A COMPARATIVE STUDY OF CHINESE ESL UNIVERSITY STUDENTS' LEARNING STYLES AND CANADIAN UNIVERSITY STUDENTS' LEARNING STYLES

by

Yun Liang

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Abstract

Many researchers have shown that culture influences learning styles. The number of students that are studying in Canada reached 50,000 in 2009, and the number is expected to grow due to the expansion of the Student Partners Program (SPP) (Citizenship and Immigration Canada, 2010). The population of Chinese students in Canada has increased rapidly from a few hundred a year in the mid-1990s to nearly 10,000 a year between 2000 and 2008 (Zhang, 2010). As many Chinese international students now seek to further education in Canada, their presence becomes more and more significant. This study compared Chinese ESL university students’ learning styles and Canadian university students’ learning styles so as to determine if there are differences in learning style preferences between these two cultural groups. Data collected from these two groups were examined quantitatively by using Kolb’s Learning Inventory Version 3.1 which was developed based on Kolb’s experiential learning theory. Significant group differences were found in the comparisons of the four learning modes and learning styles between Canadian university students and Chinese ESL university students, and are reported in this paper. However, the author found that, overall, Chinese ESL university students’ learning styles and Canadian university students’ learning styles were similar. In addition, data on teacher educational specialization by elementary and secondary programs was gathered, and significant group differences were found.
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Chapter One

Introduction

It is suggested from the past literature that different learning approaches result from different social and educational experiences (Yang & Lin, 2009). According to Bennett (1999), students from different cultures learn in different ways and may differ in their learning, self-expressions, and communication styles. Some studies have documented that English-as-a-second-language (ESL) students from different countries have come across difficulties academically at North American universities (Huang & Brown, 2009). It is reasonable to believe that international students, especially ESL students, might have trouble studying in a foreign country like Canada.

Nowadays, more and more foreign young students seek to further their education in another country than their own. Canada has opened her gate wider than ever to international students. The number of students that are studying in Canada reached 50,000 in 2009, and the number is expected to grow due to the expansion of the Student Partners Program (SPP) (Citizenship and Immigration Canada, 2010).

Chinese Students in Canada

The population of Chinese students in Canada has increased rapidly from a few hundred a year in the mid-1990s to nearly 10,000 a year between 2000 and 2008 (Zhang, 2010a). China is second to Saudi Arab as the largest source country of international students in Canada since 2000, and it has topped the list in terms of the total number of international students since 2001 (Zhang, 2010a).

According to his conference speech, the Honorable Jason Kenny, P.C., M.P. Minister of Citizenship, Immigration and Multiculturalism (Kenny, 2010) indicates that:
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Canada and China share a mutual regard for higher education and both countries benefit from the Chinese students who come to Canada to continue their studies every year. Students from China contribute both financially and culturally to the communities and institutions where they study. They bring with them new ideas and experiences, as well as diverse perspectives to Canadian classrooms. In exchange, students from China are able to gain invaluable experiences that last them a lifetime, learning about another culture and country while they gain useful knowledge so that they can contribute positively to society. The cultural exchange of young minds also helps build stronger relations between our two countries by establishing ties between our future leaders (p. 1).

According to the survey prepared by Zhang (2010b), 51% of the 179 respondents would like to stay in Canada, and Chinese students in Canada are a prospective group that is worth cultivating with specific focuses. However, as they come to Canada for their higher education, Chinese ESL students are likely to encounter the most common difficulties for adult international students, which are associated with language ability, academic performance, and social adjustment (Huntley, 1993).

English education in China does not prepare students well for their continuing studies in Canada, and language can become a great barrier for them. English is a compulsory subject taught to elementary and high school students in China. As it is taught as a second language, most Chinese students struggle to learn the language. They have difficulties meeting the requirements of English tests in China. Universities and colleges all over China are obsessed with their passing grades on the National English proficiency examinations such as the College English Test Level-4 and -6 (CET 4 and 6), and the Test for English Major Level-8 (TEM 8) (Wolff, 2010). However, according to the same study, CET is equivalent to the 3rd primary grade...
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at a public American primary school, and even though Chinese university graduates who have passed CET 6 can read and comprehend basic English at the American 3\textsuperscript{rd} grade public primary school level, they lack listening skills, writing skills and speaking skills. With a literacy foundation built in this way, Chinese students may not be able to deal with daily life in an English-speaking country like Canada. Also, studies have shown that ESL students’ lack of confidence in their English-speaking skills inhibited their class participation and interaction with English-dominant peers in their regular university courses (Ostler, 1980; Ferris, 1998). As a result, it has become harder for Chinese ESL students to pursue a higher education in Canada, especially when they are not necessarily equipped with the specialized vocabulary particular to the subject they have chosen. Overall, this can easily lead to academic underachievement and increase in a lack of confidence.

