a way and came to the foot of a mountain from whence the spring issued. There was a small opening in the mountain and it seemed as if light was coming through it. The fisherman went through the opening and found himself in an ideal world where houses were surrounded by fertile fields and pretty ponds. Mulberry, bamboo and other plants grew there. Roads were free of traffic and cocks and

dogs could be heard calling to each other. All enjoyed working in the fields; old and young joyfully lived in full happiness. The fisherman enjoyed the simple, harmonious and peaceful community life. He wanted to go back home and tell his people and officials about what he discovered and experienced, but he was never able to find the entrance to go back home. Tao's writing revealed his dream of a past golden age, a time when all people lived in peace and happiness and the rejection of the war and turmoil of the real world. It also stated that an ideal world could not be found by following an external path, but required a spiritual path, a state of mind and attitude.

Daoism taught compassion with moderation and humility, the removal of desires, knowledge, competition, the acceptance of disgrace, and an attitude to be low and submissive and to be behind others instead of ahead of them. To some degree this philosophy with its passive attitude to life and its mysterious and imaginative writing with wisdom stressed, deepened the relationship between the ruling and the ruled. This philosophy tried to eliminate people's potential to challenge authority, and their potential for creation, innovation, and the pursuit of a new and better life. Similar to Confucian education, Doaist teaching served to control citizens and maintain traditional hierarchies. Because of its principles of passiveness, non-competition, and non-struggle, Daoism, as of the Chinese philosophies, has become a past and history in China. These aspects of teaching have been criticized since the beginning of twentieth century. Very few young people in China today understand Daoist its teachings.

The Influence of Zen Buddhism on Chinese Educational Thought

Buddha, known as Gautama Buddha, was born and grew up in an upper class family in Nepal between 563 BCE and 483 BCE. After four visits at age 29 outside his palace, the Buddha suffered due to his inability to solve the inequality of the extremes of wealth and poverty that he observed. Abandoning his inheritance, he left his home and became a monk. He started to practice meditation and asceticism under a fig tree in an attempt to abolish his pain and suffering. At the age of 35, he attained spiritual awareness and was known as “the awakened one,” which is the Buddha and began to teach others how to reach this spiritual awareness or state of enlightenment. Gautama’s awareness included the Four Noble Truths and the concept of Nirvana. The former stated what suffering was, the cause of suffering, the way to overcome suffering, and the path that leads out of suffering. Nirvana describes a spiritual condition of perfect inner stillness and peace, a cessation of desire and all suffering. Gautama was the founder and spiritual leader of Buddhism (Mah, 2001).

Buddhism was imported from India to China around the fifth century CE. According to Mah (2001), Buddhism can be differentiated into Hinduism from which it was adopted, Mahayana Buddhism, and Chan (better known in the West by its Japanese character, Zen) Buddhism. Chan Buddhism diverged from Mahayana Buddhism and developed “a uniquely Chinese flavor” (Mah, 2001, p. 84). Inspired by Dao, Chan was born of the marriage of the Mahayana Buddhism and the Chinese spirit and began a new life on Chinese soil (Dumoulin, 1979). Chan means the practice and realization of the inner heart of Buddha. “Zen [Chan] awakening liberates the mind from the limitations and burdens of narrow views, dogmatic assumptions, and circular thinking habits” (Cleary, 1997, p. xi). In addition, Chan Buddhism in China has several other names, e.g.

Buddhahood, Buddha-nature, Buddha-mind, and Cosmic Body of Buddha, all of which express the absolute inner heart of Buddha. According to Suzuki (Barrett, 1956), nature is the source of the mind, the mind is from the Buddha, the Buddha forms the Way, and the Way leads to Chan. Chan is the rebirth of the combination of Confucianism, Daoism, and Buddhism. As Leggett (1978) stated, “Zen [Chan] is unity of one’s heart with the Buddha heart” (p. 43).

Thomas Cleary (1997) states, “The soul of Zen [Chan] wisdom is called the heart of nirvana, ... the spirit of Zen [Chan] compassion is called knowledge of differentiation ...” (p. xi-xii). All the knowledge of Chan is contained in the Gongan. Gongan (Koan in Japanese) is a typical method of instruction that Chan masters taught their students (disciples, monks) for self-awakening. According to Cleary (1997), Chan displays the objective senselessness of mental obstruction to objective consciousness; “the koans [Gongan] are means of breaking through these mental barriers to allow the mind’s eye to see through the veil of illusion to actual truth” (p. xiv). Gongan could be a story, dialog, question, or statement made by experienced Chan masters to test the enlightenment of their students with regard to their consciousness about themselves and the universe. Generally, those statements or stories express spiritual intuitions using seemingly irrational, illogical, and paradoxical language. Here is an example of Gongan.

A monk asked Zhao-zhou: “Does a dog also have Buddha’s-nature, or not?”

Zhao-zhou replied: “Mu.”(Dumoulin, 1979, p. 71)

This dialogue seems to make little sense and sounds illogical, but this is just its surface content. This dialogue’s peerless logic and fathomless wisdom exists in its underlying structure, which is known as absolute reality or ultimate truth. According to

Chan, existence is found in the silence of the mind, “the Land of Eternal Silent Light” of enlightenment; it is beyond our body and mind, and beyond the communication of our inner dialog. The key word in the example is Mu, a Japanese word that is actually Wu (无) in Chinese. Wu means no-existence, or none. How a student reflects and mediates on the Mu to achieve his independence and freedom of mind is the heart of the Gongan, because the good of Chan teaching is to liberate the human mind from the barriers of their habit, in Habermas’ words the technical patterns of their thoughts and activities (Cleary, 1997). Actually the Mu in the dialogue is the unique key to the source of enlightenment. Any student who wants to pass through the barrier needs first to produce a seeming experience of emptiness by revealing the limitation of thoughts and ideas based on subjective statements. The explanation of Mu, according to Cleary (1997), is ultimate reality that is beyond our imagination. The word Mu is not a clear reply, because the ultimate teaching is silent. This is from a Daoist perspective, for “Tao Te Ching” said, “One who knows does not speak; one who speaks does not know” (Wing, 1986, p. 56). So the purpose of this gongan is to train students to a degree of “Absolute unity with Mu” (Kapleau, 1966, p. 80).

The point is not to explore the correct answer for the example, but to demonstrate how Gongans press and encourage students to critique ordinary reality and force the mind into other areas of understanding. By practicing them day by day and year by year, students learn about themselves. According to Dōgen-Zenji, Shōbōgenzō (1233), ‘to learn about oneself is to forget oneself. To forget oneself is to perceive oneself as all things. To realize this is to cast off the body and mind of self and others.’ (cited by Kapleau, 1966, p. 16)

Some say that Chan Buddhism is a religion; some others say that it is a tremendous philosophy. Both sayings are reasonable. However, from an educational point of view, the most significant gain is Chan Buddhism's meditation. It teaches students how to liberate themselves from habitual prejudice, subjective assumption, and mental barriers and to see the actual truth, hidden world, and justice with their mind's eyes. This learning and method of reflection is no longer the heritage of China alone; it also has been accepted by educators around the world by Western scholars. Nevertheless, because of its origin of Buddhist religion, and association with monks and temples, as well as its metaphysical foundation, isolated from the real world, Chan meditation in China has been critically adapted in education (Lai, 2003; Chen & Sherman, 2002).

Neo-Confucian Thought in Education

Neo-Confucianism is a new school of Confucianism. Neo-Confucianists combined Buddhist and Taoist elements in their school. Although their primary teaching concerned ethics, they were more interested in the theories of the universe and the origin of human nature. They taught that knowledge and action became one and it should not be separate. That is, "knowledge is the beginning of action and action is the completion of knowledge" (Wang, 1963, p. 30).

Neo-Confucian representatives include Zhu Xi (1130-1200 CE) in the Song dynasty (960-1270 CE) and Wang Yangming (1472-1529 CE) in the Ming dynasty (1368-1644 CE). Both further developed Confucian thought.

Not content with Confucius' thinking, Zhu Xi wanted to know the meaning of creation. He concentrated on the relationship between the individual and the universe,

seeking to understand the purpose of human life and the purpose of creation. He proposed that all things possess an immaterial, universal ordering principle or law, called Li, and a material substance made with an activating energy or physical force, called Qi. Li is metaphysical and Qi is physical and energetic (Oldstone-Moore, 2002; Wang, 1946). Li and Qi exist in a state of mutual dependence, and human beings, as part of creation, possess these two elements. According to Zhu Xi, Qi is represented by our abilities to think, move, feel, and produce desires and emotion, while Li is the origin of our goodness (Wang, 1946). Since the Qi that one receives is muddy, one needs to cleanse his obstructed nature by extending his knowledge of the Li in each individual animate and inanimate object. This is the way to becoming a sage. The Dao of Heaven is thus expressed in this law. Zhu Xi's teaching stressed the use of self-discipline to reinforce our soul, mind, and spirit for "silent-sitting" (Wang, 1946, p. 138) through "hard and painful effort" (Tu, 1993, p. 55), along with intensive study to enrich our knowledge and give us a more intimate recognition of our purpose in life.

Wang Yangming challenged Zhu Xi's teaching of Li and Qi, though he also advocated Zhu Xi's silent sitting as a means of gaining self-knowledge. He believed that universal moral law is innate in man but not in the world. He held that objects do not exist entirely apart from the mind (Xin, heart) because the mind shapes them. Wang (1946) described an anecdote concerning an occasion when Wang Yangming was observing bamboo plants. Being a very common plant, it seemed that bamboo had very little relevance to human morals. Wang Yangming sat in his father's bamboo garden and watched the bamboo for three days and nights. He reasoned that this plant was humble enough to be hollow inside, hardy enough to stay green all year long, simple enough to

beautify itself with slender leaves instead of luxurious blossoms, and dignified enough to stand straight and upright. For these reasons, Wang Yangming fully appreciates the bamboo's worthiness as a garden companion. This explains why Wang Yangming did not put his faith in the world that shapes the mind, but rather in the mind that gives meaning to the world.

Anti-Confucian Movements in China and Learning from West

In the last 200 years of Chinese history there have been at least three nation-wide ANTI-CONFUCIAN student movements, each aimed at solving perceived problems with either government or society. The first occurred in the late 19th early 20th centuries. This was a period of questioning Confucian philosophy. The second broke out during the process of seeking and exploiting new ideas about science and democracy from the West in the 1920s, and the third took place in the 1980s, along with the Open Door policy. All these movements profoundly affected Chinese students, especially those who had received their education in western countries, encouraging these students' emancipatory beliefs in overthrowing the Confucian domination in Chinese thought and their action in exploring new philosophies and theories for shaping China's future.

Questioning Confucian Philosophy

The Qing dynasty (1644–1911) was the last feudal government in Chinese history. At the beginning of the Qing dynasty, Confucian teachings and ideas were the basis for all the civil service examinations for official selection and academic degrees. Loyalty to the dynasty, obedience to the father, filial piety, humanity, morality and harmony were emphasized. Although Confucian culture continued to provide the

common ground for the scholar-gentry and the dynasty, China's social and political structures, based on Confucian principles, was not able to withstand the influx of western technology and the repeated invasions, in the later period of the Qing dynasty.

By the nineteenth century as a result of the domestic and international conflicts it faced, the last feudal imperial regime, the Qing Dynasty, had become too fragile, to maintain the so-called glorious and great traditional culture. Domestically, Confucius' classical scholars and government officials dominated education. They insisted on moral principles and personal ethical values in education which were divorced from social reality (Spence, 1990). The path to higher education and public service was to demonstrate classical learning through civil service examinations. Those who passed these exams, as government officials, were, therefore, proficient in Confucian moral principles and ethical values, yet their fraudulent and drug addicted ways weakened the state's collective power, and several regional rebellions threatened the stability of the Qing kingdom (Hsü, 2000).

Internationally, the Western countries forced China to accept a series of unequal and humiliating treaties, compelling China to open its doors to foreign trade. For example, the Treaty of Nanjing in 1842 made China relinquish Hong Kong to Britain; The China-Portuguese Treaty in 1887 allowed Portugal to maintain a station in Macao; The Chinese and Japanese Treaty of Shimonoseki in 1895 ceded Taiwan, the Penghu chain islands and the Liaodong Peninsula to Japan. These and many other treaties, with the accompanying sense of national betrayal and humiliation, aroused Chinese intellectuals to question and rethink Confucian domination in China.

Inside the Qing government, there were at least two different schools within the intellectual officialdom. One was the conservative school (Confucian thought), and the other was the progressive school (self-strengthening).

The conservative school believed that Chinese culture would be able to maintain their ancestors' identity of the "Middle Kingdom" forever and that China did not need any outside culture to contaminate its purity and perfection. They wanted to keep their universe, their society's wholeness, and the harmonious Confucian culture intact. Learning about a foreign culture would undermine and destroy their own culture. Therefore, they continued to emphasize "the moral cultivation and self-realization of an individual in rectification of heart and sincerity of thought" (Leung & Leung, 1995, p. 23), and continued to assert that the only thing the nation could rely on for its survival was the rectitude of its intelligentsia cultivated from Confucian soil.

The progressive school believed that learning from Western technology and military strategy would make China both powerful and rich. Their purpose was to assimilate foreign practices and technology in order to strengthen the existing authoritarian government and to save it from collapse. The school divided Chinese culture into two categories, changeable and unchangeable. The unchangeable "concerned moral principles, ethics and human relationships, while the [changeable] included the military sphere, the fields of navigation, transportation and technology" (Leung & Leung, 1995, p. 20).

For both the conservative and the progressive schools, Confucius' human virtues, that is the innate virtues of the Three Bonds (the loyalty of subject to ruler, the filial obedience of son to father, and the submission of wife to husband) and the Five Constant

Virtues (humanity, righteousness, propriety, wisdom, and faithfulness), “like the sun and the stars shining steadfastly upon the earth”, would never change (Yuan, 2001, p. 195).

After China’s 1894–1895 defeat by Japan and the signing of the treaty of Shimonoseki, a group of intellectual reformers recognized that China needed more than “self-strengthening” strategies and that innovation must be accompanied by institutional and ideological change (Chan, 1971). Kang Youwei (1858–1927) proposed and presented a series of reforms to the young Emperor Guang Xu, and these proposals were approved. The reforms included: the establishment of modern schools; the revamping of the examination system; the promotion of agriculture; mining, trade, medicine and western learning; the sending of Chinese students abroad; the modernization of the army, navy; police force and the postal system; and a complete revision of the laws (Chan, 1971; Li, 1956). However, “the four-thousand-year-old cultural wall of China was too strong to be [a] mere pushover” (Wang, 1946, p. 158). Because of opposition from the conservatives in the central government, the reforms were only in effect for 103 days, from June 11 to September 21, 1898 (known as the One Hundred Days Reform), and then failed. Kang Youwei and Liang Qichao were exiled, and the other main six reformers lost their heads to the imperial executioner (Chan, 1971; Wang, 1946).

The reform failed, but its influence, efforts and the sacrifices made by the reformers were not in vain. Western philosophy was slowly and gradually imported into China. Translations of works such as Adam Smith’s *Wealth of Nations* (1776), John Stuart Mill’s *System of Logic* (1843) and *On Liberty* (1859), Herbert Spencer’s *Principles of Psychology* (1855), *Education: Intellectual, Moral, Physical* (1861), and *Study of Sociology* (1896), William Stanley Jevons’s *Primer of Logic* (1876), and Thomas

Huxley's *Evolution and Ethics* (1893) were introduced to China (Chen, 1979; Chow, 1960; Harrell, 1992; Tu, 1993). These philosophical books and other readings greatly enlightened Chinese intellectuals' thought on reforming society in China. In addition, over a thousand missionary schools from France, Britain, and the United States brought Western history, geography, natural history, medicine, mechanics and, of course, theology to China. The levels of the missionary schools were from primary schools to universities, and the students were both boys and girls, including those who were either physically or socially handicapped. Many Chinese students also were sent abroad to study. As Chen (1979) stated, "When the Chinese were so educated and so emancipated from the shackles of the tradition, their 'energy of faculty' would be released to achieve the long-term goals of modernization" (p. 181).

Democracy and Science — New Ideas for Chinese Students Abroad

China was in a semi-colonial and semi-feudal state at the end of the nineteenth century and the beginning of the twentieth century. As Edwin Clausen (1995) stated, "The Chinese in the twentieth century continued the search for solutions to the internal decay and external challenge that characterized their history during the nineteenth century" (p. 91). Confucian scholars were unable to deal with western guns and boats. "Science and technology were the first territories Confucian traditionalists conceded to the West" (Chen, 1979, p. 174). Concomitantly at the urging of the Self-strengthening Movement, the Qing government sent the first group of 120 Chinese students to study in America during the period 1872 to 1881 (Harrell, 1992; Ye, 2001). Later, more students were sent to Japan, France, England, Germany, and Belgium from the late nineteenth

century and into the twentieth century. Students not only embraced Western technical knowledge, but also learned about Western culture and society.

Chinese Students in the United States

The United States was the first country to which China sent students to study (Chow, 1960). In 1872, thirty Chinese students were sent to the United States for education sponsored by the Qing government (Aikman, 1989; Bieler, 2004). American culture, sciences, systems, and lifestyle were consciously and unconsciously infused in these young learners. During their study in the United States, these students cut off their Qing Dynasty queues and abandoned their traditional Chinese scholars' long gowns, replacing them with American students' fitted clothes. They were energetic and independent, ingenious and openhearted; they started to question the existing power and the authority of the Confucian classics (Bieler, 2004).

The number of Chinese students in America increased rapidly from 50 in 1903 to 300 in 1906, 650 in 1911, 1,000 in 1915, about 1,200 in 1918, and over 1,600 by the 1925 to 1926 academic year (Harrell, 1992; Ye, 2001). These American-educated Chinese students consciously absorbed three vital aspects of American life during their studies at American universities and colleges: The concepts of democracy; the social role of the individual; and the idea of continuous intellectual development.

Democratic Awakening

According to John Dewey (1921), "Democracy was a matter of beliefs, of outlook upon life, of habits of mind, and not merely a matter of forms of government" (p. 581). Chinese students believed that gradualism, the inch-by-inch, drop-by-drop approach to

change China's political and social structure, would enable China to become a liberal and democratic nation (Clausen, 1995). They began this process by establishing journals and founding societies that translated western books and introduced democratic thought. For example, Chen Duxiu created a journal called *New Youth* in Shanghai in 1915 and moved to Beijing in 1917. This Journal initiated the New Culture Movement and promoted science, democracy, and new literature. Meanwhile, Chinese students in American universities quickly established local clubs and these clubs helped students develop identification with their schools and provided a link between the students and the larger communities they were living in. *The Chinese Students' Monthly*, another publication, was created in 1905, regularly publishing articles, poems, and cartoons and other images that reflected current political and societal reality. In addition, other associations such as the Chinese Students' Christian Association in North America established in 1908, and fraternities, such as the Big River Society, were created. These associations all acted to increase students' awareness and knowledge of democratic thought.

Chinese students also actively participated in campus student activities. Gu Weijing and Hu Shi both studied at Columbia University in the 1900s. Gu Weijung became the associate editor and later editor-in-chief of the *Spectator*, "the most prestigious student journal at Columbia" (Ye, 2001, p. 30). He also represented Columbia and participated in a debate with Cornell (Ye, 2001). Later he ran for the Student Board of Representatives and was elected as one of the nine members to represent of the university. Gu also took classes on American Government and learned to give public speeches.

Hu Shi was also attracted to student activities after he arrived in the USA and served on the editorial boards of the *Monthly* and the *Chinese Students' Quarterly*. He was elected as the president of the Cornell Cosmopolitan Club from 1913 to 1914. He gave public speeches at Cornell as well as at church groups, social clubs, and women's organization. He also went to Washington, DC and visited the Capitol Hill hear a congressional debate (Bieler, 2004; Ye, 2001).

The associations, journals, and many other student activities that Chinese students established and were involved in during their studies in American universities and colleges provided them with a wide range of different political alternatives infused with the idea of democracy. Aikman (1989) stated that the Western knowledge and ideas that these overseas students brought back home targeted the roots of China's traditional cultural identity.

Spiritual Support-Cultural Adaptation and Enrichment

Chinese students at American universities and colleges experienced dramatic cultural change and many responded by adaptation in the twentieth century. The traditional professional identity, with its highly visible queue and long gown began to crack and many students wore western clothes (Bieler, 2004; Ye, 2001). The students' attitude toward traditional Chinese marriage also changed. Instead of passively obeying and accepting their parents' pre-appointed and arranged marriages, students started looking for marriage partners based on personal choice and love. Some students even married American girls (Bieler, 2004). Students recognized that Confucius' guide to the five relationships of emperor and subject, parents and children, husband and wife, older sibling and younger sibling, and friend and friend could no longer fulfill their needs as

workers and citizens. The Chinese family system preserved a monarchical political system, and the students began to advocate replacing this system with a western model.