Besides language barriers and academic performance, Chinese students may come across difficulties in their social life. Grey (2002) noted that for many international students, the problem begins with having different expectations and concerns compared to local students (Grey, 2002). From his interviews with international students, Grey found that local students failed to understand that it cost a fortune for some international students to study abroad and there was pressure on them to do their best academically. Those students had conflicts when working together, for local students did not want to devote as much time as international students did, and they aimed for a mere passing grade which was not considered good enough for international students. Also, some local students expressed an unwillingness and lack of awareness to establish a relationship with international students. International students preferred to work with people from the same ethnic group so that they felt “equal” and “having no barriers”. According to Zhang and Zhou’s research (2010), the staff at the International Students
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Center of the University of Windsor has observed that international students' weak English language proficiency affects their acclimatization to the new learning environment. However, even though some Chinese undergraduate students currently enrolled at the University are fluent in English and feel comfortable using English for academic purposes, they still have a variety of problems adjusting to school life such as communicating with local students and getting involved in university activities. It has been suggested that this may be a result of a critical issue of the chasm and the lack of cohesion existing between local and international students (Grey, 2002).

Furthermore, Hanassab and Tidwel (2002), found that international students do not have many personal or psychological needs, which might be a result of self-disclosure. Chinese students who are alone in a foreign country might not be willing to talk to others due to their language and cultural differences, which can lead to their isolation from others, and in some cases, psychological problems.

Canadian Post-secondary Education and Canadian University Students

Canada has a renowned educational system. It has one of the most highly educated populations in the world, and it leads on the world stage in advancing knowledge in many fields including research and development (Cappon, 2010).

Dale (2010) reported that in 2006, over 75% of students were between 17 and 27 years of age and over 90% of them were under age 40. More than 1,955,300 students were reported to be enrolled in Canadian public post-secondary institutions during the academic year 2010/2011, with 91.5% Canadian students and 8.5% international students of total enrolments (The Daily, 2013). Canada has a public system that provides many Canadians with a good education and the basic skills they need to enter the workforce and achieve substantial success (Education & Skills, 2013). There are diverse teaching methods in Canadian classroom. Besides the student-centered
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teaching method, other methods include inquiry- and problem-based learning exercises, community outreach projects, seminar-style classes, experiential learning and case studies (Tamburri, 2011).

Tamburri (2011) reported that Canadian professors are highly sought after especially in curriculum development as they are helping to transform post-secondary education in developing countries. Compared to the traditional teaching method of lecturing used in many developing countries, “a common innovation introduced by Canadian instructors is a student-centered teaching method where the students are largely responsible for their own learning and the teacher’s role is to facilitate that learning, rather than to impart knowledge” (Tamburri, 2011).

However, there are also weaknesses in the Canadian education system. For example, the Conference Board of Canada found that the Canadian education system attaches too much importance to school-acquired skills which leads to a lack of focus on work-based skills training and life-long education that can be fostered outside traditional academic institutions (Education & Skill, 2013). As a result, Canada is now experiencing a current and forecasted labour and skills shortage, and has lower rates of participation in post-secondary education (Cappon, 2010). These findings may lead us to understand why Canada has been receiving more international students than ever before.

Moreover, very little data on students’ learning in Canadian post-secondary education (PSE) has been reported. Canada failed to provide figures for 60 percent of the 96 indicators related to PSE such as drop-out rates in Canadian colleges and universities, participation, enrollment and graduation from Canadian colleges, public and private investment in PSE, or a profile of the learners who participate in the Canadian PSE system (Cappon, 2010).
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Unfortunately, little is known about how Canadian university students learn and react to teaching methods used in PSE.

**Purpose of the Study**

Researchers have pointed out that there are differences in learning styles among different people that come from different cultural and educational backgrounds (Holmes, 2004). What one experiences in the past has a large impact on shaping their learning styles. Kolb (1984) proposed the experiential learning theory (ELT), stating that experiential learning is a social process which focuses on the transaction between internal characteristics and external circumstances, and “the course of individual development is shaped by the cultural system of social knowledge” (p. 133). Therefore, people from different cultural systems are most likely to differ in their learning styles. Also, Kolb and Kolb (2005) have reported results of relationships between learning styles and demographic factors such as age, gender, education level, and educational specialization, and the findings were fairly positive. Based on his theory, Kolb developed the Learning Style Inventory (KLSI) to describe the way people learn and how they deal with ideas and day-to-day situations by measuring six variables. They include four adaptive learning modes – concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE), and two dialectically opposed adaptive orientations – concrete experience and abstract conceptualization (AC-CE), and reflective observation and active experimentation (AE-RO). The KLSI has been developed and improved over years and received very positive evaluations from some undergraduate students because they indicated that it helped to find ways of improving their own learning in different learning situations (Loo, 1999).

In this study, two different cultural groups, Canadian university students and Chinese ESL university students were examined in terms of their learning modes and learning styles.
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using KLSI. The demographic relationships of learning styles with age, gender, education level and educational specialization were also analyzed in this study.

Problem Statement

Very few research data is available on comparing learning styles between Canadian students and Chinese ESL students. Many studies have been done on the influence of ancient Chinese philosophy on current Chinese students, and most of them summarized Chinese students learning styles based on previous literature instead of survey research. However, their learning outcomes are not clearly understood. Chinese students from Mainland China were hardly covered by researches, and even a widely accredited measure for students’ approaches to learning, recently adopted by OECD countries, has never been extended to the Chinese-background students (Lê & Li, 2006).

There is sufficient evidence from the literature on learning approaches to suggest that different approaches are a result of different social and educational experiences (Lê & Shi, 2006). Canada has its uniqueness in education as the country consists of people of different nationalities and ethnicities. Furthermore, Canadian culture is described as a group of cultures interrelated with and juxtaposed to the two dominant cultural groups, the Anglo-Saxon culture and French culture (Rocher, 2012). It would be important for educators in the fields of curriculum development and instruction to have a better awareness of the learning styles of culturally diverse groups within the Canadian education system so as to design more personal courses tailored to foreign students who have trouble adapting academically to a different cultural climate such as the Canadian education system.
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Research Questions

According to Joy and Kolb, culture does have a significant influence on learning styles (2009). The researcher of this study predicted that the two culturally different groups, Canadian university students and Chinese ESL university students, would have different patterns of learning styles because they came from different cultural backgrounds. The researchers found variables of age, gender, education level and educational specialization influenced learning modes and learning styles as well, and these variables are also being examined in this study.

The present study is focused on finding out if there are differences between Canadian university students’ learning styles and Chinese ESL university students’ learning styles. There are three main research questions that guided this study:

1. What are the learning styles of Chinese ESL university students?
2. What are the learning styles of Canadian university students?
3. Are there group differences in learning styles between Chinese ESL university students and Canadian university students?

The Kolb Learning Style Inventory was used to investigate these three questions. More will be said about the KLSI properties in later sections. In the next section, however, I review the pertinent research literature.
Chapter Two
Literature Review

The relationship between learning styles and culture, which is not a new concept, has been discussed in scholarly research for a few decades (Yamazaki, 2005). International students are studied most frequently in cross-cultural researches as they are faced with more challenges on campus than their peers from the host country (Kuo & Roysircar, 2004). Chase (1956) believes that speakers of Chinese perceive nature and the universe differently from Western speakers because of the structure of languages. As Chinese ESL students come from a culturally and educationally different background and with a different language, their experiences in Canada might be negatively influenced by their experiences in China which have a subtle but somehow strong impact on their quality of life and effective ways of learning.