Another aspect of cultural change reflected students' arguments suggesting reforms of the Chinese written language. Classical written Chinese was full of literary expressions, with no punctuation and no phonetic or tonal system. Only those who belonged to a certain level of literati could understand this language. Students believed that the complicated Chinese written language hindered the creation of a democracy, since most Chinese citizens remained illiterate. They proposed to simplify the classical Chinese written language, getting rid of literary expression, adding punctuation, and creating a phonetic and tonal system, so the language could serve all its citizens. This proposal was opposed by conservatives, who thought that the classical Chinese written language represented humanism, national tradition, and wisdom. Hu Shi, a graduate student at Columbia University and a supporter of the reform, published articles in both *New Youth* and the *Chinese Students Quarterly* calling for more scholars' support and involvement.

Comparison often results in reevaluation. As Chinese students studied at American universities and colleges in the nineteenth century and the beginning of the twentieth century, they learned about a new culture. Many of them adopted that culture and concluded that it was time to change and reform China's traditional Confucian culture (Bieler, 2004; Ye, 2001).

Intellectual Development

Many Chinese students were greatly influenced by American academic societies. As a result of their studies in different disciplines, many Chinese academic societies were

established in the United States. For instance, the Chinese Academy of Arts and Sciences in 1910 (Bieler, 2004; Wang, 1946; Ye, 2001), the Chinese Science Society in 1914 (Bieler, 2004; Ye, 2001), the Chinese Engineering Students' Society in 1912 (Bieler, 2004), the Chinese Chemical Society in 1933 (Wang, 1946), the Agriculture Society and the Chemical Society in the early 1920s, and the Sociology Society of China in 1930. Many of these societies later became the precursors of academic societies in China. In addition, these societies became networks that connected intellectuals not only in China and America, but also across the world. A strong bridge was built between students who returned to China and their American professors and other colleagues.

When Chinese students had completed their studies in America, many applied what they had learned in a variety of fields in China. Zhan Tianyou, one of the students among the first groups to be sent to America during 1872 to 1875, returned to China after he had completed his studies in 1881. He designed and built the first railroad (Beijing to Shi Jia Zhang) without any foreign expert advice and is known as “the father of China’s railroads” (Bieler, 2004; Ye, 2001, p. 50). Gu Weijun, the Columbia University-educated student who graduated with a degree in international diplomacy with government and constitutional and administrative law, became a successful and widely respected diplomat in the 1900s (Bieler, 2004, p. 160). When Gu was taking his oral examination, his American professors asked him how could he adapt the American Constitution to suit China and whether he favored a republican form of government. Gu responded by saying that the separation of power was fundamental and that law would be established and held in the highest regard. Shi Meiyu, the first American-educated Chinese woman medical graduate student, obtained her Ph. D in 1898 from the University of Michigan. She went

on to establish the Elizabeth Danforth Hospital in her hometown in China from 1900-1920. She served as a role model for many Chinese women.

Hu Shi observed and experienced American life during his seven years (1910-1917) as a student at Cornell University and Columbia University. As mentioned earlier, he became actively involved in many on campus and off campus organizations and activities. He was elected as the president of the Brothers in Heart International Federation of Students, which was established at Cornell in 1899. He served as an official delegate to the 1913 international conference at Ithaca, representing both the Cornell Cosmopolitan Club and the Chinese Students' Alliance. He was invited to give speeches to various audiences during his time at Cornell and was awarded a prize for public speaking from the Browning Society of Boston, Massachusetts (Bieler, 2004). These social and learning experiences in America gave him a strong and firm emancipatory interest, as Habermas would put it, in changing Chinese education.

After comparing traditional Confucian thought with Western democracy, Hu opted for democratic thought. He proposed reforms to classical Chinese literary styles (Wang, 1946) and opposed traditional Chinese engagement and marriage customs (Bieler, 2004; Ye, 2001). When social Darwinism, socialism, and Marxism were imported to China, Hu criticized those who were looking for easy answers to China's problems by applying too many "isms" (Bieler, 2004; Chen, 1979; Spence, 1990; Tu, 1993). He urged intellectuals to embrace what he considered the two highest aspects of western civilization—democracy and science (Clausen, 1995; Spence, 1990; Wang, 1946). After Hu returned to China in 1917, he and several other American-educated Chinese students introduced Dewey's educational philosophy to China by translating Dewey's

lectures and books. They also created a journal named *New Education*, in which they introduced Dewey's educational theory. As a result of Hu Shi and other American-educated students' great efforts, as well as the support of other Chinese progressive intellectuals, the Chinese educational system was Americanized by the Educational Act of 1922, and this Americanized educational system was implemented until 1927 (Chen, 1979. p. 184).

Yan Fu, one of the foreign trained Chinese students and scholars, introduced many western philosophies to China. He stated that once the Chinese were educated and emancipated from the shackles of tradition, their intellectual energy would be released to achieve the long-term goals of modernization (Chen, 1979, p. 181). The nineteenth and twentieth century overseas Chinese students played the role of catalyst in replacing Confucius' philosophy with modern western scientific and technological knowledge and democratic spirit. American-educated Chinese students in this period of history wrote a shining chapter in history, building a bridge between China and the United States, enriching China's culture and educational reform with concepts of individualism, independence, and democracy (Clausen, 1995).

Sending students abroad had created and empowered "China's first engineers, railway builders, telegraph builders, mining experts, and technical officers in the new navy." (Kiang, 1948, p. 15) "Science was taken in its positivistic sense against superstition and metaphysics. Democracy was understood against the liberal-bourgeois background" (Kiang, 1948, p. 134). The American cultural and educational system, Japanese militarist and nationalist worldview, and French political thought and ideology

all contributed to the construction of a theoretical foundation for returning students, giving an emancipatory orientation to China's social and cultural development.

May Fourth Student Movement – Science and Democracy Spread

The May Fourth Student Movement (also called the New Culture Movement) was the first large-scale political and social movement that introduced western concepts of science and democracy to the larger society. As more students returned from abroad, they brought the new knowledge and concepts of “Mr. Science” and “Mr. Democracy” back to China (Chow, 1960, p. 59; Louie, 1980, p. 5; Spence, 1990, p. 315). Chen Duxiu came back from Japan in 1915 and created the *New Youth* journal in Beijing, which became the most influential intellectual journal in China, attacking Confucianism and introducing a new belief in equality and human rights from Western society. Lu Xun's short story *Madman's Diary* exposed Confucius's ethics through the character of a “madman,” about whom Lu Xun wrote, “while the history book he was reading was full of Confucian virtues [such as Ren, Yi, Li, and Xin], after carefully going through it for half a night, he was able to see between the lines the two characters ‘eat men’” (Louie, 1980, p. 11-12). Cai Yuanpei returned from France and became president of Peking (Beijing) University. Cai challenged Peking University's traditional learning which focused on “the acquisition of wealth or official promotion” in government by proposing a new focus on academic research, academic freedom, and student self-government (Chow, 1960, p. 50). There was an atmosphere of reform and emancipation among intellectuals.

In April 1919, the Chinese government failed in its efforts at the Paris Peace Conference to take back Jiaozhou in Shandong Province, which Japan had seized from

Germany, and also failed to have Japan's Twenty-One Demands of 1915, in which the Japanese government threatened to secure and legalize Japan's continuing invasion and colonization in China, withdrawn. When this news reached Beijing at the end of April 1919 from Paris, "student organizations, including the New Tide Society, the Citizens Magazine Society, the Work-and-Study Society, the Common Voice Society, and the Cooperative Study Society" (Chow, 1960, p. 99) held a meeting and planned a demonstration for May 7, which they defined as National Humiliation Day, the anniversary of the day on which the Twenty-One Demands were signed. The Chinese government's failure in the Paris Peace Conference aroused the students' anger and touched off the outbreak of the May Fourth Movement three days before planned, on May 4th. About 5000 students in Beijing left their campuses to protest the government's betrayal. Many students held up signs carrying slogans such as "abolish the 21st item," "punish the traitors," "refuse to sign on the treaty," "Destroy the old curiosity shop of Confucius!" "Overthrow Confucius and his progeny!" (Yang, 1991) Very soon, students in Shanghai joined in to support the Beijing students' movement and held demonstrations in Shanghai. Workers, farmers, and businessmen also supported and participated in the students' demonstration. The May Fourth Movement became a national political and cultural demonstration.

The May Fourth Movement was primarily a student-led movement protesting imperialism and feudalism in China. The concepts of Mr. Democracy and Mr. Science, equal rights, individualism, and women's emancipation had been planted in Chinese society. Chinese intellectuals, especially those who had received a Western education and

had returned to China, played an extremely significant emancipatory role in changing China's society.

Education in China during the Cultural Revolution

The Cultural Revolution, originally called the Great Proletarian Cultural Revolution, was a nation-wide political, social, economic, educational, ideological, and cultural revolution proposed and led by China's first communist and autocratic leader, Mao Zedong, during the years of 1966-1976 (Jing, 1991, p. 3). One of the purposes of the Cultural Revolution was to overthrow the so-called old world and to establish a new world based on socialism, in which the goal of education was to cultivate students with a revolutionary mindset to serve the revolutionary government. The curriculum, from elementary level to higher education, was oriented to a theme of education serving proletarian politics. People were categorized into two opposite groups during the Cultural Revolution, the proletariat, viewed as the revolutionary class, and the "enemy," viewed as the anti-revolutionary class. The people in the proletariat class included the poor, lower class peasants, workers, revolutionary soldiers, revolutionary cadres, and revolutionary martyrs. Those who were defined as landlords, rich peasants, reactionaries, bad elements, rightists, traitors, and spies were known as class enemies. Intellectuals formed an intermediate class. They were frequently singled out from the political movements and labeled as bad elements, rightists, and anti-revolutionaries, because many had wealthy family backgrounds. "If one dared to criticize any policy or political leader, he or she could be prosecuted and sent to a labor camp or sentenced to life in prison or death"(He, 2002). These intellectuals were thus treated as class enemies.

According to Chen (2001), and Hoffman (2001), Mao Zedong, who ruled China during the period 1949 to 1976, used the Cultural Revolution to counteract the influence of capitalism, elitism, imperialism, bourgeois values, royalist art and literature, and Confucianism, as well as of specific groups of people such as bureaucrats, capitalist intellectuals, and backsliding party members. The revolutionary class was the main tool in this devastating movement. Students, specifically the Red Guards, were completely mobilized during the Cultural Revolution.

Red Guards were students from all educational levels, from elementary to university (Jing, 1991). “The name ‘Red Guards’ indicates that they were the Guards of Mao Zedong and would defend him” (Wang, 1997). Most of the students were from revolutionary class families who had joined the Red Guard. Supported by Mao Zedong, Red Guards were encouraged to “learn revolution by making revolution” (Fairbank, 1986, p. 234) because “revolution is no sin, and rebellion is justified,” they “became the people with great power and authority to ‘conduct revolution’ in every sphere of life in the country” (Jing, 1991, p. 5). Red Guards were also empowered to torture innocent people, invade residents’ homes and local museums, destroy any furniture they wanted, and burn books, paintings, other publications and cultural relics that they thought were not revolutionary in content.

At the beginning of the Cultural Revolution, in 1966, schools were closed so that all the teachers and students could participate fully in all the political activity (Chen, 2001). Revolutionary students and teachers from urban and rural schools marched for the revolution by traveling to Mao Zedong’s birthplace, visiting the revolutionary bases of Jinggang Shan Mountain, Yanan, Beijing University, and Qinghua University. During

their revolutionary traveling, “workers, peasants, and city dwellers were warned not to interfere with student activities” (Singer, 1971, p. 22). Generally, these students were themselves Red Guards. So everywhere they went, they would “bombard the headquarters” (Mao, 1966), dragging and beating up the party’s officials and managers, labeling them as anti-revolutionaries. The Red Guard students bullied and humiliated their own teachers, whom previously they had loved and admired, by posting “big characters” on campus, condemning them at public “struggle sessions,” “shaving half the teachers’ heads in the yin-yang style, and parading their teachers through the streets wearing tall dunce hats”(Hoffman, 2001, p.5). Other researchers, such as Y. Wang (1997), S. Huang (1996), J. Fairbank (1992), T. Tsou (1986), and T. H. Chen (1981), all reported similar events in their research.

The schools were finally reopened in 1970 for two reasons (Chen, 1981). One was that the revolutionary students and Red Guards “had had too good a time wandering about as unchallenged apostles of the revolution provided with free transportation, board, and lodging wherever they went” and nation-wide they were out of control (p. 90). The Red Guard caused violence wherever they went, including physical violence to school teachers, school directors, landlords, and any other members of the antirevolutionary “black gangs” (Wang, 1997). The second reason the schools were reopened was that the government wanted teachers and students to return to school to prepare for recruiting more revolutionaries. To accomplish this, all schools had to infuse Mao’s thoughts of educational revolution into their teaching and learning, create a revolutionary alliance by combing classes, grades, and department into a “three-in-one” revolutionary body (Schoenhals, 1996). All lessons were to be planned with the goal of having students learn

Mao Zedong's works and quotations, and become familiar with documents related to the Cultural Revolution. Another change was that "the traditional 13 years of kindergarten to 12th grade were reduced to a nine- or ten-year plan for primary and secondary (or middle) school" (China, 2005; Chen, 2001).

Students in colleges and universities were divided into two groups. One group of students was the children of landlords, intellectuals, and other rich families, so although they achieved good grades in their academic studies, they were said to have had been "contaminated" by their family background; any future opportunities for them were blocked. The other group of students was the children of workers, peasants, and soldiers. Although they were not academically strong and "were uneasy about the emphasis on quality and academic achievement," (Kan, 1971, p. 47) they were the ones with the most revolutionary enthusiasm and zeal, and were trusted and promoted by Mao Zedong. The schools nationally became the battle ground of the revolution.

A Curriculum of Political Socialization: Elementary, Secondary, and Higher Education *Elementary School Curriculum*

During the Cultural Revolution, political socialization started as early as kindergarten and preschool (Ridley, Godwin, & Doolin, 1971). "All forms of the old — old textbooks, literature, music, movies, plays, and Chinese paintings — were banned in schools" (Chen, 2001). When a child was three to four years old, the child was taught to be familiar with a picture of Mao Zedong and the national flag. During the child's fifth year, the child learned to love the country and the political leaders. When the child was six years old, he or she was taught to love the New China, to love the Communist Party and the People's Liberation Army, and to hate reactionaries and American Imperialism.

Chinese language textbooks were full of stories, fables, and poems that glorified Mao Zedong and the Communist Party from the first grade to the fifth grade (Jing, 1991). For example, in the first grade, children were told that Chairman Mao loved them and they must respect and love Chairman Mao and the Communist Party. The following is a poem from a first grade textbook of the time:

East becomes red, the sun rises, China has a Mao Zedong.

He seeks happiness for the people,

He is our great savior.

Chairman Mao loves the people; he is our guide.

In order to construct a new China, he leads us forward.

The Communist Party is like the sun, wherever it arrives it is bright.

Wherever the Communist Party is, there people are liberated. (Jing, 1991, p. 89)

When students were in the second grade, in addition to emphasizing the love of Chairman Mao, students were taught to recognize who were the evil-hearted people. The fable “a wolf in sheep’s clothing,” was typical. A wolf wanted to eat the sheep. Since the shepherd had a gun and a dog, the wolf could not easily approach the sheep. So the wolf put on a sheep’s skin and insinuated himself into the herd of sheep. But the shepherd found the wolf among his sheep. He raised his wooden stick at the wolf and struck fiercely at it, saying as he struck: “death to you, you wolf in sheep’s clothing!” The teachers helped students apply the story to the reality of their society, saying the landlords, the rich, the anti-revolutionaries, and the capitalists were like wolves. They were the children’ class enemies and must be severely punished (Jing, 1991).

In third grade, the theme of being brave and sacrificing for the socialist revolution was added in the textbook. One of the well-known chapters in the third grade Chinese language textbook concerned the hero named Liu Wenxue, who was born into a very poor family that had been cruelly oppressed by their landlord before liberation. Liu Wenxue, an excellent fourth grade student and a Young Pioneer, was going home after working on the farm one night, when he saw a shadow in a pepper field which belonged to their commune. He approached the shadow and found it was a landlord who was stealing the commune's pepper. The landlord lied to Liu Wenxue, saying he had picked the pepper under order from the commune in order to serve the people. Having caught the landlord stealing oranges and peppers a few days early, Liu Wenxue did not believe what the landlord said, so he questioned the landlord, asking why he did not harvest in the daytime. When Liu Wenxue tried to take the landlord to the commune for punishment, the landlord tried to bribe Liu Wenxue, but Liu Wenxue refused the landlord's "stinking money" and insisted on taking him to the commune. Finally, the landlord seized Liu Wenxue tightly by the throat with his evil claws and killed him. Liu Wenxue became a hero and model to his peers and the landlord was sent for execution by shooting (Jing, 1991).

Chinese students educated during the time of the Cultural Revolution can recite this story. The theme of the story for the third grade students was that (a) landlords were evil, their hands were like evil claws, and they were the students' enemies; (b) this enemy always wanted to destroy socialist fruit; (c) students must be prepared to fight their enemies to protect their socialist fruit; (d) it was the highest glory to sacrifice their lives to fight against their enemies.

In the fourth grade, Mao Zedong was still the focus of students' school life. Every student was proud to say, "When I wear Chairman Mao's picture medal, the red sun is rising from my heart." The theme of becoming heroes for political socialism was maintained in students' daily learning.

In fifth grade, the theme of the Chinese language curriculum focused on teaching students not to show any mercy to class enemies. The representative fable was *The Farmer and the Snake*. This described how a farmer was walking along a road in an extremely cold winter when he saw a snake on the roadside, almost frozen to death. The farmer showed mercy to the dying creature and put the snake inside his coat to warm it up. The dying snake came back to life, but instead of gratitude, bit the farmer. The farmer, on the point of death, said he regretted that he had showed mercy and had saved the life of the evil creature and must receive this evil retribution. It was obvious that the landlord and other anti-revolutionaries were the snake; the revolutionary Pioneers should not show any mercy to them. They must be defeated and destroyed. From humiliation to physical punishment, the revolutionary students could do whatever they wanted to the landlords and other revolutionary enemies.

Another feature of the elementary curriculum was that before each class began, students were required to sing revolutionary songs while they prepared their class learning materials such as pencils, erasers, exercise books, and textbooks. Those songs were all about glorifying Mao Zedong. Here is an example of a song:

Chairman Mao, you are like the bright sun; we are like the sunflower,
Happily facing towards you and blooming under your sunlight;
You are the bright North Star; we are the group stars,

Tightly circling around you.

Your thought is the spring rain and dew,

We grow healthy and strong under your nurture.

You ignited the Great Cultural Revolution with your own hand.

That fire forged us hundreds of times and made us become steel.

Secondary School Curriculum

When students progressed to secondary school, they were required to recite Mao Zedong's works and learn quotations in their early morning reading. More importantly, the focus of the curriculum was to develop and train students' thinking ability and to foster their class consciousness. Students were required to write revolutionary papers. Bulletin boards could be seen everywhere on campus and inside each classroom. The best-written revolutionary papers were selected and displayed on the bulletin board. The board was updated once a week with new papers and pictures. Many students copied newspaper articles and these papers were always selected as model papers for display. Each school had their own campus broadcasting station and speakers. Student speakers were selected to read the selected papers during break and lunch. Students were also organized in small groups to visit local poor peasants and learn about how their landlords had oppressed them before Liberation. Sometimes, once poor farmers were invited to school to give students speeches about the "bitterness of the past and reflections on the happiness of the present." Students were required to write reports each time to reflect how happy they were because only Mao Zedong could lead them to a better life.

Another part of the curriculum at this stage was that schools each had their own students' performance team. The teams were well known as being art and propaganda

teams. Their mission was to prepare different forms of performances for the public. These forms included monologues, dialogues, speeches for three voices, dancing, plays, singing, and choir performances. The content of these performances consisted of worshiping and glorifying Mao Zedong, socialism, and the Communist Party, and besmirching landlords and capitalists. Some of the performances were written by teachers and students. The teams practiced during school hours and usually went to different villages and factories to perform at night for the local people.

Mathematics, chemistry, and physics were excluded from the curriculum. The students who had an interest in these classes were called “five points plus sheep” and they were not welcome in the main stream on campus. “Five points” meant that these students had strong interest and motivation in academic achievement but showed less or no interest in revolutionary activities. The popular saying at that time was that “so long as you have a revolutionary father, being good at math, chemistry, and physics is of no importance.” “Sheep” was used to indicate that if you were good at academic study you were too timid and weak to make a revolution. Foreign languages were also excluded from the curriculum. Students were categorized into revolutionary criticized class, agricultural class, and revolutionary art and propaganda performance class.

Students were also taken to work in factories, on farms, and to the mountains to plant trees and receive military training so that they could learn from peasants, workers, and soldiers (Chen, 1981). Given this situation, quite a few students, including poor peasants and other revolutionary family students, dropped out of school and simply helped their parents at home. The majority of the students, however, was loyal and active

and enjoyed participating in these stimulating and risk free revolutionary activities in school.

Upon completing secondary school, those who lived in urban environments had to go to rural area, such as the countryside to receive labor training (Barnouin & Yu, 1993). These students, according to Mao, were born in the cities and therefore did not understand the peasants' life, including how to plough, how to sow, how to spread fertilizer manually, and how to harvest and reap by hand. Consequently, they were sent to the countryside to be re-educated by the peasants. Students from the countryside, who were registered in the countryside at birth, had no opportunity for other careers than that of their family. They had no opportunity to go to college unless they were from an extremely poor and revolutionary family.

Higher Education Curriculum

For the first six years of the Cultural Revolution, colleges and universities nationally were also closed (Huang, 2005). Faculty, staff and administrators all participated in the revolutionary movement. When some institutions higher of education reopened in 1972, the traditional curriculum, teaching methods, and textbooks and other materials were no longer used. Instead, "the schools were directed to organize their students for participation in the 'three great revolutionary movements,' namely the class struggle, the struggle for production, and scientific experiment" (Cheng & Manning, 2003; Chen, 1981, p. 94).

The New Admissions Policies

Traditionally, students went to college based on the grade they obtained in the nationally administered entrance examination. Generally, those who could go to college

were from wealthier families such as landlords and professionals who were the high academic achievers (Kan, 1971). The reopening of colleges and universities in 1972 broke with this traditional admission procedure and opened the doors for peasants, workers, and soldiers to enter higher education. Instead of going to college through examination, students were recommended by their local revolutionary committees (Singer, 1971). The members of the committee were selected from revolutionary families with a very low academic attainment. The sources of students were from the families of poor peasants, workers, and soldiers, while students “of non-proletarian families and bourgeois intellectuals had little chance of admission” (Chen, 1981, p. 96). “No academic credentials were required” (p. 96). These college students were known as “Gong-Nong-Bin Xueyuan” (Worker-Peasant-Soldier college students) and the colleges were also known as Universities of Workers-Peasants-Soldiers. Meanwhile, “workers, peasants, and soldiers were empowered to ‘attend, manage and reform’ the universities” (Huang, 2005). There was a prevailing saying at that time about college admission policies that they would rather keep the socialist weed than the capitalist seedling.

Curriculum in Higher Education

The new curriculum was focused on the “three great revolutionary movements.” According to Mao’s words, the working class was the leading class, so the board of trustees (the revolutionary committee) for each college and university were selected from among peasants, workers, and soldiers “the most reliable supporters,” who “could be entrusted with the responsibility of ascertaining the correct political-ideological orientation of teachers and students” (p. 94).

According to Chairman Mao's instructions on May 7, 1966 (Löfstedt, 1980), the period of schooling should be shortened, education should be revolutionized, and the domination of the schools by bourgeois intellectuals should not be allowed to continue. As a result, curriculum content was limited to what was directly related to production and ideological politics. Chemistry, physics, and biology classes were replaced with farm technology and plant cultivation techniques. There were no longer classes involving theoretical teaching and learning. Archaeology students visited tombs; students in medical school were sent to rural areas to provide medical treatment to peasants; and "an engineering institute in the capital city conducted classes in 110 factories and mines in 17 provinces and cities ... and invited 300 workers to serve as full or part-time teachers" (Chen, 1981, p. 95). Faculty and students in social sciences and humanities were told to go out of school to carry on "social investigations" and class struggle, and they were expected to take the whole society as their factory (Chen, 1981).

The worker-peasant-soldier college and university students did not have sufficient time to learn basic concepts from textbooks in the classroom, but spent the school year working alongside workers in factories and peasants on farms. Some new institutions were operated by factories with short training programs lasting from a few months to two or three years, and these were known as new proletarian higher education institutions or colleges and universities (Chen, 1981). These institutions did not have set curricula. Their programs were very flexible and were subject to the local agricultural needs and ideological-political circumstances. According to Chen (1981), the worker-peasant-soldier college student population made up 90% of the student body of Beijing University in 1970. Peasants, workers, and soldiers were also recruited into teaching and

administrative positions in higher education, the respected and loved faculty who taught before the Cultural Revolution in colleges and universities were sent to farms, factories, and other state-owned camps to engage in labor and ideological remolding.

During the Cultural Revolution, Confucian, Daoist, and Buddhist philosophy in education were all classified as evil; international communication was completely blocked; education centered on Mao's thought. "The Cultural Revolution resulted in a massive disruption of education in China" (Deng & Treiman, 1997 p. 400). The result of this disruption was that, (a) almost all schools nation-wide were closed from 1966–1972 and different student cohorts in different grades lost their school education; (b) even when later schools were reopened, academic teaching and learning was replaced with revolutionary activities, including students' "legally" sanctioned violence toward their own teachers (Wang, 1997); (c) many intellectuals who worked in schools were purged and were sent to work on farms and factories for reeducation, resulting in the severe shortage of teachers; (d) the "Recommendation Only" admission policies favored students of worker-peasant origins irrespective of ability and the exclusion of students with intellectual abilities created academically barren institutions of higher education. The Chinese people including the students lost all belief in education.

Open Door Policy

Although the Communist Party in China continues dominated the country's leadership, after the devastation of the Cultural Revolution many administrators, intellectuals, and other students in China sought a new way to rejuvenate and vitalize their country.

Mao Zedong died in September 1976. Deng Xiaoping, who had been purged twice and was completing his third rehabilitation, returned to power as one of the Vice Chairmen in the Chinese Communist Party in July 1977. In the same year, the NCEE (National College Entrance Examinations), which were administered province by province, were restored. The first group of young people from factories, farms and other institutions participated in the formal entrance examination and those who were qualified went to college after the hiatus suffered by the higher education system during the ten-year Cultural Revolution. In the Third Plenum of the Eleventh Party Congress in 1978, Deng Xiaoping proposed a series of Chinese economic reforms and a new Open Door policy. Since then, the four modernizations, namely the modernization of industry, agriculture, science and technology, as well as of national defense, became the focus for all Chinese people.

Under Deng's economic reforms and Open Door policy, a curriculum oriented toward scientific knowledge replaced the political and revolutionary struggle agenda. All students' efforts were geared toward gaining the theoretical and practical knowledge needed for China's modernization. Education and economic reform became two dynamic forces. Starting in 1978, right after Deng's visit to the United States, many Chinese students and scholars were selected and sent abroad to study in the United States, Europe, and Japan (Löfstedt and Zhao, 2002). According to information from the Ministry of Education of the People's Republic of China (China, 2005), the number of Chinese students and scholars studying abroad from 1987 to 2004 was over 810,000 in 108 countries and regions all over the world, covering almost all disciplines. Over 200,000 Chinese international students and scholars have decided to study in the United States,

and each year the numbers increase (see Table 1). According to the information from the Institute of International Education (2005), in the past five years, the number of Chinese international students who have studied in the United States has exceeded those from other nations.

Table 1

The Enrollment of Chinese International Students in the United States Institutions

Years	Student Number
1999-2000	54,466
2000-2001	59,939
2001-2002	63,211
2002-2003	64,757
2003-2004	61,765
2004-2005	62,523
2005-2006	62,582

(Source: Institute of International Education, 2004, 2005, 2006)

These overseas Chinese students, like earlier foreign-educated students, not only took advanced scientific and technological knowledge home with them, but brought liberal democratic thought, educational systems, social systems, and practical theories to China.

Cross-Cultural Adaptation

Empirical Studies of Cross-Cultural Adaptation

Based on numerous studies on sojourners' cross-cultural adaptation, several models have been developed of the process from cultural shock to communication competence. Culture shock was first defined in the 1960s by Kalervo Oberg, an anthropologist, who stated that culture shock was initiated by "the anxiety that results from losing familiar signs and symbols of social intercourse" (p. 177). According to

Oberg (1960), the indications (symptoms) of culture shock for sojourners appear as follows:

- Strain due to the effort required to make necessary psychological adaptations
- A sense of loss and feeling of deprivation with regard to friends, family, status, career, and possessions
- Rejection by and/or rejection of members of the new culture
- Confusion in role, role expectation, values, feelings and self-identity
- Surprise, anxiety, and even disgust and indignation after becoming aware of cultural differences
- Feelings of impotence due to not being able to cope with a new environment.

Since Oberg's study, many related studies and similar terms for cross-cultural adaptation have emerged. Representative studies include Smalley's (1963) "language shock"; Byrnes' (1966) "role shock"; Bennett's (1977) "transition shock"; Taft's (1977) "cultural fatigue"; Berry and his colleagues' "acculturative stress" (Berry, 1990; 1970; Berry & Annis, 1974; Berry & Sam, 1997); and Zaharna's (1989) "self-shock." These researchers have exposed difficulties and frustrations of those sojourners, who include foreign workers and business people, but primarily consist of foreign students, when they initially encounter foreign cultural environments, highlighting particularly their shock, uncertainty, confusion, and disorientation.

Based on the phenomenon of cultural shock, researchers have started to focus on cultural change and adaptation. Models of cultural adaptations include the "U-curve" shape (Church, 1982; Torbiörn, 1982), the "W-curve" shape (Lewis & Jungman, 1986), and the "inverted U-curve" shape (Torbiörn, 1982). The "U-curve" model describes

newcomers as undergoing at least four stages of cultural adjustment. These four stages are honeymoon, culture shock, adjustment, and mastery. The “W-curve” model describes six phases that sojourners experience when they migrate to a new environment. These are the preliminary phase, spectator phase, increasing participation phase, shock phase, adaptation phase, and re-entry phase (Lewis & Jungman, 1986). The inverted U-curve assumes that cultural adjustment stress is initially high and then declines slowly for several years, finally, forming an inverted U-curve function (Dion, 1998; Torbiörn, 1982). Each of these models identifies some of the relevant factors and provides useful measurement tools; however, they all lack a theoretical framework and development (Black & Mendenhall, 1991; Cui, Berg, & Jiang, 1998). In addition, few researchers have specifically targeted Chinese international students from the mainland of China who are studying at American universities as unique and specific international sojourners, though many snapshot studies have indicated that Chinese international students are different from their American peers and other students from different regions of Asia (Kwan, Sodowsky, & Ihle, 1994).

Theoretical Studies of Cross-Cultural Adaptation

In addition to empirical studies, numerous theoretical approaches describing cross-cultural adaptation, such as open system theory, social learning theory, constructivism, and cognitive-affect-behavior framework have been developed. These theories have revealed different aspects of cross-cultural adaptation in terms of cultural differences and the theoretical orientation needed for adaptation.

Open System Theory

According to Kim and Ruben (1988), the open system posits that human beings are naturally homeostatic and constantly embrace different meanings and interpretations of perceived phenomena “to achieve an ordered whole” (p. 307). “Each person is seen not as a rather static package of more or less stable internal structure, but as a dynamic and self-reflexive system that observes itself and renews itself as it continuously interacts with the environment” (Kim, 2001, p. 35). The entrance to the whole is through the process of encoding and decoding to function in a certain given sociocultural environment. As an individual arrives in a foreign land and must communicate in another language, this experience tends to disrupt his or her existing internal order (native language), and as a result the individual experiences disequilibrium. Although Chinese international students and other international students who chose to study at American universities and other institutions, have already learned English as a second language, focusing on American on-campus culture, before they came to the United States, after they land in the United States, they still experience disequilibrium (Zhao, 2003; Zuo, 2002). This disequilibrium is eventually replaced with adaptive changes and growth. According to Kim (2001), adaptive changes occur along with a person’s recognition of the new elements and complexity of the milieu and his or her ability to maintain an overall inner coherence and unity. The process of adaptive changes follows a path of repeated dialectic growth of going forward and backward, based on individual traits and the social, political, and cultural environment in which the individual finds him-or-her self.

Based on open theory perspective, Kim (2001) developed a model of the stress-adaptation-growth dynamic. Kim's work concentrated on the process of cultural integration of Korean, Vietnamese, Japanese, and Mexican students in the United States (Guitel, 2004). Chinese international students were not included in her study.

Social Learning Theory

Social learning theory concentrates on the learning that occurs within a social context. It integrates behavioral and cognitive perspectives and assumes that students learn from observation and cognition. According to Albert Bandura (1977), social learning theory has four central conditions that are necessary for individual learning to occur: attention, retention, reproduction, and motivation.

Black and Mendenhall (1991) modified social learning theory in order to model cross-cultural adaptation. When students leave their own country and come to study in the foreign country they have selected, they pay great attention to observing many aspects of the host country's culture. This includes their selection of the status of the host model they would like to follow, the attractiveness of the model, the similarity, the repeated availability of the model, and past reinforcement. During the retention stage, international students collect data on the modeled behaviors through day by day observation of communication, and actively participate and mentally reproduce the modeled behaviors. In the third stage of reproduction, international students act and behave according to the information they have mentally stored. This process is also coincident with Senge's model of the ladder of inference (Senge, Cambron-McCabe, et al., 2000). There are at least two different categories of international students regarding their motivation in adapting to the host culture. One group of students will seek direct support from his or

her surroundings, such as host organizations, the local community, faculty members and host peers. This group of students has more motivation and self-efficacy, which helps them to merge in the novel culture (Black & Mendenhall, 1991). The other category of international students, because of their personal disposition, will choose behaviors that deviate far from their host peers' behaviors, and will do little to utilize modeled and observed behaviors which are appropriate in the new culture (Black & Mendenhall, 1991). Frustration, disappointment, or anger is likely to result for such students.

Social learning theory provides a theoretical framework that can be used to describe the general situation for cross-cultural adaptation. However, no research has been reported on international students who are from a specific country.

Cognitive-Affect-Behavior Framework

Recently, many researchers have focused on the cognition, affect, and behavior involved in cross-cultural adaptation (Cervillon & Dubé, 2002; Cui, Berg, & Jiang, 1998; Specer-Rodgers & McGovern, 2002). According to Cui, Berg, and Jiang (1998), the cognitive dimension includes the sojourners' understanding of the language and communication rules of the host culture. The affective dimension is the empathetic perceptions of sojourners regarding the host culture that could help sojourners merge themselves psychologically into the host culture. The behavioral dimension calls for sojourners to display their cognitive and affective abilities in social and cultural interactions with their hosts. A group of Chinese international students at a university in the United States participated in a study using the cognition-affect-behavior framework and the results showed that for them, the cognitive (communication) dimension was closely correlated with the affective (cultural empathy) dimension. This strong positive

correlation revealed that for Chinese international students in general, their behavior (social interaction) with their hosts is very similar and acceptable (Cui, Berg, & Jiang, 1998). This result also reflected how well the Chinese international students, had been prepared prior to coming to the United States, due to China's Open Door policy and compulsory English language education.

Another research thread examines the two opposite poles of collectivism and individualism for Chinese international students and their host peers. The collective perspective has now entered western culture and become one of the guiding concepts in leadership strategies (Moy, 1992); and conversely individualism has penetrated into Chinese culture (Biggs, 1996; Li & Fischer, 2004). In addition, Chinese international students, especially those who have decided to pursue their academic degree in the United States, have to some extent rebelled against some of their traditional culture. A new theoretical perspective is thus critically needed to re-examine the differences/similarities between Chinese international students and their American peers as they pursue their academic degrees in the same universities.

Habermas's Three Categories of Human Interests

For Jürgen Habermas (1971), learning takes place in relationship to people's specific interests in the technical, the practical, and the emancipatory in which knowledge is constituted. These knowledge and cognitive interests inform social organization through "work, language, and power" (Habermas, 1971, p. 313) and "together, create a unified whole" (McLeod, 2001). Each of these interests is constitutive and initiates a certain way of knowing because each "mediate[s] the natural history of the human

species with the logic of the self-formative process” (Habermas, 1971, p. 196). Each also has its own “function of the objectively constituted problems of the preservation of life that have been solved by cultural form of existence as such” (p. 196). As Kimpston, Williams, and Stockton (1992) stated, “each perspective has its own integrity and logic, and each successive perspective respects that integrity within a broader formulation of what it means to know” (p. 170). The technical interest concentrates on skills and performance. The practical interest supports hermeneutic interpretations and shared understanding. The emancipatory interest generates critical and reflective thought and action aimed toward enabling empowerment and autonomy. In addition, each of these interests has its own beliefs and epistemology, or ways of knowing.

Terms for the technical interest include, empirical analytical science paradigm (Schubert, 1986), scientific-technical interest, instrumental learning (Mezirow, 1991), instructional action, and work (Habermas, 1971). Technical interest is regarded as being an instrumental and exploitable knowledge of control and prediction. It also broadly refers to the way that people control and manipulate their material environment, including other people. This knowledge to a great extent has become interwoven with positivism, in which knowledge is based on empirical investigation and is governed by hypothesis based deductive theories in traditional mathematics, astronomy, physics, chemistry, and biology (Habermas, 1971, p. 73). “Everything that can become the object of vigorous science counts as a fact” (Habermas, 1971, p. 74). Under positivism’s influence, technical interest learning is assessed in terms of efficiency and effectiveness (Cranton, 1996). It governs the way individuals learn to control, manage, and manipulate their environment to achieve their goals. Under this scenario, teaching may be always

contextualized and grounded in human need but is still limited in object. Stephen Butler (1997) describes, “The teacher becomes deliverer of a directed curriculum and learning is controlled through the control of teaching, where the most efficient route to facts is the best route to travel” (p. 17). As a result, “the attitude of pupils must, on the whole, be one of docility, receptivity and obedience’ (Dewey, 1938, p. 18). The technical interest perspective is also reflected in Ralph W. Tyler’s (1949) curriculum study. Using four questions with “simplicity” and “parsimony,” he framed his chapter titles as followings:

1. What Educational Purposes Should the School Seek to Attain?
2. How Can Learning Experiences Be Selected Which Are Likely to Be Useful in Attaining These Objectives?
3. How Can Learning Experiences Be Organized for Effective Instruction?
4. How Can the Effectiveness of Learning Experiences Be Evaluated? (p. 1)

Technical interest is not the only way of teaching and learning. As Young (1990) stated, “It has been argued that control-oriented knowledge is not necessarily an inappropriate form of knowledge in human affairs” (p. 1310). It is “a linear, cause and effect, measurable, and rationally controlled way of thinking and making judgments about who ought to learn what, whom, when, where, for how long, and why” (Henderson & Hawthorne, 1995, p. 9).

Another way of constituting knowledge, according to Habermas, is called the practical cognitive interest. Practical interest is also known as communicative learning and communicative action (Mezirow, 2000; 1991; Harris, 1999), communicative knowledge (Habermas, 1971), the historical or hermeneutical sciences (Schubert, 1986), and a Habermasian theory of knowledge (Harris, 1999). According to Habermas (1971),

practical interest is basically an interest in understanding and making sense of conditions for meaningful communication and dialogue. It describes how “access to the facts is provided by the understanding of meaning, not observation” (p. 309).

The relationship between teacher and student using the practical paradigm is not the same as the scenario using the technical interest. While in technical interest orientated learning, the teacher student relationship is hierarchical, controlling, and objective, in practical interest orientated learning, the teacher may become the learner and the learner may become the teacher (Pritchard, 2000). In addition, according to Schubert (1986), the interaction includes teachers, learners, subject, and environment. The major role of a teacher is to take students to different environments and to have students then construct meaning based on their experiences. “Communication is a process of sharing experience till it becomes a common possession” (Dewey, 1916, p. 11). Mutual understanding, positive socialization, and consensus are the keys to encouraging learners to care for each and all individuals in a learning environment, no matter where they are from.

Language is the tool for mediating relationships and enhancing meaningful discussion. This communication and interaction, however, must be built on trust, integrity, legitimacy, and sincerity with the intent to create new knowledge (McLeod, 2000). R. P. Badillo (1991) stated that, when examined by hermeneutic science, language discloses an interest that not only involves an abstract comprehension or interpretation of text, for instance about persons, cultures or traditions, but more importantly, it aims at “*practically effective* knowledge” at “the possibility of creating and maintaining successful mutual interaction between two or more individuals.” According to Wilson (1997), language includes ordinary language communication and theoretical and practical

discourses. “In every utterance a speaker makes a truth claim relating to the objective world, a rightness claim relating to the social world of normatively regulated interpersonal relations, and a truthfulness or sincerity claim relating to the speaker's subjective world” (Wilson, 1997, p. 191).