Chinese students find it difficult to acquire the English literacy skills of writing, listening and reading even though they learn English from a young age. Yu (2007) notes that learning a second language (L2) or a foreign language is different in many ways from learning a concrete subject. Dörnyei (2003, p. 4), supports this notion by stating that “while an L2 is a ‘learnable’ school subject in that discrete elements of the communication code (e.g., grammatical rules and lexical items) can be taught explicitly, it is also socially and culturally bound, which makes language learning a deeply social event...”. The implication of Dörnyei’s notion is that what Chinese students learn at school in China might not meet the social and cultural requirements of a Canadian classroom.

Curricula and exams are traditionally designed and delivered differently in Chinese classrooms from those in Canadian classrooms. Greenpan (2008) indicates that China has an educational system that places great importance on standardized tests which are regarded as the
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The only way to guarantee meritocracy and ensure fairness. For example, teachers teach according to the provincial or national syllabus so as to equip students with the knowledge needed to pass the Chinese national standardized exams, and they do so in a given timeframe. Therefore, instead of being encouraged to explore and think critically, Chinese students develop a shocking capacity for memorization, that is, they memorize what is taught without truly understanding it.

Meanwhile, students’ diligence, which means working hard out of class, is highly valued, and students are usually given a heavy load of homework which requires more repeated practices than creative work. Therefore, “many now agree that the lack of creativity in China’s education system will soon prove a major stumbling block in the country’s continuing development” (Greenpan, 2008).

Taught and shaped by the Chinese education system, Chinese students who go to school and strive to get into university by passing the university entrance exam develop their own styles of learning. Mariani (2007), states that a particular learning style is often a combination of culturally-based beliefs, attitudes and values and have a more general response to the demands of curricula and exams. Throughout their long term in-class experiences, Chinese students are used to a one-way learning mode where they absorb knowledge without speaking it out. They have difficulty voicing their own opinions back in China because expressing their thoughts and emotions is not a cultural custom in the Chinese classroom. Mak (2011) notes that Chinese students usually require longer wait-time to speak-up and respond than their European counterparts because “group unity” and “face” are important elements of their culture and these two elements are threatened by an inability or reluctance to speak when they feel pressured. As they have such concerns as loss of face, it becomes uneasy for Chinese students to express their thoughts in class.
Moreover, there are fundamental differences between eastern and western thinking and philosophy (Nisbett, 2003). Western education has been regarded as Socratic, where knowledge is generated, or co-constructed through a process of questioning and evaluation of beliefs through student-student and teacher-student communication instead of being passively absorbed by students (Holmes, 2004). Chinese students from Confucian background cultures feature a wealth of subtle and pervasive thinking (Back & Barker, 2002). They may be intimidated by the Western classroom practices of volunteering answers, commenting, interrupting, criticizing, asking questions, or seeking clarification, which is the opposite of the Confucian classroom where teachers are authoritative figures. Again, "the fear of loss of face, shame and over modesty made the Western participative style of learning less acceptable to them" (Wong, 2004, p. 155). This idea leads us to think that the preservation of "face" and unwillingness to step out of their comfort zone are likely to hinder their immersion into a foreign classroom, a notion discussed in the next section that can be traced to a philosophy of life dating back 500 B.C..

Confucianism and Citizenship Education in China

Differences have been noted in the learning styles of students from such traditional educational systems as the Chinese and those from Western countries such as Canada (Holmes, 2004). The more different the two cultures are from each other, the harder it is for foreigners to adapt themselves to the host culture (Furnham & Bochner, 1986).

China is well known for its Confucian culture which took roots in China for thousands of years. Chinese people's thinking and behaviour are strongly under the influence of Confucian philosophy (He, 1996). Confucianism stresses the benefits of fixed hierarchical relationships which show respect for age, seniority, rank and family background (Mariani, 2007). According to Confucius, teachers have been made an authority figure in the classroom. Hence, students
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show their respect to their teachers by speaking as little as possible. Also, because Confucianism places great emphasis on harmony (Huang & Brown, 2009), classroom debates are often regarded or perceived as arguments or conflicts which affect unity. The Doctrine of the Mean, a concept and one of the important books in Confucianism, dominates the mainstream of thinking in Chinese society. Confucius (2004) stated the following:

While there are no stirrings of pleasure, anger, sorrow, or joy, the mind may be said to be in the state of equilibrium. When those feelings have been stirred, and they act in their due degree, there ensues what may be called the state of Harmony. This equilibrium is the great room from which grow all the human actings in the world, and this Harmony is the universal path which they all should pursue” (p. 1).