Knowledge constitutive interests are unique to different disciplines and are instrumental in creating microclimates. Looking at the discipline of science, Aikenhead and Jegede (1999) reported that all students, both domestic and international, are in the process of assimilation and accommodation from their own culture to the microculture of science. Students in science, like people in any culture, “share unique combinations of norms, values, beliefs, expectations, and conventional actions” (p. 272). Education too has its microclimate. It “requires an in-depth knowledge of children, content, teaching and learning, and commitment to educational virtues” (Henderson & Hawthorne, 1995, p. 7). Communication in education is the practice of an ‘ethic of caring’ to education, whereby the teacher is challenged to serve each student’s ‘best self’ (Noddings, 1984, p. 7).

Emancipatory interest uses the critical sciences paradigm or critical praxis (Schubert, 1986). It “refers to a freeing of one’s self to enable growth and development from the taken-for-granted ideology of social conventions, beliefs, and modes of operation” (Schubert, 1986, p. 318). “It refers to a basic human interest in rational autonomy, freedom from constraints, and removal from distortions” (Huynh, 2005, p. 40). Georgia Drake (2000) says, “The social organization empowers one to transcend constraints as imposed by socio-economic class structure controlling ideologies” (p. 42). Similarly, as Huynh, Lee, and Schuldt (2005) state,

Emancipatory interest is a growing process of personal transformation aimed at overcoming internal and external constraints. Rather than exploring a situation so as to control it or to understand it, an emancipatory interest seeks to free people from physical, mental and social distortions and injustice. (Boudreau, 1997, p. 1)

The emancipatory interest entails a concern for the moral and ethical dimensions underlying human action by asking what sort of activities and experiences will help lead people towards lives characterized by equity, caring, and compassion (Gore & Zeichner, 1991). Emancipatory interest is a belief, as well as an action. As Geelan, Taylor, and Day (1998) state,

emancipatory actions involves self-knowledge and reflection on one's lived experience, and the problematising of power structures with a view of emancipation from the inequities. This mode is related to the empowering of human beings through the critique of ideology. (p. 105)

Emancipatory interest is the twin sister of critical theory. It shares the belief that truth is not based on evidence; instead, it is based on the consensus that all citizens, as social actors, have equal access, rights, and resources. Empirical and hermeneutic research help us to describe our world, but critical research, the emancipatory interest, tries to understand why it is and how it should be (Ewert, 991).

In the context of education, emancipatory cognitive interest helps both teacher and student act rationally in a self-determined and self-reflective manner. Self-determination, according to Andy Hargreaves (2003), is "the capacity to be autonomous" (p. 183), and self-reflection is "the capacity to critically examine the cultural context and traditions where one is inserted, as well as one's affective and emotional dispositions and

constitution” (p. 183). The process of inquiry through self-determination and self-reflection, according to Patricia Cranton (1996), encourages a learner to “challenge his or her taken-for-granted assumptions, to engage in an open discourse of accepted values and practices, to seek out new perspectives, and to work toward changes eliminating or minimizing concerns” (p. 30). “Changes in attitudes, beliefs, interpretation, and concepts that give rise to new ones are considered the outcomes of emancipatory learning” (Huynh, 2005, p. 40). Therefore, as Peter Rennert-Ariev (2005) describes it, the process of emancipation may help reveal unjust or inequitable practices in education that serve to privilege certain groups and marginalize others. Teachers and students should discard authoritarian discourse and collaborate with each other to address the question “whose interests are served by outlooks and skills fostered by schooling” (Schubert, 1986).

Summary

Habermas’s cognitive theory comprehensively demonstrates three dimensions of how human being construct knowledge about the world in which they live. Cultural background, demographic factors, political, social and historical environment, as well as educational policy and curriculum all will influence human beings’ interest in getting to know the world. Chinese international students grew up in China, a country with an old civilization which today present juxtaposes of Confucianism, Daoism, Buddhism, with the new infused blood of Western civilization as a result of its Open Door policy. Due to a strong interest in and desire to continuously discover and decode the mysteries of science and technology, and having experienced Western cultural and educational system, many Chinese students have left home and to study abroad, especially in the

United States. It is interesting and significant to use Habermas's cognitive theory to explore and examine these Chinese international students' beliefs about teaching and learning. This study provides a new dimension to cross-cultural study.

III. METHODS AND PROCEDURES

Overview

This chapter presents a detailed description of the methodology used in this study. Included in this chapter are the purpose of the study, setting, research questions, an inclusive explanation of the steps of the online survey, data collection and data analysis procedures. Information regarding the methodology used to validate the instrument and its reliability are also discussed. Finally, the statistical steps used to examine the research questions are explored.

Purpose

The purpose of this study was to compare Chinese international graduate students' and American-born graduate students' educational beliefs about teaching and learning. The related demographic information of the participants in this study included nationality, ethnicity, gender, discipline, years in the program, state and province of high school education, and future goals. The study examined Chinese graduate students' and American graduate students' educational belief about teaching and learning using the following comparison groups: Chinese graduate students and American graduate students; male graduate students and female graduate students; Chinese male and female graduate students; American male and female graduate students; American graduate

students who have studied at Auburn University for one year and those who have studied more than one year; and Chinese graduate students who have studied at Auburn University for one year and those who have studied more than one year.

Research Questions

The eight research questions examined in this study were as follows:

1. What are the dominant beliefs about teaching and learning of Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
2. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
3. To what extent do Chinese graduate students differ from American graduate students in the disciplines of pure and applied sciences and mathematics in terms of their beliefs about teaching and leaning?
4. Are there any statistically significant differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?
5. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international graduate students in their first year of the graduate program and those who have studied more than one year in the disciplines of pure sciences and mathematics at Auburn University?

6. Are there any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

7. Are there any statistically significant differences in beliefs about teaching and learning between American-born male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

8. Are there any statistically significant in beliefs about teaching and learning between Chinese international male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

Setting and Participants

The setting of this study was Auburn University, a land grant university in the southern United States, with a total enrollment of 21,511 and 3,026 graduate students (Auburn University Office of Institutional Research and Assessment, 2006) in spring semester 2005. Graduate students hailed from all 50 states and nearly 100 foreign countries and were enrolled in almost all disciplines. Chinese international graduate students' enrollment was 214, representing 31% of international students at the university.

Auburn University offers graduate majors in most disciplines, but its primary focus is on the traditional land grant disciplines of agriculture and engineering with a strong emphasis on related fields such as natural sciences and mathematics. Its largest colleges are the College of Agriculture, Samuel Ginn College of Engineering, College of

Education, College of Liberal Arts, College of Sciences and Mathematics, and College of Business (Office of Institutional Research and Assessment, 2006).

Setting

This research was limited to the colleges and departments with pure and applied natural sciences and mathematics programs. These were the College of Agriculture, Samuel Ginn College of Engineering, College of Sciences and Mathematics, College of Veterinary Medicine, and Department of Nutrition and Food Science in the College of Human Sciences.

Because there were some departments and schools whose programs were a combination of applied sciences and management, such as Fisheries and Agriculture, Forestry, and Pharmacy, it was not possible to easily determine any individual student's program focus. Those departments and schools were, therefore, excluded.

Participants

A total 1,175 American-born graduate students and Chinese international graduate students who enrolled in the pure and applied sciences in Auburn University's graduate school and registered in spring semester of the year 2005 were selected to participate in this study. Nine hundred and eighty-seven (987) American-born graduate students and 188 Chinese international graduate students were included in the study.

American-born graduate students were defined as American citizens who were born in and who received their education in the United States. "American-born" as the operational definition deliberately selected in order to include the diversity of Americans who in some way are affected by and participate in the culture and educational system of the United States. American citizens who were graduate students in pure and applied

natural sciences at Auburn University but who were first generation immigrants were excluded from this study.

Chinese international graduate students were limited to those who came from mainland of China and were citizens of the People's Republic of China studying at Auburn University to obtain their master or PhD degrees. Taiwan is part of China; however, because Taiwan has been politically separated from mainland of China for more than 50 years, Chinese students who came from Taiwan and enrolled in Auburn University's graduate school were excluded.

Hong Kong returned to China in 1997; Macao returned to China in 1999. The Chinese government's policy toward Hong Kong and Macao is to treat these areas as one country but two systems; the educational system in Hong Kong and Macao are therefore different from that in mainland of China. Before 1997, Britain occupied Hong Kong for over one hundred years; before 1999, Portugal governed Macao for over four hundred years. Chinese students who came from Hong Kong and Macao, therefore, were also excluded from this study.

According to enrollment statistics for spring semester of 2005, the majority of Chinese international graduate students at Auburn University were in the pure and applied sciences of Agriculture, Engineering, Mathematics and Statistics, and Veterinary Medicine. The total number was 188. These graduate students were 88% of the total Chinese international graduate students at Auburn University. Only 26 (12%) graduate students who came from mainland of China were in other disciplines, i.e. Education, Liberal Arts, Human Sciences, and some of the combination of applied sciences and management, such as Fish and Wildlife Management, Forestry, and Pharmacy. The

numbers of American graduate students and Chinese international graduate students in the pure and applied sciences registered in spring semester of 2005 were all obtained from the Office of Institutional Research and Assessment (2005) of Auburn University.

Based on the purpose and the statement of the problem of determining to what degree Chinese and American graduate students were similar or different in regards to their educational beliefs about teaching and learning in this study, Stephen Lee Butler's (1997) *Cognitive Interest Inventory* was used as a survey instrument. Ten graduate students (5 Chinese international and 5 American-born graduate students) were randomly selected to have a pilot study. A certain items of the original statements in the instrument were restated without changing the original meaning. Content validity, construct validity, and reliability were confirmed. A web-based survey was sent to the Chinese international and American-born graduate students who were in the disciplines of pure and applied sciences and mathematics at Auburn University through the Institutional Research and Assessment Office (IRA) of Auburn University. A total of 1175 students (188 Chinese international and 987 American-born graduate students) got this survey from their Auburn University's e-mail. One hundred American-born graduate students and 55 Chinese international graduate students returned their survey. Chi-square test and one-way ANOVA were used to analyze the collected data.

Instrument

The survey instrument used for this study was developed by Stephen Lee Butler (1997) for his dissertation *Habermas' Cognitive Interests: Teacher and Students Interests and Their Relationship in An Adult Education Setting*. The theoretical foundation of the

instrument was based on Jürgen Habermas' (1971) philosophy of three knowledge-constitutive interests: technical, practical, and emancipatory. Habermas is a modern German philosopher. In his *Knowledge and Human Interests* (1971), Habermas indicates three ways of constructing knowledge.

There are three categories of inquiry for which a specific connection between logical-methodological rules and knowledge-constitutive interests can be demonstrated. This demonstration is the task of a critical philosophy of science that escapes the snare of positivism. The approach of the empirical-analytic sciences incorporates a *technical* cognitive interest; that of the historical-hermeneutic sciences incorporates a *practical* one; and the approach of critical oriented sciences incorporates the *emancipatory* cognitive interest. (Habermas, 1971, p. 308)

Habermas explains, “The expression ‘interest’ is intended to indicate the unity of life context in which cognition is embedded” (p. 9). He also clarifies that “‘cognitive interest’ is therefore a peculiar category ... for knowledge is neither a mere instrument of an organism’s adaptation to a changing environment nor the act of a pure rational being removed from the context of life” (p. 197).

Shirley Grundy, an Australian educator, provides a clearer explanation about technical, practical, and emancipatory cognitive interest by applying Habermas’ three cognitive interests to curriculum development. According to Grundy (1987), “the technical interest is a fundamental interest in controlling the environment through rule-following action based upon empirically grounded laws” (p. 12). Practical interest is “a fundamental interest in understanding the environment through interaction based upon a

consensual interpretation of meaning” (p. 14). The emancipatory interest is “a fundamental interest in emancipation and empowerment to engage in autonomous action arising out of authentic, critical insights into the social construction of human society” (p. 19). According to Butler (1997), “it appears that a teacher’s cognitive interests may influence his or her way of teaching and a student’s cognitive interests may influence his or her way of learning” (p. 31). In addition, adult learners are different from children and youth in many ways. Butler indicated that Habermas’ theory of cognitive interests provided an outstanding framework for his study (Butler, 1997).

Butler’s instrument, titled “Cognitive Interest Inventory,” was designed originally for use with air force officers at a leadership-training institute of higher education. The instrument was modified slightly by Roberta Louise Pritchard (2000) to make it more appropriate for studying elementary principals’ beliefs about teaching and learning. Georgia Drake (2000) used the instrument to study the relationship between Alabama high school principals’ educational beliefs, personal characteristics, school demographics, and student achievement. The researcher of the present study used Butler’s instrument to compare Chinese international with American graduate students’ beliefs about teaching and learning.

Humans approach knowledge with an “orientation toward technical control, toward mutual understanding in the conduct of life, and toward emancipation from seemingly ‘natural’ constraint” (Habermas, 1971, p. 311). According to Butler (1997), technical interest is the expression of the fundamental human need for survival and for earning a living; it is “work” (Habermas, 1971, p. 313), and it is regarded as instrumental, as a means to the desired end (Ewerd, 1991). Teachers with technical interest usually like

to control the learning environment, deliver isolated facts to students, and strictly follow the goals of the planned curriculum. For example, the statements in Butler's survey clearly reveal this kind of interest about teaching and learning:

4. The primary purpose of education is to prepare the learner to control and manage his or her environment.
7. Curriculum should be designed to control the process of learning by controlling the process of teaching.
19. The most important learning outcome for the student is acquiring improved skills.

In order to live with other human beings we must interact with them through communicative action, "which motivate people to communicate with others in building a common understanding of 'reality'" (Harris, 1999, p. 2). While technical interest relies upon empirical science to reveal knowledge, practical cognitive interest is based on the historical-hermeneutic sciences where knowledge is created in the interpretation process. Therefore, Habermas (1971) explains that practical interest gains "knowledge in a different methodological framework ... [It] is provided by the understanding of meaning, not observation" (p. 309). According to Grundy (1987), practical interest is oriented toward understanding. Butler (1997) stated that the roles of teacher and learner became blurred in the practical interest. Teachers bring students to a specific learning situation in an atmosphere designed to enhance individual students' personal interaction with the materials, and students make meaning based on their own life experiences. The following statements in Butler's survey about teaching and learning correspond to practical interest in education.

5. The most important role of education is the development of mutual understanding with others.
20. The fundamental basis of learning allows for the consideration of alternative interpretation.
29. Curriculum should be designed so the teacher and student understand each other since both are concerned with promoting the right action.

The third category of interest is emancipatory. This interest means people seek and find greater freedom from the oppressive domination of others--from individuals and/or from the imperatives of an increasingly rationalized and bureaucratized society (or system) through self-reflection. Habermas (1973) explains, "Self-reflection brings to consciousness those determinants of a self-formative process of cultivation and spiritual formation which ideologically determine a contemporary praxis of action and the conception of the world" (p. 22). William Schubert (1986) states that "emancipation refers to a freeing of one's self to enable growth and development from the taken-for-granted ideology of social conventions, beliefs, and modes of operation" (p. 318). Grundy (1987) states that, "While the other two interests are concerned with control and understanding respectively, the emancipatory interest is concerned with empowerment" (p. 19). Therefore, emancipatory learning is a process of freeing ourselves from forces that limit our options for our lives. Teachers who demonstrate emancipatory interest might create a learning environment where "an ethos of support, encouragement, non-judgmental acceptance, mutual help and individual responsibility is created" (Mezirow, 1981, p. 19). Butler's instrument sought to identify adult students' beliefs about teaching

and learning as it relates to emancipatory interest through questions such as the following in his survey:

27. The primary purpose of education is to prepare the learner to be liberated from the presently existing environment.
30. Curriculum should be designed to empower both teacher and student.
12. The outcome each teacher should look for in his/her students is effective behavior.

Each person's belief in one or more of the interest orientations leads to his or her "taken-for-granted definitions and understandings of the world that give coherence and direction to everyday actions and interactions" (Welton, 1995, p. 141). The examples taken from Butler's instrument demonstrate that with his instrument, it is the aggregate of these questions that assesses an individual's beliefs about teaching and learning in education.

Content Validity

The general concept of validity is defined as "the degree to which a test measures what it claims, or purports, to be measuring" (Brown, 1996, p. 231). Content validity is based on the extent to which a measurement reflects the specific intended content domain (Carmines & Zeller, 1991, p. 20). Butler's (1997) original survey was validated using teachers and adult students in a military college in Alabama.

To enhance content validity of the scores from the Cognitive Interest Inventory, Butler (1997) first contacted three jurors who had extensive knowledge about Habermas' theory and had also written books and journal articles about Habermas. These jurors were

also familiar with the purpose of Butler's study. Each of the jurors provided feedback for the inventory and their feedback were adopted to revise the inventory. Next, Butler presented the revised inventory to two teachers of Air Command and Staff College (ACSC) to obtain their responses before the actual data collection. After the two teachers' completion of the inventory, Butler explained to them individually the purpose of the inventory and described the essence of the three cognitive interests. The two teachers told Butler that their responses matched the appropriate category and that "none of the items was confusing or unclear to them" (Butler, 1997, p. 43). Finally, Butler presented the inventory to a graduate class at Auburn University. The students in this class had studied and discussed Habermas' theory for four quarters; they also read Grundy's (1987) *Curriculum: Product or Praxis*. The students were asked to complete the inventory "as the actual participants would" (p. 44). After they completed the inventory, another copy was handed to each of the students for labeling each item "as either technical, practical, or emancipatory as a final validity check" (p. 44). The result revealed "no additional problems with the inventory" (p. 87). The combination of the final validity check and the feedback from the jurors indicated that the scores from inventory possessed sufficient content validity to be considered a valid instrument" (p. 57). Scores from this survey instrument, therefore, has content validity, and can be used as a measure of Chinese and American graduate students' beliefs about teaching and learning in terms of technical, practical, and emancipatory interests.

Construct Validity

The term “construct” generally refers to some phenomenon that is abstract and theoretical and that cannot be directly observed. Construct validity is the extent to which an instrument adequately measures a theoretical construct /concept and seeks agreement between a theoretical construct and a specific measuring device or procedure. Construct validity is “the degree to which an instrument measures the traits or characteristics implied by the construct it is intended to measure” (Ary, Jacobs, & Razavieh, 1996, p. 565).

One of the ways that construct validity is measured is to “conduct a factor analysis on scores from the new instrument” (Huck, 2000, p. 104). Butler (1997) used factor analysis in developing his questionnaire in order to determine the extent to which each variable contributed to each of the three scales, technical, practical, and emancipatory, in his questionnaire. Butler (1997) hypothesized that the pattern of zero and non-zero loadings would confirm that the 15 items designed to represent each of the three scales rigorously did represent the cognitive interests for which they were designed.

Ary, Jacobs, and Razavieh (1996) explained that researchers should know the purpose, the setting, and the population in which the instrument will be used to accurately assess construct validity. The best way to determine construct validity is to use the actual participants to test the validity of the instrument scores. Butler (1997) obtained 551 adult student participants’ responses on the total 45-item questionnaire as the initial group analysis. All 45 items were analyzed to determine the extent to which each variable contributed to each of the three cognitive scales and to identify common factors underlying the instrument. To facilitate interpretation of the factor analysis data, the

maximum likelihood factors were extracted using the Varimax rotation option of SPSS Factor Analysis. Loadings of this analysis confirmed that items represent the intended constructs.

Concurrent Validity

Concurrent validity compares scores on an instrument with current performance on some other measure. According to Ary, Jacobs, and Razavieh (1996), concurrent validity is how well a standardized score correlates with current scores on the same construct area using a different measure. To establish concurrent validity in his research, Butler (1997) compared the responses to his instrument, “Cognitive Interest Inventory”, with the responses to Zinn’s (1994) instrument, “Philosophy of Adult Educational Inventory” (PAEI). The PAEI was selected for the comparison because this Inventory was based on Habermas’ cognitive interests. This comparison, according to Butler (1997), would strengthen the credibility of his questionnaire because the PAEI had been demonstrated to be valid and reliable.

The PAEI and the “Cognitive Interest Inventory” contained 150 items (75 items in the PAEI and 75 in the “Cognitive Interest Inventory”). During the field test, five of the six (83.3%) respondents were placed into matching categories as a result of their responses to both instruments. The correlation coefficient between the two instruments was .9615 with a p value of .002 (Butler, 1997). To see if a statistically significant correlation between the two instruments would hold for a larger sample, too, Butler (1971) decided to repeat the concurrent validity testing with of 75 teachers.

Fifty-five of the 75 (73.3%) teachers who participated in this study were placed into matching categories as a result of their responses to the PAEI and the “Cognitive Interest Inventory.” The correlation coefficient between the two instruments was .2784, with a ρ value of .016. The result indicated that the correlation between the two instruments was statistically significant. Thus the scores from “Cognitive Interest Inventory” in Butler’s (1997) study possessed sufficient concurrent validity.

Butler’s (1997) survey was adapted for use with Chinese international graduate students and American-born graduate students at Auburn University. Butler’s instrument had been originally designed to assess graduate students and adult learners’ teaching and learning beliefs in education in a military institution in the United States. The instrument was also adapted to assess elementary school and high school principals’ beliefs in education (Drake, 2000; Pritchard, 2000). Since the participants in the present study would be graduate students coming from two different cultures and since their disciplines were limited to the pure and applied sciences and mathematics, the researcher conducted a pilot study to test the content validity of scores from this instrument.

The researcher in this study selected five Chinese graduate students and five American graduate students in the disciplines of Chemical Engineering, Animal Science, Physics, Computer Science, and Agronomy and asked them to complete the survey and provide feedback after their completion. Students were asked to complete the 45-item survey and to mark and question any statement or term that they did not understand. The ten completed surveys showed that two participants did not understand a few terms in the instrument. In order to preserve the meaning of the original version of the instrument, the researcher clarified these terms by briefly defining them within the probe (Appendix B,

Comparing Educational Beliefs of Chinese International and American Students). The revision consisted of the following:

Original: “6. In education, authority resides in the learning community.”

Revised: “6. In education, authority resides in the learning community, the academic “home” where students and faculty collaboratively share knowledge in the process of learning and teaching.”

Original: “33. Among key concepts for effective education are: access to alternatives, Socratic dialogue, and awareness of the role of ideology.”

Revised: “33. Among key concepts for effective education are: access to alternatives, reflection, and awareness of the role of ideology.”

Original: “35. In education, authority resides in the practitioner.”

Revised: “35. In education, authority resides in the practitioner, a person who practices a profession.”

The revised survey was sent to the same participants after the terms they identified had been clarified. The participants responded that they understood all the items in the survey.

Reliability

According to Shannon and Davenport (2001), the basic idea of instrument reliability may be expressed by the word consistency. “The more consistent the results from a measurement instrument are, the more reliable they are” (p. 119). Huck (2000) indicated that the question to ask is, “To what extent can we say that the data are consistent?” (p. 86). There are different approaches to examine reliability. Butler (1997)

used split-half and coefficient alpha to test the reliability of his “Cognitive Interest Inventory,” because these two approaches were useful for testing attitude scales.

The split-half procedure measures reliability in terms of internal consistency, which, according to Shannon and Davenport (2000), “estimates reliability in terms of how consistent the actual items are within the instrument” (p. 120). If the items of a measurement instrument are divided into two halves, the correlation between the two halves will show how reliable the scores from the two halves are. Butler (1997) artificially divided his instrument into two halves and compared the individuals’ responses on the two halves of the instrument. The results showed that the reliability analysis of the two halves of the “Cognitive Interest Inventory” provided an alpha for part 1 of .8108 and an alpha for part 2 of .8098.

The coefficient alpha, known as Cronbach’s alpha, examines the extent to which items perform as consistent measures of a single construct. Butler (1997) “measured the extent to which the scores of the individual items agreed with one another and provided a score that represented the maximum likelihood estimate of reliability” (p. 64). A standardized item alpha was also calculated for each of the three scales (technical, practical, and emancipatory). The results for both the alpha coefficients and the standardized item alphas were adequate to good as reported in Table 2. Both split-half and coefficient alpha measurements of the three scales (technical, practical, and emancipatory) showed that the “Cognitive Interest Inventory” instrument contained a high degree of internal consistency.

Table 2

*Alpha Coefficients and Standardized Item Alpha**

Scale	Alpha Coefficient	Standardized Item Alpha
Technical	.8187	.8195
Practical	.7538	.7591
Emancipatory	.8358	.8373

* Butler, 1997, p. 64

The Butler's 45 item questionnaires was supplemented by 14 demographic questions in order to examine individual Chinese and American graduate students' educational beliefs about teaching and learning. The demographic questions asked participants' gender, nationality, discipline, level of degree sought, ethnicity, state and province, and their future career goal. The survey took 20 to 25 minutes to complete.

Data Collection

Procedures

The researcher applied for a student Web account from Auburn University's FrontPage server and used a Web-based survey instrument to collect data. The survey instrument and demographic information were written in hypertext markup language (HTML) by using 2003 Microsoft FrontPage software. The surveys were anonymous as no personal identification was requested or obtained by other means. The instrument was electronically posted to the selected students' Auburn University's e-mail. As a

respondent completed and submitted the survey electronically, an e-mail containing the responses was generated from the Auburn University Web page server. This e-mail was automatically forwarded from the Auburn University server to the researcher's Auburn University e-mail account. This ensured that participation in the study was both voluntary and anonymous. Specific steps for the survey data collection procedure were as follows:

Step 1. The researcher applied and obtained a letter of agreement to participate from the Institutional Research and Assessment (IRA) of Auburn University (<http://www.panda.auburn.edu/>). The IRA agreed to help the researcher select the participants and release these participants' Auburn University's e-mail addresses to the researcher.

Step 2. Before the participants' e-mail addresses were delivered to the researcher, the researcher was warned that because of the large number of the selected participants and the limited space for the researcher's Auburn University student e-mail capacity, if the researcher sent the survey link to these participants from her Auburn University's e-mail account, each participant's invitation e-mail containing the survey link would be labeled as 'SPAM' and many students would delete the e-mail without opening it. Another issue involved privacy policy. The researcher could not be given the necessary information to be able to identify the 987 American-born graduate students and the 188 Chinese international graduate students. Nor was the researcher allowed to obtain these students' e-mail addresses. However, the Institutional Research and Assessment office offered to the survey link to the selected participants so that there would be no violation

of privacy, and the participants would not receive the e-mail being labeled as “SPAM.” The researcher therefore, agreed to accept the Institutional Research and Assessment office’s help for sending the e-mail, which contained the Institutional Review Board Information Sheet along with the access link to participants’ Auburn University e-mail addresses (Appendix C: Information Letter). The Institutional Research and Assessment office also sent three follow-up letters to the selected participants through their Auburn University e-mail account.

Step 3. The researcher provided a brief description of the purpose of the study, 14 demographic questions, instructions for completing the Cognitive Interest Inventory, and the means to submit it (Appendix B: Comparing Educational Beliefs of Chinese International and American Students). When respondents opened the link, completed the survey, and selected the “Send” button at the bottom of the form, an e-mail with the responses was sent from Auburn University FrontPage server to the researcher’s Auburn University e-mail folder. If the respondent, for any reason, missed responding to one item in the survey, when he or she selected the “Send” button, a box would appear indicating the specific item he or she missed, so the respondent could go back and make up the one she/he missed. This ensured that the researcher received fully completed surveys. Since the completed survey was sent from the Web site through FrontPage instead of the respondents’ e-mail accounts, their responses were completely anonymous and untraceable.

Step 4. The researcher created a folder for data collection. All respondents' completed surveys went automatically to this specific folder.

Step 5. The researcher conducted the first follow-up after three days by asking the Institutional Research and Assessment office to send an e-mail message to all respondents. The follow-up e-mail letter included a "thank you" for those who had completed the survey and contained a link to the survey instrument with a request for participation for those who had not (Appendix D: E-mail Follow-up Letter (1)).

The researcher received a total of 106 returned surveys from American graduate students after the first follow-up letter but only 30 returned surveys from Chinese graduate students.

Step 6. The researcher conducted the second follow-up thank you/invitation after another five days by asking the Institutional Research and Assessment office to send an e-mail message to only the Chinese graduate students. The follow-up e-mail letter contained a link to the survey instrument (Appendix D: E-mail Follow-up Letter (2)). In order to try to increase the number of the returned survey from the selected Chinese graduate students, the researcher sent an e-mail to the president of the Chinese Scholar and Student Organization (CSO) and asked her to encourage more students' participation. Very soon, the researcher received another 15 returned surveys from the selected Chinese graduate students. The returned surveys from the Chinese graduate students were 45. Since 188

Chinese graduate students were selected to participate in the survey, the 45 returned surveys were not powerful enough for a statistical analysis.

Step 7. Three weeks from the second follow-up letter to participants, the researcher asked the Institutional Research and Assessment office to send the third (last) follow-up thank-you/invitation letter and link to the Chinese participants (Appendix D: E-mail Follow-up Letter (3)). The researcher received another 10 returned surveys within the specified two weeks.

The researcher got 100 returned surveys from American graduate students and 55 returned surveys from Chinese international graduate students.

Data Analysis

The Statistical Package for Social Sciences (SPSS) 12.0 software was used to analyze the data for research questions. Demographic data from the survey were analyzed and reported as the following: gender, age, academic degree, college/school name, enrolled program, years at Auburn University, ethnicity, and future goal. Butler's "Cognitive Interest Inventory" (1997) contained 45 items. The three cognitive interests, technical, practical, and emancipatory, consisted of 15 items each. They were coded as nominal and categorical variables in the following manner: 1= technical, 2 = practical, and 3 = emancipatory. A Likert-type scale with numerical values of 1 to 5 was assigned to the participants' responses. Specifically, participants' responses included Strongly Agree (SA), Agree (A), neutral (N), Disagree (D), and Strongly Disagree (SD) with the matched numerical values of 5, 4, 3, 2, and 1 respectively.

Each statement was scored and assigned a numerical value and the scores for all items representing each cognitive interest were added together. The three totals were then divided by the number of items representing each interest, thus producing three cognitive interest means for each respondent. The highest mean calculated for each respondent became the predominant belief paradigm for each graduate student respondent.

Research questions 1, 2, 4, 5, 6, 7 and 8 were tested using chi-square test for independence to ascertain statistically significant differences in graduate students' dominant beliefs about teaching and learning in terms of nationality, gender, and length of years.

Research question 3 was tested using one-way ANOVA to examine statistically significant differences among the three means: technical, practical, and emancipatory, representing the difference between the Chinese and American graduate students' beliefs about teaching and learning.

Summary

This chapter explained the method used in the study of Chinese international graduate students' and American-born graduate students' belief paradigms about teaching and learning, and any differences related to their nationality, gender, and their length of study at Auburn University's graduate programs in pure and applied sciences and mathematics. Chapter IV presents the findings of this study.

IV. ANALYSIS OF DATA AND RESULTS

The purpose of this study was to explore the similarities and differences between Chinese international and American-born graduate students' beliefs about learning and teaching while they pursued their academic degree at Auburn University, Alabama.

This chapter presents the results of the data analysis regarding beliefs about teaching and learning among Chinese international and American-born graduate students. Demographic and survey data were collected. Participants' demographic data included gender, nationality, years in America (for Chinese graduate student participants), years at Auburn University, college names and disciplines, level of academic degree (master or PhD), years in the program, and their career goal(s). The survey data were used to explore the eight research questions and two null hypotheses that had been formulated for this study. The research questions were as the follows:

1. What are the dominant beliefs about teaching and learning of Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
2. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

3. To what extent do Chinese international graduate students differ from American-born graduate students in the disciplines of pure and applied sciences and mathematics in terms of their beliefs about teaching and learning?

4. Are there any statistically significant differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?

5. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?

6. Are there any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

7. Are there any statistically significant differences in beliefs about teaching and learning between American-born male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

8. Are there any statistically significant differences in beliefs about teaching and learning between Chinese international male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

Data Analysis

The Statistical Package for the Social Sciences (SPSS 12.0 for Windows) software was used to analyze the data according to each question posed. The population was comprised of 987 American-born graduate students and 188 Chinese international graduate students who studied in Auburn University's graduate school and they were all in the disciplines of pure and applied sciences and mathematics. Butler's (1997) "Cognitive Interest Inventory" was used in this study and was made available to participants electronically in hypertext markup language (HTML) through Microsoft FrontPage software. The inventory was activated through the Auburn University FrontPage server and was hyperlinked in the Information Letter and follow-up letters. The Information Letter and the follow-up letters were sent to the selected participants' Auburn University's e-mail account through the Institutional Research and Assessment (IRA) office. One hundred and fifty-five returned surveys (100 from American-born graduate students and 55 from Chinese international graduate students).

Statistical Method

Two statistical means of analyses were used: chi square test, and analysis of variance (ANOVA). The chi square test was used to determine if graduate students' belief paradigms about teaching and learning, categorized as technical, practical, and emancipatory (the dependent variable), related to their nationality, gender, or year of study in their graduate program (the independent variable). The chi square test of was used because it is an effective way to handle data expressed as frequency, and it tests the differences between categorical variables. ANOVA test was conducted to test the mean differences in belief paradigm between Chinese international graduate students and

American-born graduate students in terms of their technical, practical, and emancipatory perspectives about teaching and learning.

The data are presented in the following order: (1) description of the population and data for each question; (2) descriptive statistics such as frequencies and percentages of the responses from Chinese international graduate students and American-born graduate students in the disciplines of pure and applied sciences at Auburn University; (3) Chi square analysis of the differences in belief paradigms between the Chinese international and American-born graduate students; (4) one-way ANOVA of the mean differences in belief paradigms between the Chinese international and American-born graduate students; (5) chi square analysis of the differences in beliefs paradigms between American graduate students in their first year in the graduate program and those who have studied more than one year; (6) chi square analysis of the differences in belief paradigms between Chinese international graduate students in their first year in the graduate program and those who have studied more than one year; (7) chi square analysis of the differences in belief paradigms between male graduate students and female graduate students; (8) chi square analysis of the differences in belief paradigms between American-born male graduate students and female graduate students; and (9) chi square analysis of the differences in belief paradigms between Chinese male graduate students and female graduate students.

Description of the Population

A total of 1,175 graduate students in the pure and applied sciences and mathematics disciplines who were enrolled and registered in spring semester of 2005 at Auburn University were selected to participate in the online survey. Among these

participants, there were 188 Chinese international graduate students and 987 American-born graduate students. The survey instrument, which was activated through Auburn University's FrontPage server, was sent to the participants' Auburn University e-mail account. After the Information Letter with the survey link and the first follow-up letter to the participants, responses were received from 100 American-born graduate students and 33 from Chinese international graduate students. Because of the small number of responses by the Chinese international students, the second and the third follow-up letters with link to the survey were sent only to Chinese international students' e-mail account, and a total of 22 completed surveys were obtained for a total of 55 completed surveys from Chinese international graduate students and 100 completed surveys from American-born graduate students.

Data

The first question was what were the dominant beliefs about teaching and learning of selected groups of graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? One hundred and fifty-five (155) of the 1175 graduate students in the pure and applied sciences and mathematics responded to the survey. However, among the 55 completed surveys from Chinese international students, one of them responded to the 45-item statements with the same response from statement 1 to statement 45. Among the 100 completed surveys from American-born graduate students, one of them also responded the same way to all 45-item statements. These two respondents' surveys were excluded from the data. Excluding the two respondents' surveys resulted in a 13.4% return rate for all graduate students surveyed. American-born

graduate students' return rate was 10.1%; Chinese international graduate students' return rate was 29.3%. All Chinese respondents graduated from high school in mainland of China. All American-born respondents graduated from high school in the United States. Demographic data about respondents are shown below in Tables 3-10.

Table 3

Respondents by Gender

Gender	Chinese	American	Percent	Total
Males	25	48	48	73
Females	29	51	52	80
Total	54	99	100	153

Table 4

Respondents by Age

Age range	Chinese		American		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
20-25	6	11.1	50	50.1	56	37
26-30	25	46.3	26	26.3	51	33
31-35	10	18.5	9	9.1	19	13
36-40	7	13.0	6	6.1	13	9
41-45	6	11.1	3	3.0	9	6
46- above	0	0	5	5.1	5	2
Total	54	100	99	100	153	100

Table 4 shows that 50% of American-born graduate students were at their age between 20 and 25, while the percentage of Chinese international graduate students was 11%. For the students who were between 26 and 30 years old, Chinese international graduate students took 46.3% while American-born graduate students were 26.3%. The percentage of Chinese international graduate students at age between 31 to 35, and 41 to 45 was also higher than their American counterparts.

Table 5

Respondents by Academic Degree

Degree	Chinese	American	Total
Master	14 (25.9%)	52 (52.5%)	66 (43.1%)
PhD	40 (74.1%)	47 (47.5)	87 (56.9)
Total	54	99	153

Table 5 shows that the majority of Chinese international graduate students were in their PhD program (74%) while more than half of American-born graduate students were in their Master program (52.5%).

Table 6

Respondents by College/School and Programs

Name	Chinese	American	Total
	Biochemistry/Chem.	9	Biochemistry/ Chem. 13
	Cell & Molecular Bioscie.	4	Chemistry 3
Sciences and Mathematics	Math	1	Math 7
	Physics	3	Physics 2
	Statistics	1	Statistics 1
	Missing	2	Microbiology 1

(table continues)

Table 6 (continued)

Name		Chinese		American	Total		
Engineering	23	Civil	3	Civil	8		
		Computer	3	Computer	3		
		Software	2	Software	4		
		Electrical	6	Electrical	4		
		Environmental	1	Environmental	2		
		Industry	4	Material	3		
		Other	2	Other	5		
		Missing	2	Missing	3		
Agriculture	6		16	Entomology	5		
				Horticulture	5		
				Animal	4		
				Sciences	4		
				Biosystems	2		
Human sciences	1	Food Nutrition	1	5	Food Nutrition	5	6
Veterinary	4	Biomedical	4	18	Vet. Medicine	15	
					Biomedical	1	
					Radiology	1	
					Physio. Endocrin.	1	
Missing	0	Missing	0	1	Missing	1	1
Total	54			99		153	

Table 7

Respondents by Years in Graduate Program at Auburn University

Years at AU	Chinese	American	Total
1-below	12	18	30
1-2	2	0	2
2-3	11	11	22
3-4	16	28	44
4-5	7	7	14
5-6	3	14	17
6-above	3	21	24
Total	54	99	153

Table 8

Chinese Respondents by Years in USA

Years in USA	Chinese	Percent
Less than 1 year	9	16.7
1-2 years	11	20.4
2-3 year	9	16.7
Over 3 years	25	46.3
Total	54	100

Table 8 shows that 46.3% Chinese international graduate students studied at Auburn University for at least more than three years, 20.4% of them studied at Auburn University for about two years, and 16.7% of them were in their first year and between their second and third year at Auburn University respectively.

Table 9

Respondents by Ethnicity

Respondents	Ethnicity	Number	Percent
American-born graduate students	White	89	90%
	Black	7	7%
	Asian	0	0%
	Hispanic	1	1%
	Native	0	0%
	Other	2	2%
	Total	99	100%

Table 9 shows that the majority of the returned survey was White American-born graduate students (90%). African-American graduate students were 7%. Hispanic American graduate students were 1%, and none were from Asian-American or Native Americans.

Table 10

Respondents' Future Goal

Respondents	Teaching or Research	Working for a Company	Self-run Business	Other
Chinese	39	5	0	10
American	60	12	5	22

The first research question was: What are the dominant beliefs about teaching and learning of Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? Table 11 displays the belief paradigms, i.e. beliefs about teaching and learning, of the Chinese international and American-born graduate students. The results show that Chinese international graduate students had higher emancipatory beliefs (41.3%) than their American counterparts (20%). American-born graduate students demonstrated higher practical beliefs (39.1%) than their Chinese counterparts (23.9%). Their technical beliefs for American-born graduate and Chinese international students were 37.9% and 34.8% respectively. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. Among the 153 respondents, eight Chinese international and 12 American-born respondents did not have a dominant belief paradigm.

Table 11

Chinese International and American-born Graduate Students' Dominant Beliefs

Respondents	Technical	Practical	Emancipatory	Total
Chinese	16 (34.8%)	11 (23.9%)	19 (41.3%)	46
American	33 (37.9%)	34 (39.1%)	20 (23.0%)	87
Total	49 (36.8%)	45 (33.8%)	39 (29.3%)	133

The second research questions was: Were there any statistically significant differences in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? The frequencies of the two groups' dominant belief paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences between the two groups' beliefs about learning and teaching in education, $\chi^2(2, n=133) = 5.569, p = .062$ (Table 12).