The main idea expressed in the paragraph is to maintain equilibrium and harmony.

Huang and Brown (abstract, 2009) has pointed out in their study that Chinese students feel uncomfortable with the classroom behaviour of North American students. They prefer lecture than discussion and query the professor’s failure to follow through textbooks. They feel there is too much emphasis on group work but not enough lecture summaries. Also, they feel they do not share any common interest with North American students. The paragraph extracted from Confucius helps explain why students in China do not stand out in a group to express their own ideas; they try to maintain the equilibrium and harmony in the classroom by not raising their hands (a form of participation) and avoiding any form of arguments or classroom debates.

Besides, as Chinese students are used to viewing an issue from different perspectives without taking a stance as stated by the Doctrine of the Mean (Zhongyong), they might be regarded as thinking illogically, and their classroom assignments, which may otherwise be acceptable in China, might look ambiguous to a western reader.
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Lastly, China is a socialist state where collectivism is held in high esteem. Yang (2002), found that after the establishment of the People’s Republic of China in 1949, China introduced citizenship education courses to young Chinese students as part of their nine-year compulsory education to ensure loyalty to the nation. And the core substance of the citizenship education lies in the political ideology of the one-party system of government (Walder, 1986). Therefore, again, Chinese students are educated to respect authority. That is, they are encouraged to respect the communist party in China, respect their parents, and respect their teachers at school.

One of the Confucian education advocate is social development rather than individual development (Huang & Brown, 2009), which is coordinated with the socialist ideology of collectivism. Since individualism is not encouraged in Chinese classrooms, Chinese students don’t feel comfortable standing alone or be opinionated. They would rather be silent than express their ideas freely, be they right or wrong. The combination of Confucianism and citizenship education in China shape the learning style of Chinese students, and they are encouraged to learn by working with each other without promoting individualism or challenging one another so as to benefit the whole group or community. This is somewhat of an opposite form of learning found in most Canadian classrooms; a topic discussed in my next section.

Kolb’s Experiential Learning Theory: the Conceptual Framework

Experiential Learning Theory (ELT) was proposed by Kolb (1984), who drew from the intellectual origins of experiential learning on the works of John Dewey, Kurt Lewin, and Jean Piaget. It is a way to recognize and value people’s experience and ability for self-learning in the field of adult education (Fridland, 2002). Kolb (1984) believes that,

“Without denying the reality of biological maturation and developmental achievement (that is, enduring cognitive structures that organize thought and action), the experiential
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learning theory of development focuses on the transaction between internal characteristics and external circumstances, between personal knowledge and social knowledge. It is the process of learning from experience that shapes and actualizes developmental potentialities. This learning is a social process; and thus, the course of individual development is shaped by the cultural system of social knowledge (p. 133).

Kolb defined learning as a holistic process of adaptation to the world, involving the integrated functioning of the total organism - thinking, feeling, perceiving, and behaving, whereby knowledge was created through the transformation of experience in the learning process.

The process of experiential learning is composed of four adaptive learning modes and can be described as a four-stage cycle involving the four adaptive learning modes (see Figure 1). The four adaptive learning modes include (1) concrete experience (CE). CE abilities focus on being involved in experiences and dealing with immediate human situations subjectively; (2) reflective observation (RO). RO abilities involve reflecting upon the meaning of ideas and situations by carefully watching and listening; (3) abstract conceptualization (AC). AC abilities call for applying logic, ideas, and concepts; and (4) active experimentation (AE). AE emphasizes the abilities to make practical applications and to be pragmatic with what actually works (Yamazaki, 2005).
In this model, abstract conceptualization/concrete experience (AC-CE) and active experimentation/reflective observation (AE-RO) are two distinctive dimensions representing two dialectically opposed adaptive orientations. AC and CE are two ends on the prehension axis, from apprehension based on CE to comprehension based on AC. The prehension axis describes how an individual takes hold of their experience. AE and RO represent two ends on the transformation axis, describing the process of creating knowledge by either intention through RO or extension through AE. These two dimensions result in four learning styles including converging learning style, diverging learning style, assimilating learning style and accommodating learning style. Kolb and Kolb’s summary of these four basic learning styles is based on both research and clinical observation from results of the learning style inventory.
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(Kolb, 1984). The converging learning style is the combination of AC and AE. People with a converging learning style learn by ideas and theories and are good at putting them into practice. The diverging learning style is the combination of CE and RO. People with a diverging learning style learn from concrete situations, and they like to go broad and generate new ideas from those experiences. The assimilating learning style is the combination of AC and RO. People with an assimilating learning style tend to be thinkers, collecting a variety of information and building it into logical form. The accommodating learning style is the combination of CE and AE. People with an accommodating learning style tend to be doers who learn from “hands-on” experience and enjoy carrying out plans.