Follow up exploratory tests were conducted between technical and emancipatory beliefs, technical and practical beliefs, and practical and emancipatory beliefs about teaching and learning about Chinese international graduate students. The results showed that there were no statistically significant differences between technical and emancipatory beliefs; technical and practical beliefs; and practical and emancipatory beliefs among

Chinese international graduate students, $\chi^2(1, n=35) = .257, p = .612$; $\chi^2(1, n=27) = .926, p = .336$; and $\chi^2(1, n=30) = 2.113, p = .144$, respectively (Table 13).

Table 12

Differences in Belief Paradigms between Chinese International and American-born Graduates

Respondents		Technical	Practical	Emancipatory	Total
Chinese International graduates	Observed	16	11	19	46
	Expected	16.9	15.6	13.5	46.0
	% within citizen	34.8%	23.9%	41.3%	100.0%
American-born graduates	Observed	33	34	20	87
	Expected	32.1	29.4	25.5	87.0
	% within citizen	37.9%	39.1%	23.0%	100.0%
Total	Observed	49	45	39	133
	Expected	49.0	45.0	39.0	133.0
	% within citizen	36.8%	33.8%	29.3%	100.0%
Chi-Square Test Result					
Value		Df	Asymp. Sig. (2-sided)		
5.569 ^a		2	.062		

^a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.49.

Table 13

Dominant Beliefs of Chinese International Graduate Students

	Observed	Expected	Percent
Highest Technical	16	17.5	45.7%
Highest Emancipatory	19	17.5	54.3%
Total	35	35.0	100.0%
Chi Square Test Result			
Value	df	Aymp. Sig. (2-sided)	
.257	1	.612	
	Observed	Expected	Percent
Highest Technical	16	13.5	59.3%
Highest Practical	11	13.5	40.7%
Total	27	27.0	100.0%
Chi Square Test Result			
Value	df	Aymp. Sig. (2-sided)	
.926	1	.336	
	Observed	Expected	Percent
Highest Practical	11	15.0	36.7%
Highest Emancipatory	19	15.0	63.3%
Total	30	30.0	100.0%
Chi Square Test Result			
Value	Df	Aymp. Sig. (2-sided)	
2.133	1	.144	

The third question was: To what extent do Chinese international graduate students' belief paradigms differ from those of American-born graduate students in the disciplines of pure and applied sciences and mathematics in their beliefs about teaching and learning? The Chinese international and American-born graduate students' belief paradigms were interpreted based on their responses to the 45 items in the survey. Responses to these items were coded as followings: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Table 14 shows the means of the Chinese international and American-born students' responses for the technical, practical, and emancipatory belief paradigm categories. The results of a one-way ANOVAs indicated that no statistically significant differences in belief paradigms exist between two groups, Chinese international and American-born graduate students: technical ($F(1, 151) = .068, p = .794$); practical ($F(1, 151) = .518, p = .473$); and emancipatory ($F(1, 151) = .080, p = .777$).

Table 14

Extent of Difference in Belief Paradigms of Chinese and American Graduate Students

Beliefs/Respondents	Number	Mean	Std. Deviation	Std. Error	F	Sig.
Technical	Chinese	54	53.87	7.690	1.046	
	American	99	54.18	6.680	.671	.068
	Total	153	54.07	7.029	.568	.794
Practical	Chinese	54	53.35	6.915	.941	
	American	99	54.16	6.502	.654	.518
	Total	153	53.88	6.640	.537	.473
Emancipatory	Chinese	54	54.46	7.401	1.007	
	American	99	54.12	6.984	.702	.080
	Total	153	54.24	7.112	.575	.777

The fourth question was: Are there any statistically significant differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University? The frequencies of each respondent's strongest belief paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences in belief paradigms between the students who studied at Auburn

University's graduate school for one year and those who studied for more than one years, $\chi^2(2, n=87) = 4.387, p = .112$ (Table 15). However, results could be different with larger expected cell counts as one of them was less than 5.

Table 15

Belief Paradigms by Years of American-born Graduate Students at Auburn University

	American	Technical	Practical	Emancipatory	Total
One year	Observed	6	4	7	17
	Expected	6.4	6.6	3.9	17.0
	% within years at Auburn University	35.3%	23.5%	41.2%	100.0%
More than years	Observed	27	30	13	70
	Expected	26.6	27.4	16.1	70.0
	% within years at Auburn University	38.6%	42.9%	18.6%	100.0%
Total	Observed	33	34	20	87
	Expected	33.0	34.0	20.0	87.0
	% within years at Auburn University	37.9%	39.1%	23.0%	100.0%
Chi-Square Test Result					
	Value	df	Asymp. Sig. (2-sided)		
	4.387 ^a	2	.112		

^a. 1 cells (16.7) have expected count less than 5. The minimum expected count is 3.91.

The fifth research question was: Are there any statistically significant differences in beliefs about teaching and learning between Chinese international graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University? Among the 54 participants, 9 of them did not have a specific dominant belief paradigm. The frequencies of each of the 45 respondent's strongest belief paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences between Chinese international graduate students who studied at Auburn University's graduate school for one year and those who studied for more than one years, $\chi^2(2, n = 46) = .449, p = .799$ (Table 16). However, results could be different with larger expected cell counts as three of them were less than 5.

Table 16

*Belief Paradigms by Years of Chinese International Graduate Students at Auburn**University*

	Chinese	Technical	Practical	Emancipatory	Total
One year	Observed	2	2	4	8
	Expected	2.8	1.9	3.3	8.0
	% within years at Auburn University	25.0%	25.0%	50.0%	100.0%
More than one year	Observed	14	9	15	38
	Expected	13.2	9.1	15.7	38.0
	% within at Auburn University	36.8%	23.7%	39.5%	100.0%
Total	Observed	26	11	19	46
	Expected	16.0	11.0	19.0	46.0
	% within at Auburn University	34.8%	24.9%	41.3%	100.0%
Chi Square Test Result					
	Value	Df	Asymp. Sig. (2-sided)		
	.449 ^a	2	.779		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.91.

The sixth question was: Are there any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? Among the 153 respondents, 20 did not have a specific dominant belief paradigm. The frequencies of each of the 133 respondent's strongest belief paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences in belief paradigms between male and female respondents who studied at Auburn University's graduate school, $\chi^2(2, n=133) = 2.390, p = .303$ (Table 17).

Table 17

Belief Paradigms by Gender

Gender		Technical	Practical	Emancipatory	Total
Male	Observed	28	24	16	68
	Expected	25.1	23.0	19.9	68.0
	% within gender	41.2%	35.3%	23.5 %	100.0%
Female	Observed	21	21	23	65
	Expected	23.9	22.0	19.1	65.0
	% within gender	32.3%	32.3%	35.4 %	100.0%

(table continues)

Table 17 (continued)

	Gender	Technical	Practical	Emancipatory	Total
	Observed	49	45	39	133
Total	Expected	49.0	45.0	39.0	133.0
	% within gender	36.8%	33.8%	29.3	100.0%
Chi Square Test Result					
	Value	df	Asymp. Sig. (2-sided)		
	2.390 ^a	2	.303		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.06

The seventh question was: Are there any statistically significant differences in beliefs about teaching and learning between American-born male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? Among the 99 respondents, 12 did not have a specific dominant belief paradigm. The frequencies of each of the 87 respondents' strongest belief paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences in belief paradigms between American male and female respondents who studied at Auburn University's graduate school, $\chi^2(2, n = 87) = .219, p = .896$ (Table 18).

Table 18

Belief Paradigms by Gender (American)

	American	Technical	Practical	Emancipatory	Total
Male	Observed	17	17	9	43
	Expected	16.8	16.8	9.9	43.0
	% within gender	39.5%	39.5%	20.9%	100.0%
Female	Observed	16	17	11	44
	Expected	17.2	16.7	10.1	44.0
	% within gender	36.4%	38.6%	25.0%	100.0 %
Total	Observed	33	34	20	87
	Expected	33.0	34.0	20.0	87.0
	% within gender	37.9%	39.1%	23.0%	100.0%
Chi Square Test Result					
	Value	df	Asymp. Sig. (2-sided)		
	.219	2	.896		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.89

The eighth question was: Are there any statistically significant differences in beliefs about teaching and learning between Chinese international male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University? Among the 54 respondents, 9 did not have a specific dominant belief paradigm. The frequencies of each of the 45 respondents' strongest belief

paradigm were computed. The beliefs were assigned the following values: technical = 1, practical = 2, and emancipatory = 3. The chi-square test was computed and the result showed that there were no statistically significant differences in paradigms between Chinese male and female respondents who studied at Auburn University's graduate school, $\chi^2(2, n=46) = 4.067, p = .131$ (Table 19).

Follow up exploratory tests were also conducted between technical and emancipatory beliefs, technical and practical beliefs, and practical and emancipatory beliefs about teaching and learning among Chinese female international graduate students. The results showed that there were no statistically significant differences between technical and practical beliefs; technical and emancipatory beliefs, $\chi^2(1, n=9) = .111, p = .739$; $\chi^2(1, n=17) = .2.882, p = .090$, respectively. However, there were statistically significant differences between practical and emancipatory beliefs, $\chi^2(1, n=16) = 4.000, p = .046$ (Table 20).

Table 19

Belief Paradigms by Gender (Chinese)

	Chinese	Technical	Practical	Emancipatory	Total
Male	Observed	11	7	7	25
	Expected	8.7	6.0	10.3	25.0
	% within gender	44.0%	28.0%	28.0%	100.0 %
Female	Observed	5	4	12	21
	Expected	7.3	5.0	8.7	21.0
	% within gender	23.8%	19.0%	57.1%	100.0 %
Total	Observed	16	11	19	46
	Expected	16.0	11.0	19.0	46.0
	% within gender	34.8%	23.9%	41.3%	100.0%
Chi Square Test Result					
	Value	df	Aymp. Sig. (2-sided)		
	4.067 ^a	2	.131		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.02

Table 20

Dominant Beliefs of Chinese Female International Graduate Students

	Observed	Expected	Percent
Highest Technical	5	4.5	55.6%
Highest Practical	4	4.5	44.4%
Total	9	9.0	100.0%
Chi Square Test Result			
Value	Df	Aymp. Sig. (2-sided)	
.111	1	.739	
	Observed	Expected	Percent
Highest Technical	5	8.5	29.4%
Highest Emancipatory	12	8.5	70.6%
Total	17	17.0	100.0%
Chi Square Test Result			
Value	Df	Aymp. Sig. (2-sided)	
2.882	1	.090	
	Observed	Expected	Percent
Highest Practical	4	8.0	25%
Highest Emancipatory	12	8.0	75%
Total	16	16.0	100.0%

(table continues)

Table 20 (continued)

Chi Square Test Result		
Value	df	Aymp. Sig. (2-sided)
4.000	1	.046

Summary

1. Among the 153 graduate students who participated in the survey, 133 had a dominant belief about teaching and learning. Eighty-seven (87), out of 99 American graduate students and 46, out of 54 Chinese international students had a dominant belief about teaching and learning. Among Chinese international students, 34.8% of Chinese international students held a dominant technical belief paradigm, 23.9% held a dominant practical belief paradigm, and 41.3%, held a dominant emancipatory belief paradigm. Among American students, 37.9% held a dominant technical belief paradigm, 39.1% held a dominant practical belief paradigm, and 23.0%, held a dominant emancipatory belief paradigm.
2. There were no statistically significant differences in beliefs about teaching and learning between Chinese international and American-born graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University.
3. There were no statistically significant differences between Chinese international graduate students and American-born graduate students in the disciplines of pure and applied sciences and mathematics in terms of their beliefs about leaning and teaching?

4. There were no statistically significant differences in beliefs about teaching and learning between American-born graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University.

5. There were no statistically significant differences in beliefs about teaching and learning between Chinese international graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University.

6. There were no statistically significant differences in beliefs about teaching and learning between male and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University.

7. There were no statistically significant differences in beliefs about teaching and learning between American-born male and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University.

8. There were no statistically significant differences in beliefs about teaching and learning between Chinese international male and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University.

The next chapter discusses in detail the findings presented in this chapter and addresses the implications of these findings. The author makes recommendations for future research as well.

V. SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Summary

The primary purpose of this study was to explore the similarities and differences between Chinese international and American-born graduate students' beliefs about teaching and learning while they pursued their academic degree in the disciplines of pure and applied sciences and mathematics at Auburn University. Jürgen Habermas's three perspectives of knowledge and human interests served as the framework in this study. This study did not find any statistically significant differences in beliefs about teaching and learning as a function of graduate students' cultural background and citizenship. The results of this study highlight some implications for educational administrators, faculty members, Chinese international students, and American-born graduate students.

Eight research questions guided this study:

1. What are the dominant beliefs about teaching and learning of Chinese international and American-born of graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?
2. To what extent do Chinese graduate students differ from American graduate students in the disciplines of pure and applied sciences and mathematics in terms of their beliefs about teaching and leaning?

3. Are there any statistically significant differences in beliefs about teaching and learning between Chinese and American graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

4. Are there any statistically significant differences in beliefs about teaching and learning between American graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?

5. Are there any statistically significant differences in beliefs about teaching and learning between Chinese graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University?

6. Are there any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

7. Are there any statistically significant differences in beliefs about teaching and learning between American male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

8. Are there any statistically significant differences in beliefs about teaching and learning between Chinese male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University?

The participants in the study included 54 Chinese international graduate students and 99 American-born graduate students who registered in spring semester of 2005 at Auburn University's graduate school. The Statistical Package for the Social Sciences

(SPSS 12.0 for Windows) software was used to analyze the data according to each question posed. Two statistical methods of analysis were used: Chi square test, and analysis of variance (ANOVA). Butler's (1997) "Cognitive Interest Inventory" was used in this study and was made available to participants electronically in hypertext markup language (HTML) through Microsoft FrontPage software.

Discussion of Findings

The first research question was to identify the dominant beliefs about teaching and learning of Chinese international and American-born graduate students. Data showed that the majority of Chinese international graduate students (41.3%) held a dominant emancipatory belief, while 34.8% of them held a dominant technical belief, and only 23.9% of them held a practical belief about teaching and learning. Male graduate students held a dominant technical belief (41.2%), while female graduate students held a emancipatory belief (35.4%). Among American-born graduate students the result showed that the majority, 39.1%, held a dominant practical belief, 37.9% held a dominant technical belief, and 23.0% held a dominant emancipatory belief about teaching and learning.

Belief is one's mental act of placing confidence or trust in someone or something. Sergiovanni and Carver (1973) suggest that "what you believe, your perceptions of yourself, the world around you, and the people who inhabit this world largely determines how you behave" (p. 33). In terms of technical, practical, and emancipatory cognitive interests in relation to teaching and learning, students in the pure and applied sciences and mathematics in this study did not show any statistically significant differences. This

was true for all categories: Chinese international graduate students and American-born graduate students; students who have studied for one year in Auburn University's graduate school and those who have studied for more than one year; female graduate students and male graduate students, regardless of cultural background.

In view of the historical differences between the two cultures, this lack of difference in educational beliefs was not expected. Yet, this study suggests that the educational changes in China of the last 100 years have had a profound impact on the thinking of Chinese people. Chinese culture, including beliefs about education, has been influenced by Confucianism, Daoism, and Buddhism, China's major philosophies and belief systems, throughout most of its more than five thousand years of civilization. The Confucian hierarchical three bonds and the five relationships, the standards of being a good citizen, focused on producing obedient and submissive tools, instead of educating citizens to hold the ideals of freedom, equality, and democracy. As has been described in Chapter 2, however, as a result of the actions of the Chinese students who have returned from overseas, the anti-Confucian movements, and the desire of students to modernize and reform society through science, and democracy, this traditional culture began to change at the end of the nineteenth and the beginning of the twentieth centuries. These movements typically represented the emancipatory cognitive interests of Chinese students. The Cultural Revolution, which resulted in social and educational devastation and disaster for China in 1960s and 1970s, again strengthened students' motivation for change and innovation. The pro-democracy movement, which culminated in the Tiananmen Square protest of 1989, indicated students' beliefs in emancipatory action. Along with the connection and contact with the outside world, begun in the 1980s,

Chinese people, particularly Chinese students and scholars who studied overseas, have continued to challenge the influence of their traditional culture by infusing new ideas from Western society. Many Chinese international students, instead of inheriting Confucian traditional culture, have followed a critical perspective in education and have held an emancipatory cognitive interest, which has been directed toward their country's historical educational beliefs and social values. The myth of "every Chinese wears a Confucian thinking cap, a Taoist robe and Buddhist sandals" (Mah, 2001, p. 10) is no longer valid as the only identity for Chinese international students, nor is the still prevailing misconception and stereotyped representation in both academic articles and the popular media about Chinese students as docile, quiet, passive, and test-orientated.

The fact that the majority of American-born graduate students held confidence and trust in the practical perspective was expected, while the fact that the next largest group held a technical cognitive interest was also not surprising. The United States has had over two hundred years in which to establish an equal, free, and democratic society with a well-built constitution, laws, and judicial system that has allowed for gradual change in a relatively stable society. These conditions have been advantageous to the development of and innovation in educational curriculum theory and practice. The evidence of these developments has been reflected in educational thought based on ideas from John Dewey's (1905, 1915) emphasis on interests of learners, Joseph Schwab's (1969) situational learning, Paulo Freire's (1970) pedagogy of the oppressed, to Jürgen Habermas's (1971) emancipatory knowledge. Most participants in this study were born in 1970s and 1980s. These students had their learning experiences, on the one hand, under curricula which emphasized student-centered learning and teaching, and on the other

hand, perhaps as a result of the federal government's, and often state and local governments' specific criteria for accountability and achievement, under curricula with a technical perspective. The results of this study may be explained by these influences. The differences between Chinese international and American-born graduate students' cognitive interests, however, represent only tendencies.

The demographic information showed that the age Chinese international graduate students tended to be older than their American counterparts. Fifty percent of American graduate students were in the age range between 20 to 25 (11% were Chinese international graduate students), while 46.3% of Chinese international graduate students were in age of 26 to 30 years old (26.3% were American graduate students). The percentage of Chinese international graduate students in the age range of 31 to 35, 36 to 40, and 41 to 45 was also higher than their American counterparts, with 19%, 13%, and 11%, respectively, while the percentage of American graduate students at the same age range was 9%, 6%, and 3%, respectively. In addition, 74% of the Chinese international graduate students enrolled in their Ph. D. program study and about 26% of them were in their master program study, while the percentage of American graduate students was 47% in their Ph. D. program study and 53% of them were in their master degree program. This information suggest that Chinese international graduate students had certain years of working experience before they came to the United States for their academic degree, while many American graduate students came to their graduate program study right after they graduated their undergraduate study. The age differences, the unequal number of enrollment attributed to Ph. D. program and master degree program, and the working experience, all these factors may affect the results found in this study.

The second and the third research questions were designed to examine whether Chinese international and American-born graduate students' beliefs about teaching and learning were significantly different. The result of an ANOVA revealed that there were no statistically significant differences between the two groups of students: technical ($F(1, 151) = .068, p = .794$); practical ($F(1, 151) = .518, p = .473$); and emancipatory ($F(1, 151) = .080, p = .777$). A chi-square test confirmed the result, showing that there were no statistically significant differences between the two groups' beliefs about learning and teaching in education, $\chi^2(2, n=133) = 5.569, p = .062$.

Within Chinese international graduate students, the highest frequencies fell into the emancipatory category, and the lowest frequencies were the practical one. It was interesting to examine if there were any statistically significant differences among Chinese international graduate students' educational beliefs about teaching and learning between technical and emancipatory, technical and practical, and practical and emancipatory. Three follow up tests were conducted. The results showed that there were no statistically significant differences between technical and emancipatory beliefs; technical and practical beliefs; and practical and emancipatory beliefs among Chinese international graduate students, $\chi^2(1, n = 35) = .257, p = .612$; $\chi^2(1, n = 27) = .926, p = .336$; and $\chi^2(1, n = 30) = 2.113, p = .144$, respectively. These results showed that the three educational beliefs about teaching and learning "evenly" co-existed in Chinese international graduate students.

One important question then is why the lack of significant differences between Chinese international and American-born graduate students' beliefs about teaching and learning. Much cross-cultural and inter-cultural research has focused on international

students, immigrants, and refugees during their stay in a host country or institution. Very few research studies have been conducted on adaptive transformation with the students while preparing to go abroad to study in a specific country.

Today's reality of adapting international education to China has greatly decreased the culture gap and conflict for Chinese students studying in Western society. China has made every effort to connect its educational system with the world in terms of curriculum, especially in the natural sciences and engineering education. Organizations such as World Bank as well as educational researchers have noted that China's overall representation in the international scientific community has grown rapidly since its reopening to the world (World Bank, 2000; Zhong, 1998). Other adaptations have included adopting American and other advanced industrial countries' textbook for use with Chinese college and university students, inviting prestigious international professors to teach and direct Chinese students in China; and sending Chinese college professors to world famous universities for short term visits and training. According to the statistics based on estimates from the Division of American and Oceanian Affairs, Department of International Cooperation and Exchanges, Ministry of Education of China (China, 2006), there have been over 200,000 Chinese students and scholars studying in the United States since 1979. Meanwhile, 97 joint-venture international universities and colleges in China have been permitted to offer foreign degree certificates, 63 (or 65%) of them were from the United States and Canada. Since 1978 China's chemistry education, for example, has developed as a result of internal sociopolitical changes, international influences, and the influences of individual scholars returned from overseas (Wei & Thomas, 2004). Beijing University Professor Ma, a Fulbright scholar, states that higher education reform in China

has adopted the American higher education system's model, and all changes in China's higher education are done with globalization and internationalization as the final goal (Ma, 2006). The curriculum policy has changed from uniform textbooks nation-wide to one syllabus and multiple textbooks (Wei & Thomas, 2004). For all of these reasons, Chinese international students once enrolled in universities and colleges in the United States, can readily adapt to American campus culture and can collaborate with their American peers in their teaching and learning. The lack of significant differences between the two groups in terms of their beliefs about teaching and learning, therefore, is not surprising and any differences are more likely explained by individual difference than by cultural group differences.

The lack of significant differences between Chinese international and American-born graduate students' beliefs about teaching and learning may also be explained by cultural adaptation theories and research findings. Adaptation to a different culture is not mere mechanical imitation in the manner of a parrot, or as J. Liu (2001) put it, it is not to "ape Westerners at every step" (p. 249). Instead, it is a process of maintaining the best part of one's own culture and absorbing the essence of the second culture. In the process students create a dynamic and new culture in which both newly arriving and local groups of people can seek their common goals and work together at common points.

The fourth and fifth questions sought to determine if there were any statistically significant differences in beliefs about teaching and learning between graduate students in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University. We have looked at these differences separately among Chinese graduate students and among

American-born graduate students. The reason for examining the two questions was to try to discover whether graduate education has a significant effect on students' beliefs about teaching and learning. Surprisingly, no statistically significant differences were found between students in their first year of graduate school and those who have studied more than one year: for American-born students, $\chi^2(2, n = 87) = 5.356, p = .069$; for Chinese international students, $\chi^2(2, n = 45) = 1.129, p = .569$. The results seemed to suggest that students, by the time they begin graduate education, have developed their beliefs about teaching and learning. However, interpretability of the results are questionable due to the low expected frequency between graduate students (both American-born and Chinese international) in their first year in the graduate program and those who have studied more than one year in the disciplines of pure and applied sciences and mathematics at Auburn University.

One interpretation of these results can be based on the work of Aikenhead and Jegede (1999) and Aikenhead (1996), who distinguish among subcategories of culture as lifeworld culture and science culture, and the micro-culture of the family and the micro-culture of school science. Generally, these divisions develop with students' immersion in their science majors. Students, even from the same country, experience cultural border crossing into the "foreign" culture of science (Aikenhead, 1996; Aikenhead & Jegede, 1999; Costa, 1995). Both Chinese international and American-born graduate students in this study had experienced this border crossing into the culture of science in their undergraduate science programs. In addition, the culture of science is strengthened globally through teaching and learning via internet, satellite broadcasting, software, as well as other means of global communication such as student and scholar exchange

programs, associations, and conferences. The international nature of the culture of science is clearly articulated in the following statement by the International Council for Science:

Progress in science is made through the worldwide exchange of ideas, information, data, and materials, and the understanding of the work of others. Science is a co-operative exercise that thrives on open international interaction and exchange. It transcends national boundaries. In this sense, science is universal and when this universality is infringed or impeded it can have serious consequences for science and for society more broadly. (International Council for Science (ICSU) Statement, 2004)

Preparation for and adapting to a new culture in order to pursue advanced academic degrees has greatly decreased the cultural gap between international students and their host peers. The international culture of science and the habit of collaboration to solve world challenges in the fields of science and technology have gathered students and scholars into a global community. Under these circumstances, it is unlikely to find significant group differences in beliefs about teaching and learning based on cultural background in the fields of pure and applied science. Differences are more likely a result of individual variation.

The sixth to eighth questions were designed to explore if there were any statistically significant differences in beliefs about teaching and learning between male graduate students and female graduate students in the disciplines of pure and applied sciences and mathematics at Auburn University. Chi-square tests were run to examine these questions, and no statistically significant differences were found in each of these

questions: for male and female graduate students, $\chi^2(2, n = 133) = 2.390, p = .303$; for American-born male and female graduate students, $\chi^2(2, n = 87) = .219, p = .896$; and for Chinese international male and female graduate students, $\chi^2(2, n = 46) = 4.069, p = .131$.

Within the 21 female Chinese international graduate students, the frequencies about their educational beliefs in technical, practical, and emancipatory were 5, 4, and 12, respectively. The researcher was interested that if there were any statistically significant differences within these female graduate students, therefore, exploratory follow up tests were conducted between technical and emancipatory beliefs, technical and practical beliefs, and practical and emancipatory beliefs about teaching and learning for Chinese female international graduate students at Auburn University. The results showed that there were no statistically significant differences between technical and practical beliefs; technical and emancipatory beliefs, $\chi^2(1, n = 9) = .111, p = .739$; $\chi^2(1, n = 17) = .2.882, p = .090$, respectively. However, there were statistically significant differences between practical and emancipatory beliefs, $\chi^2(1, n = 16) = 4.000, p = .046$.

Numerous studies have been conducted to examine the correlation between gender differences and their academic achievement (Cockburn, 1985; Lewis, 2000), gender and graduate enrollment (Becker, 1990; Spertus, 1991), and gender differences and employments (Graham & Smith, 2005; Rapoport, et al. 2002). These studies demonstrated how traditional and contemporary policies and research have discriminated against female science and engineering students, have affected their academic talents, and frustrated them in seeking employment (McIlwee & Robinson, 1992; Sonnert & Holton, 1995).

Historically, Confucius said that only women and underlings are especially difficult to handle (Confucius, trans. 1997, p. 89). The first form of oppression for women was to bind their feet when they were four to six years old (Handlin, 1975). In addition, the rule of three forms of obedience, that women must “comply with their fathers or elder brothers in youth, their husbands in marriage, and their sons after their husbands’ death” (Handlin, 1975, p13), just as officials were expected to serve their rulers, completely enforced women’s social and legal inferiority status. Women were not welcome to receive education.

In the United States a 19th century woman, Almira Phelps (1846), complained, “females, in particular, are not expected to enter into the recesses of the temple of science” (p. 200). According to Sheffield (2004), although women’s access to college was much easier and occurred much earlier in the United States than in Europe, the programs designed for women were in religion, reading, writing, grammar, ... instead of in science. Even when women were found equally as intelligent as men, their science education was focused on practical skills, while men’s was in scientific methods. The doors of science education were not open to women; as Margaret Mead (1959) concluded, the student most often identified by teachers and fellow students as a future scientist was “almost always a boy” (p. 139). Male is still dominant in the field of science and engineering (Meekhof, 1995; National Science Foundation, 2003). Women’s role was to serve their husband, raise children, and work inside their house (Spring, 1999). If these conditions were true for American women, they were equally or even more true for Chinese women.

Today, however, both in China and in the United States, women are beginning to take their place in the sciences and engineering. The results in this study indicated that gender differences did not exist among either Chinese international or American-born graduate students regarding their beliefs about teaching and learning. Graduate students from the same cultural background, that is, American-born students or Chinese international students, showed no gender differences in their beliefs about teaching and learning. Kimberley Tolley (2003) points out that although there are advocates of “curriculum and instructional methods believed to address inherent or cultural differences between men and women” (p. 216), most women students know that they are pursuing nature’s system and mystery, but not man’s system of nature. Regardless of gender, once women students interested in obtaining a science education immerse themselves in the same program with their male peers, they collaborate to pursue the same goals and deal with the same problems and challenges. Their interest in science has bonded them together in the same culture.

Interestingly, this study found out that there were statistically significant differences between practical and emancipatory beliefs in Chinese female international graduate students about teaching and learning in the disciplines of pure and applied sciences and mathematics at Auburn University. Chinese women have never given up fighting for their rights of authentic equality and freedom, particularly in education. The typical examples were the women’s emancipation movement known as the “May Fourth Feminism” during the 1910s and 1920s; women’s labor force participation and higher rate of enrollment in higher educational institutions during the Cultural Revolution; and women’s involvement in the economic reform in the 1980s (Li, 2000). Because of the

hierarchical and autocratic social and political system in China, the results of these emancipatory actions have not completely freed women from male dominated society. Starting from the 1980s, the development of the economy in China has released women's potential talents in science and technology, and women have gained more employment in a variety of areas, but economic reform has not fully enhanced women's liberation and men continue to dominate and control financial and political power (Zhou, 2003). Women in China continue to fight for their equality and freedom, and this cognitive interest is reflected in this study. Further more, Chinese female international students' action of selecting to go abroad for their academic pursue itself reflected their desire for changing their world, innovation, and creativity.

Implications

This study examined the similarities and differences in beliefs about teaching and learning in terms of technical, practical, and emancipatory perspectives of Chinese international graduate students and American-born graduate students, who were in the disciplines of pure and applied science and mathematics in Auburn University's graduate school and registered in the spring semester, 2005. Since the findings showed more similarities than differences in these selected graduate students' beliefs about teaching and learning, it is time to focus on better integrating Chinese international graduate students into the comprehensive university life.

While recognizing cultural differences, this study has found similarities to be important to students' teaching and learning. For Chinese international graduate students in this study, the similarities in beliefs about teaching and learning imply that they share

with their American peers common goals as students and these shared goals should be conducive to an environment which fosters positive interpersonal interaction and helps students view each other in less or ever non-stereotypical ways.

Understanding that they share similarities of beliefs about teaching and learning with their American-born counterparts will give Chinese international graduate students more confidence to seek opportunities for authentic collaboration. This will also enhance Chinese international graduate students' identity as members of the university community.

There are some obstacles to full integration of Chinese international graduate students into university life and academic collaboration. Although the two groups of graduate students shared similar beliefs about teaching and learning, their manner in class performance is not the same. According to Liu's (2001) research, Chinese students generally do not like asking "low-quality" questions in class if they think everyone understands the material, while American students are very eager to share whatever they think with others in the class. This results in losing opportunity for Chinese international students to share their thoughts with their American peers and instructors. Chinese international students need to re-assess their class performance of the manner to prevent having their instructor and their American peers from misunderstanding them.

For American-born graduate students, the value of understanding commonalities with Chinese international graduate students lies in the fact that since Chinese international graduate students represented the largest international student body on campus, and most of them are enrolled in the disciplines of pure and applied sciences and mathematics, maximizing contact opens a window for American-born graduate students

to understand a new and different culture. Secondly, although these graduate students are in the same disciplines, American-born graduate students could benefit from their Chinese international peers' alternative approaches to solving the same problems. Thus, a natural cross-cultural exchange and mutual learning environment and culture will be built. Thirdly, due to their prior learning experiences and adaptation to American curriculum in the sciences while they were in China, these Chinese international graduate students are able to participate on an equal basis with their American peers once they enter American universities. Therefore, Chinese international graduate students are able to enlarge and strengthen American universities' science teams. American-born graduate students have more colleagues and team members with whom to collaborate to achieve their academic goals and to face challenges. Lastly, American-born graduate students will reconsider the findings of previous research on Chinese international graduate students, as well as their preconceived ideas about the Chinese international students with whom they are teaching and learning together. When they notice differences in beliefs among Chinese international students, American-born graduate students will be aware that these differences in beliefs about teaching and learning are not based on of their cultural backgrounds and differences in nationality, but rather from personal and individual differences.

Many universities in the United States have started to commit to international education. For example, one of Auburn University's mission statements is to prepare students for the challenges of a global economy and to develop Auburn University into nationally and internationally recognized centers of excellence (Auburn University Vision and Mission Statement, 2006). As one of the largest international student bodies at

Auburn University, Chinese international graduate students in the disciplines of pure and applied sciences and mathematics, actively participate in teaching, learning, and service during their academic degree study. Through their academic contributions they provide a unique Chinese perspective. More importantly, as this study demonstrates, their beliefs about teaching and learning are very similar to those of their American peers. For both of these reasons, the unique perspective and the shared beliefs, faculty members, educational policy makers, and other administrators would be well advised to look for ways to provide more opportunities for Chinese international graduate students to engage in the university's affairs in order to strengthen the authenticity of the university's international focus and create greater opportunities for international collaboration.

The gap between the espoused mission statement and actual practice of transforming universities into international and global institutions has not yet been reduced. University policy makers and other administrators should utilize the potential of Chinese international graduate students for increasing international presence. One of the characteristics of an internationalized university is its international curriculum. According to Whalley (1997), such a curriculum should have “an international orientation in content, aimed at preparing students for performing (professionally/socially) in an international and multicultural context, and designed for domestic students as well as foreign students” (p. 10). Chinese international graduate students in the pure and applied sciences and mathematics, on the one hand, bring their own culture of perseverance in science learning and research. On the other hand, because of China's adaptation and practice of American and other international curricula in the sciences, and as a result of electronic communication, which further familiarized Chinese international graduate

students with teaching and learning at American universities even while in China, these students should prove critical when implementing an international curriculum within the various disciplines.

According to Chinese international students' opinion, it seems that some of the educational policy makers and faculty members have not become fully aware of Chinese international graduate students' adaptation to American culture and the similarities of beliefs about teaching and learning with those of their American peers and colleagues. In order to enhance Chinese international students' integration into American universities and in order to increase American policy makers' and faculty members' as well as students' international experiences, and in order to encourage collaboration in various disciplines, universities need to provide more opportunity for American graduate students to learn and to understand Chinese culture and include Chinese international graduate students in all aspects of university life.

Recommendations for Future Research

Based on the findings of this study, there are suggestions for future research. The sample population used in this study represents only Chinese international graduate students and American-born graduate students in the disciplines of pure science and mathematics at Auburn University in the state of Alabama; therefore, findings can not be generalized to other Chinese international students and American-born graduate students who are in the same disciplines in other universities in the United States. It would, therefore, be beneficial and significant to replicate and continue to explore this study at other universities in the United States. In addition, Chinese international graduate

students and American-born graduate students who are in the social sciences, humanities, and business were excluded from this study. It could be also significant and interesting to conduct this research by comparing Chinese international graduate students and American-born graduate students who obtain their academic degree in the social sciences, humanities, and business with each other as well as with those who are in the natural sciences.

Based on the theoretical frameworks of Habermas and those who have used his frameworks in educational thought such as Butler, Grundy, and Schubert, it would be interesting to investigate how natural sciences and engineering faculty members' beliefs about affect students' teaching and learning. Since many international students are involved in these disciplines, and the faculty team itself features great cultural diversity, such a study would provide a new dimension for better collaboration and understanding.

Conclusions

This study explored similarities and differences in beliefs about teaching and learning among Chinese international and American-born graduate students. Differences in beliefs among students within the same culture, based on gender and years of graduate study as factors were also explored. It seemed that similarity, instead of difference, dominated the relationship between Chinese international and American-born graduate students. It was also interesting that it appeared that male graduate students and female graduate students, regardless of culture, shared similar educational beliefs, as did those who had studied only one year and those who had studied more than one year at Auburn University. Theories such as culture change, cross-cultural adaptation, and the sub-

culture of science were supported according to the findings of this study from a different dimension.

The results uncovered in this study challenged some of the assumptions based on earlier research, especially those that had found Chinese international students, to be “obedient,” “quiet,” “bookish,” “test-orientated,” and “Confucian-orientated.” These assumptions, when looked at in the context of contemporary Chinese history, the historical connections between China’s education and the West, and the trend toward globalization in education, are untenable, outdated, and detrimental to the integration of today’s Chinese international students into American university life, as well as to a positive and productive relationship between Chinese international students and their American peers. Finally, allowing these earlier studies to govern contemporary assumptions of differences between Chinese and American students, and by extension societies, is detrimental to the international education of all students.

This study of Chinese international and American-born graduate students’ beliefs about teaching and learning has provided a new dimension for examining cross-cultural difference and similarity. Both difference and similarity enrich, benefit, and enhance collaboration and creativity in a society with a multicultural environment such that of the United States. American universities, however, must recognize the harmful effect of policies and practices based on outdated assumptions for international graduate students, including Chinese international graduate students, as well as for their American peers. In a time of international economic development and technology-compelled globalization, it is time to re-examine educational policy. Hopefully, the findings from this study will generate further cross-cultural research in the area of educational beliefs and practices.

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APPENDICES

APPENDIX A
SURVEY ENTRANCE AND E-MAIL LETTER

Survey Entrance and E-mail Letter

Dear Graduate Students,

An invitation letter sent you through your Auburn University e-mail address a few days ago. The Information Sheet, which had been approved by the AU IRB (Auburn University Institutional Review Board for Human Research) (Project Number: 4-209 EP 0501), sent to you via paid mail to your mailing address. Both letters asked you to participate in a web-based survey that was developed as part of my doctoral program. This survey and research is focused on exploring and comparing Chinese international and American graduate students' beliefs in education about learning and teaching at Auburn University.

In order to participate in the survey please select the following link at: <http://frontpage.auburn.edu/~zhaofan>, which will take you to the survey online. There are 13 demographic questions and 45 survey items. It will take you 15-20 minutes to complete the survey. When you complete the survey and click on "Send" button, your responses will go to the database that I will use for the research through Auburn University's server. Your responses will be anonymously. If you have not received the e-mail letter or the Information Sheet letter in your mailbox please contact me and I will send you the copies.

If you have any questions about this electronic survey or my research, please feel free to contact me at (334) 844-4105 or send e-mail to zhaofan@auburn.edu.

Thank you for your assistance and income. Your participation is Greatly Appreciated!

Sincerely,

Fangxia (Sally) Zhao

APPENDIX B

COMPARING EDUCATIONAL BELIEFS OF CHINESE INTERNATIONAL AND
AMERICAN STUDENTS

Comparing Educational Beliefs of Chinese International and American Graduate Students

Purpose of the study

The purpose of this survey is to identify educational beliefs about learning and teaching of Chinese and American graduate students in disciplines of pure and applied sciences and mathematics, in order to establish whether or not these Chinese and American students hold similar or dissimilar educational beliefs. The results will enrich the knowledge base about graduate students' beliefs about learning and teaching, and should aid in cross-cultural communication and collaboration.

Section I Demographic Information

1. Your Gender:
Male Female
2. Age range: 46-above
3. Citizenship: Chinese American
4. If you are a Chinese citizen, how long have you been in the United States of America?
More than three years
5. If you are a Chinese, in which province did you attend high school? If you are NOT a Chinese citizen, please select "Not Applicable" from the menu below.
Anhui
6. If you are an American citizen, please mark the following. If you are NOT an American citizen, please select "Not Applicable" from the menu below.
Others
7. If you are an American citizen, in which State did you attend high school? If you are NOT an American citizen, please select "Not Applicable" from the menu below.
Wyoming
8. Are you an Alabama resident?
Yes No If you select No, please give the State's name Alaska
9. What level of academic degree are you pursuing?
Master Degree or equivalent Ph. D. or equivalent

- 10. Name of your college or school at Auburn University:

- 11. Name of program in which you are enrolled:

- 12. Years at Auburn University
Six years and above

- 13. Where did you obtain your undergraduate degree?
The People's Republic of China The United States of America
Other country (write out the name of the country)

- 14. What is your career goal?

Section II Cognitive Interest Inventory

Direction:

Each of the forty-five (45) items on the inventory contains a statement about education in general. Underneath each statement is a scale from SD to SA.

To complete the inventory, read each statement. On the scale, **CLICK ON THE RADIO BUTTON BENEATH** the letter that best describes your general beliefs about each statement. The letters on the scale represent the following: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

Please respond to all items indicating your honest opinion of each statement. If you have no opinion or are not sure about a statement, **CIRCLE N**. **THERE ARE NO RIGHT ANSWERS!!!** There aren't even any answers better than others, it is simply what *you* believe.

Please **CLICK ON THE RADIO BUTTON BENEATH** the letter that best represents your beliefs about each statement.

SD D N A SA
 STRONGLY DISAGREE DISAGREE NEUTRAL AGREE STRONGLY AGREE

	(SD)	(D)	(N)	(A)	(SA)	
1. Among key concepts for effective education are: behavioral objectives, needs assessment, and competency-based education.	<input type="radio"/>	1				
2. Learning involves communication where expectations about behavior must be understood by at least two people.	<input type="radio"/>	2				
3. Most successful educational situations are structured, with clear	<input type="radio"/>					

objectives and feedback from teacher to learner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3
4. The primary purpose of education is to prepare the learner to control and manage his or her environment	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	4
5. The most important role of education is the development of mutual understanding with others.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	5
6. In education, authority resides in the learning community, the academic "home" where students and faculty collaboratively share knowledge in the process of learning and teaching.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	6
7. Curriculum should be designed to control the process of learning by controlling the process of teaching.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	7
8. The desired knowledge generated by the teacher-student relationship is the student observing through experimentation, and reaching the correct conclusion.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	8
9. Learning involves reflection about the way history and culture have helped to form the learner's roles and expectations.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	9
10. The most important learning outcome for the student is an ability to transcend current perspectives.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	10
11. The most important results of education include increased skills, behaviors, or competencies.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	11
12. The outcome each teacher should look for in his/her students is effective behavior.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	12
13. The primary purpose of education is to prepare the learner to understand the environment so he/she can interact with it.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	13
14. The fundamental basis of learning is found in controlled observation and experimentation of the content studied.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	14
15. The role of theory in education is to help construct new knowledge and practice.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	15
16. Good teachers recognize social and cultural issues that may place constraints on each learner.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	16
17. The desired knowledge generated by the teacher-student relationship is the ability of the student to generate critical action.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	17
18. The fundamental basis of learning provides the learner with an accurate, in-depth understanding of his/her historical situation.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	18
19. The most important learning outcome for the student is acquiring improved skills.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	19
20. The fundamental basis of learning allows for the consideration of alternative interpretations.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	20
21. Good teachers use their professional judgment to develop an effective learning environment.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	21
22. The role of theory in education is to serve as a source of meanings for our actions.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	22
23. The most important results of education include identifying constraints on social change.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	23
24. The real value of any theory is that it penetrates the current system of power.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	24
25. Most successful educational situations are flexible enough to allow for interaction with others who have similar interests.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	25
26. The most important role of education is to prepare people for work, whether paid or unpaid.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	26
27. The primary purpose of education is to prepare the learner to be liberated from the presently existing environment.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	27

28. Among key concepts for effective education are: role playing, resolving conflict, discussion and dialogue, learning groups, and performance-based education.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	28
29. Curriculum should be designed so the teacher and student understand each other since both are concerned with promoting the right action.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	29
30. Curriculum should be designed to empower both teacher and student.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	30
31. The outcome each teacher should look for in his/her students is a desire to create a just society.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	31
32. Good teachers are efficient in their attainment of stated objectives.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	32
33. Among key concepts for effective education are: access to alternative perspectives, reflection, and awareness of the role of ideology.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	33
34. The desired knowledge generated by the teacher-student relationship is the student observing the situation as a whole and making meaning from it.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	34
35. In education, authority resides in the practitioner, a person who practices a profession.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	35
36. Learning involves predictions about observable events that can be proven correct or incorrect.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	36
37. The most important learning outcome for the student is developing sound judgment.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	37
38. The most important role of education is to prepare people to represent their own interests.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	38
39. In education, authority resides in the plan.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	39
40. The most important results of education include helping learners interpret, construct meaning, and interact with others.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	40
41. The real value of any theory is that it provides understanding.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	41
42. The role of theory in education is to guide our actions.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	42
43. The outcome each teacher should look for in his/her students is meaningful action.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	43
44. The real value of any theory is that it provides direction.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	44
45. Most successful educational situations provide a vivid awareness of social and cultural issues that impact the student daily.	(SD) <input type="radio"/>	(D) <input type="radio"/>	(N) <input type="radio"/>	(A) <input type="radio"/>	(SA) <input type="radio"/>	45

Please Re-Check to make sure you have selected an answer for each question before submitting.

Send

THANK YOU VERY MUCH FOR YOUR RESPONSES

APPENDIX C
INFORMATION LETTER

Information Letter

Dear graduate students,

You are invited to participate in a research study of Chinese international graduate students' and American graduate students' beliefs about learning and teaching. This study is being conducted by Fangxia (Sally) Zhao, under the supervision of Dr. Judith Lechner, Associate Professor in College of Education. I hope to learn about each group's beliefs and also to look at the degree to which the beliefs of the two groups are similar or different. You have been selected to participate because you are a graduate student at Auburn University and you are in one of the following programs or disciplines: agriculture, engineering, nutrition and food sciences, sciences and mathematics, or veterinary medicine. This survey is voluntary. Here is the link to the survey:

<http://frontpage.auburn.edu/education/Educational%20Beliefs%20Survey/educationalbeliefsurvey.htm>

There are 13 demographic questions and 45 survey items. It will take you 15-20 minutes to complete the survey. Your response is very important to the success of my study and would be greatly appreciated.

The results of this study may be of direct benefit to you as you may gain a deeper understanding about your and your peers' beliefs about learning and teaching. Beyond this possible personal benefit, your participation will contribute to the knowledge base that may help professors gain insight into their own as well as their students' beliefs about teaching and learning, and may provide new evidence to challenge perceptions based on previous research on Chinese graduate students who are studying in the United States.

When you complete the survey and click the "Send" button, your responses will go to the Auburn University server that will forward them to my e-mail folder. Thus you are anonymous. This means that there is no risk involved with your participation in this survey.

Information collected through your participation will be used in my dissertation. Results may also be disseminated through conference presentations and /or professional publications. You may choose not to participate in this survey. You may also withdraw from participation at any time, without penalty.

If you wish to receive the results of this study or have any questions, I invite you to contact me at:

Fangxia (Sally) Zhao
2195 Haley Center
Auburn University
(334) 844-4105
zhaofan@auburn.edu.

Your decision whether or not to participate will not jeopardize your future relations with Auburn University, the College of Education, the Department of Educational Foundations, Leadership and Technology, or the Truman Pierce Institute.

Thank you for your participation and the valuable information you will provide with the completion of this survey.

Sincerely,

Fangxia (Sally) Zhao
Doctoral Candidate

For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. “Chip” Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu) .

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

APPENDIX D

E-MAIL FOLLOW-UP LETTER (1), (2), AND (3)

E-mail Follow-up Letter (1)

Dear graduate students,

About 3 days ago, I sent to you an e-mail letter with the web-based electronic survey entrance and asked you to participate in the survey that has been developed to explore and compare Chinese international and American graduate students' beliefs about learning and teaching.

This e-mail letter is to express my thanks to you if you have already responded to the web-based survey.

I would sincerely ask those who have not yet participated if you would participate and help with this research. If you are interested and willing to participate, please click on the following web address:

<http://frontpage.auburn.edu/education/Educational%20Beliefs%20Survey/educationalbeliefsurvey.htm>

There are 13 demographic questions and 45 survey items. It will take you 15-20 minutes to complete the survey. When you complete the survey and click the "Send" button, your responses will be sent to my database through Auburn University's server. Thus, this method will ensure anonymity.

Your response is very important to the success of this study. Remember that the aim is to help you understand your own as well as your colleagues' beliefs about learning and teaching so that mutual respect and collaboration will be enhanced.

If you have any questions about this electronic survey or my research, please feel free to contact me at (334) 844-4105 or send e-mail to zhaofan@auburn.edu.

Thank you for your assistance and income. Your participation is Greatly Appreciated!

Sincerely,

Fangxia (Sally) Zhao
Doctoral student
Department of Educational Foundations, Leadership, and Technology

E-mail Follow-up Letter (2)

Dear graduate students,

It has been a week since I sent to you the e-mail letter with the web-based electronic survey entrance and asked you to participate in the survey that has been developed to explore and compare Chinese international and American graduate students' beliefs about learning and teaching.

This e-mail letter is to express my thanks to you if you have already responded to the web-based survey.

I would sincerely ask those who have not yet participated if you would participate and help with this research. If you are interested and willing to participate, please click on the following web address

<http://frontpage.auburn.edu/education/Educational%20Beliefs%20Survey/educationalbeliefsurvey.htm>

There are 13 demographic questions and 45 survey items. It will take you 15-20 minutes to complete the survey. When you complete the survey and click the "Send" button, your responses will be sent to a database through Auburn University's server. Thus, this method will ensure your anonymity.

I know that you are very busy, but your response is very important to the success of this study as I wish to have greater representation in this study from the graduate students who are enrolled in one of the disciplines of engineering, agriculture, sciences and mathematics, nutrition and food sciences, or veterinary medicine. Therefore, I strongly encourage you to become involved and contribute your input as part of this study which I hope will benefit all graduate students as well as faculty members now and in the future.

If you would like the results or have any questions about this electronic survey or my research, please feel free to contact me at (334) 844-4105 or send e-mail to zhaofan@auburn.edu.

Thank you for your assistance and input. Your participation is Greatly Appreciated!

Sincerely,

Fangxia (Sally) Zhao
Doctoral student
Department of Educational Foundations, Leadership, and Technology

E-mail Follow-up Letter (3)

Dear graduate students,

It has been two weeks since I sent to you the e-mail letter with the web-based electronic survey entrance and asked you to participate in the survey that has been developed to explore and compare Chinese international and American graduate students' beliefs about learning and teaching.

I would like to sincerely thank those graduate students who responded the web-based survey.

If for some reason you have not participated in the web survey, this is the last time that I encourage you to participate. Since this web-based survey, which you can access at <http://frontpage.auburn.edu/education/Educational%20Beliefs%20Survey/educationalbeliefsurvey.htm>

, will be inactive after **April 20, 2005**, I ask you not to delay answering the survey. Your response is very important to the success of this study as I wish to have greater representation in this study from the graduate students who are enrolled in one of the programs or disciplines of agriculture, engineering, sciences and mathematics, nutrition and food sciences, or veterinary medicine. Therefore, I strongly encourage you to become involved and share your beliefs as part of this study which I hope will benefit all graduate students as well as faculty members now and in the future.

If you would like the results or you have any questions about this electronic survey or my research, please feel free to contact me at (334) 844-4105 or send e-mail to zhaofan@auburn.edu.

Thank you for your assistance and input. Your participation is Greatly Appreciated!

Sincerely,

Fangxia (Sally) Zhao
Doctoral Student
Department of Educational Foundations, Leadership, and Technology

APPENDIX E

PERMISSION TO USE COGNITIVE INTEREST INVENTORY

Auburn University

HARRISON SCHOOL OF PHARMACY

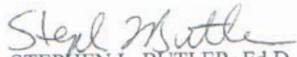
Office of Teaching, Learning and Assessment
217 Walker Building
Auburn University, Alabama 36849-5501

Telephone: (334) 844-9003
Fax: (334) 844-8353
E-Mail: pyoasa@auburn.edu

MEMORANDUM FOR Graduate School, Auburn University

SUBJECT: Permission to use my survey instrument

1. Zhao Fangxia (Sally) has my permission to use my survey instrument to assist her in completion of her doctoral dissertation at Auburn University's College of Education.
2. She may modify the instrument in any way she feels necessary to complete her study.
3. Please direct any questions to me at 844-9003 or via email at butlesl@auburn.edu.


STEPHEN L. BUTLER, Ed.D.
Assistant Director

A LAND-GRANT UNIVERSITY

APPENDIX F

INFORMED CONSENT LETTER AS APPROVED BY AUBURN UNIVERSITY

INSTITUTIONAL REVIEW BOARD (IRB)

Auburn University

Auburn University, Alabama 36849



Office of Human Subjects Research
307 Samford Hall

Telephone: 334-844-5966
Fax: 334-844-4391
hsubjec@auburn.edu

January 5, 2005

MEMORANDUM TO: Fangxia (Sally) Zhao
EFLT

PROTOCOL TITLE: "Comparing Educational Beliefs of Chinese International Aand American Graduate Students"

IRB FILE: #4-209 EP 0501

APPROVAL DATE: January 5, 2005
EXPIRATION DATE: January 4, 2006

The above reference protocol was approved by IRB Expedited procedure under Expedited Category #7 on January 5, 2005. You should report to the IRB any proposed changes in the protocol or procedures and any unanticipated problems involving risk to subjects or others. Please reference the above authorization number in any future correspondence regarding this project.

If you will be unable to file a Final Report on your project before January 4, 2006, you must submit a request for an extension of approval to the IRB no later than December 19, 2004. If your IRB authorization expires and/or you have not received written notice that a request for an extension has been approved prior to January 4, 2006, you must suspend the project immediately and contact the Office of Human Subjects Research for assistance.

A Final Report will be required to close your IRB project file. You are reminded that consent forms must be retained at least three years after completion of your study.

If you have any questions concerning this Board action, please contact the Office of Human Subjects Research at 844-5966.

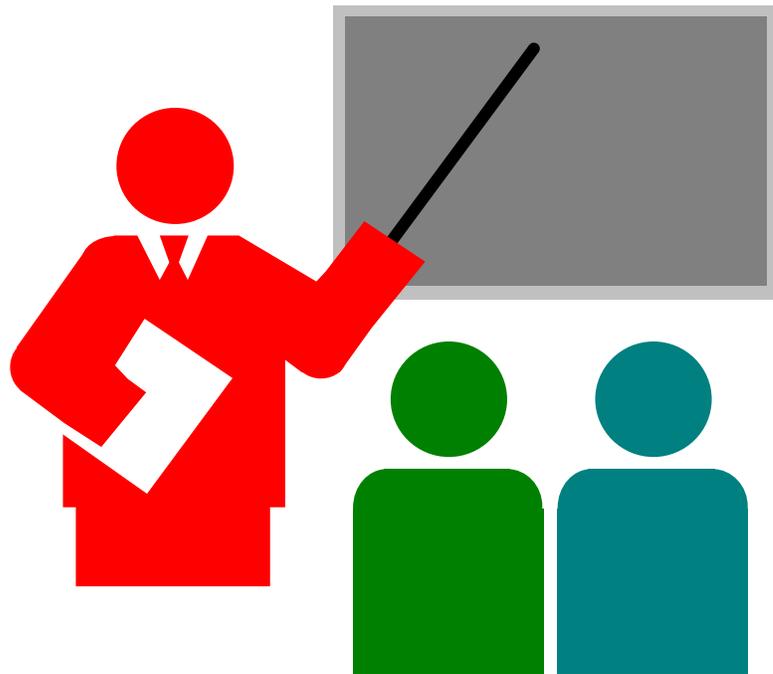
Sincerely,


Peter W. Granjean, Chair
Institutional Review Board for the Use of Human
Subjects in Research

cc: Dr. William Spencer
Dr. Judith Lechner

APPENDIX G
COGNITIVE INTEREST INVENTATION

COGNITIVE INTEREST INVENTORY



AIR COMMAND AND STAFF COLLEGE STUDENTS AND TEACHERS

Please return your completed questionnaire to:

Lt Colonel Steve Butler
Air Command and Staff College
Maxwell AFB, AL 36112

COGNITIVE INTEREST INVENTORY

FOREWORD

The German philosopher Jürgen Habermas differentiates three generic areas in which human interest generates knowledge. These areas are “knowledge constitutive” because they determine categories relevant to what we interpret as knowledge. They also determine the mode of discovering knowledge and for establishing whether knowledge claims are warranted. The purpose of this inventory is to establish which of these three cognitive interests is the most influential in your experiences as a learner and/or teacher.

INSTRUCTIONS FOR COMPLETION

Each of the forty-five (45) items on the inventory contains a statement about education in general. Underneath each statement is a scale from SD to SA.

To complete the inventory, read each statement. On the scale, **CIRCLE** the letter(s) that best describes your general beliefs about each statement. The letters on the scale represent the following: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

Please respond to all items indicating your honest opinion of each statement. If you have no opinion or are not sure about a statement, **CIRCLE N**. **THERE ARE NO RIGHT ANSWERS!!!** There aren't even any answers better than others, it is simply what *you* believe.

Students may return completed indentation to your DEC instructor or one of the central collection boxes in DEC or CVV. Teachers may return completed inventories to your respective department heads.

THANKS FOR YOUR TIME.

SD D N A SA
 Strongly Disagree Disagree Neutral Agree Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

1. Among key concepts for effective education are: behavioral objectives, needs assessment, and competency-based education.

SD D N A SA

2. Learning involves communication where expectations about behavior must be understood by at least two people.

SD D N A SA

3. Most successful educational situations are structured, with clear objectives and feedback from teacher to learner.

SD D N A SA

4. The primary purpose of education is to prepare the learner to control and manage his or her environment.

SD D N A SA

5. The most important role of education is the development of mutual understanding with others.

SD D N A SA

6. In education, authority resides in the learning community.

SD D N A SA

7. Curriculum should be designed to control the process of learning by controlling the process of teaching.

SD D N A SA

SD D N A SA
Strongly Disagree Disagree Neutral Agree Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

8. The desired knowledge generated by the teacher-student relationship is the student observing through experimentation, and reaching the correct conclusion.

SD D N A SA

9. Learning involves reflection about the way history and culture have helped to form the learner's roles and expectations.

SD D N A SA

10. The most important learning outcome for the student is an ability to transcend current perspectives.

SD D N A SA

11. The most important results of education include increased skills, behaviors, or competencies.

SD D N A SA

12. The outcome each teacher should look for in his/her students is effective behavior.

SD D N A SA

13. The primary purpose of education is to prepare the learner to understand the environment so he/she can interact with it.

SD D N A SA

14. The fundamental basis of learning is found in controlled observation and experimentation of the content studied.

SD D N A SA

15. The role of theory in education is to help construct new knowledge and practice.

SD D N A SA

SD D N A SA
Strongly Disagree Disagree Neutral Agree Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

16. Good teachers recognize social and cultural issues that may place constraints on each learner.

SD D N A SA

17. The desired knowledge generated by the teacher-student relationship is the ability of the student to generate critical action.

SD D N A SA

18. The fundamental basis of learning provides the learner with an accurate, in-depth understanding of his/her historical situation.

SD D N A SA

19. The most important learning outcome for the student is acquiring improved skills.

SD D N A SA

20. The fundamental basis of learning allows for the consideration of alternative interpretations.

SD D N A SA

21. Good teachers use their professional judgment to develop an effective learning environment.

SD D N A SA

22. The role of theory in education is to serve as a source of meanings for our actions.

SD D N A SA

23. The most important results of education include identifying constraints on social change.

SD D N A SA

SD	D	N	A	SA
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

24. The real value of any theory is that it penetrates the current system of power.

SD	D	N	A	SA
----	---	---	---	----

25. Most successful educational situations are flexible enough to allow for interaction with others who have similar interests.

SD	D	N	A	SA
----	---	---	---	----

26. The most important role of education is to prepare people for work, whether paid or unpaid.

SD	D	N	A	SA
----	---	---	---	----

27. The primary purpose of education is to prepare the learner to be liberated from the presently existing environment.

SD	D	N	A	SA
----	---	---	---	----

28. Among key concepts for effective education are: role playing, resolving conflict, discussion and dialogue, learning groups, and performance-based education.

SD	D	N	A	SA
----	---	---	---	----

29. Curriculum should be designed so the teacher and student understand each other since both are concerned with promoting the right action.

SD	D	N	A	SA
----	---	---	---	----

30. Curriculum should be designed to empower both teacher and student.

SD	D	N	A	SA
----	---	---	---	----

31. The outcome each teacher should look for in his/her students is a desire to create a just society.

SD	D	N	A	SA
----	---	---	---	----

SD D N A SA
Strongly Disagree Disagree Neutral Agree Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

32. Good teachers are efficient in their attainment of stated objectives.

SD D N A SA

33. Among key concepts for effective education are: access to alternative perspectives, Socratic dialogue, and awareness of the role of ideology.

SD D N A SA

34. The desired knowledge generated by the teacher-student relationship is the student observing the situation as a whole and making meaning from it.

SD D N A SA

35. In education, authority resides in the practitioner.

SD D N A SA

36. Learning involves predictions about observable events that can be proven correct or incorrect.

SD D N A SA

37. The most important learning outcome for the student is developing sound judgment.

SD D N A SA

38. The most important role of education is to prepare people to represent their own interests.

SD D N A SA

39. In education, authority resides in the plan.

SD D N A SA

SD D N A SA
Strongly Disagree Disagree Neutral Agree Strongly Agree

Please CIRCLE the letter(s) that best represents your beliefs about each statement.

40. The most important results of education include helping learners interpret, construct meaning, and interact with others.

SD D N A SA

41. The real value of any theory is that it provides understanding.

SD D N A SA

42. The role of theory in education is to guide our actions.

SD D N A SA

43. The outcome each teacher should look for in his/her students is meaningful action.

SD D N A SA

44. The real value of any theory is that it provides direction.

SD D N A SA

45. Most successful educational situations provide a vivid awareness of social and cultural issues that impact the student daily.

SD D N A SA