The relationship between learning styles and age, gender, education level and educational specialization is discussed as external validity evidence for the KLSI. Each of these variables is briefly discussed in the following section.

Age. Kolb (1976) has indicated that there was an increase in preference for learning by active experimentation (AE) up to middle age, followed by a decrease in later life as measured by the active experimentation/reflective observation (AE-RO) scale. Similar significant relationships were also found in the results from the KLSI 3.1 normative sample with larger age cohort sample sizes (Kolb & Kolb, 2005).

Gender. The Learning Style Inventory 1, Learning Style Inventory 2 and the Kolb Learning Style Inventory Version 3.1 normative sample have similar significant gender differences on the abstract conceptualization/concrete experience (AC-CE) scale (Kolb, 1976, 1985; Kolb & Kolb, 2005), showing that males were more abstract learners than females. However, Kolb and Kolb (2005) notes that the results need careful interpretation and cannot be overstated, since there are such factors as educational specialization and career choices which
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often interact with gender differences that can contribute to the outcome (Willcoxson & Prosser, 1996).

**Education Level.** According to Experiential Learning Theory, “abstractness in learning style is related to an individual’s level of participation in formal education” (Kolb & Kolb, 2005). Validation from the KLSI Version 3.1 indicates that there is a linear relationship between abstractness and level of education. That is, as the education level goes higher from elementary to high school to university to graduate degree, the mean of AC-CE scale goes higher.

**Educational Specialization.** The four learning styles are shaped by the transactions between people and their environment at the level of educational specialization (Kolb & Kolb, 2005). Kolb (1984) believes that specialized development in higher education helps accentuate people’s learning style if the knowledge structure of that field prizes and nurtures their style. People who choose different academic specializations might differ in their learning style because “this specialization in the realms of social knowledge influences individuals’ orientations toward learning, resulting in particular relations between learning styles and early training in an educational specialty or discipline” (Kolb & Kolb, 2005, p. 6); as in studying in a university environment.

In terms of ethnicity, Joy and Kolb (2009) have conducted research on different cultural clusters defined by the Global Leadership and Organizational Effectiveness (GLOBE). They indicate that culture measured by the representative country from each cluster does influence learning style. In Fridland’s study (2002), comparing Chinese teachers of English as a foreign language (N=100) and American teachers of English as a second language (N=105) in 12-K work settings, Chinese teachers’ learning styles were distributed as followed: 42% were diverging learners, 28% were assimilating learners, 18% were converging learners, and 12%
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were accommodating learners. On the other hand, 31% of American teachers had diverging learning style, 27% had assimilating learning style, 18% had converging learning style, and 26% had accommodating learning style. The author further used $x^2$ analysis to compare the results, but the differences found in the four learning-style distributions between these two groups were marginal.

Summary

According to Nisbett (2003), the western way of thinking is based on Greek philosophy, which focuses on subjects and allows debates and challenges of one another, and values critical thinking. This is different from the Chinese traditional way of thinking where relationships or contexts are assigned priorities. Therefore, the western way of thinking poses a big problem for Chinese students when they pursue their studies in Canada. Hence, Chinese students may have difficulty adjusting to a Canadian method of learning and teaching.

Previous researchers that have examined Chinese students' learning styles abroad have focused on the historical and cultural impact on their learning. However, it appears that they have failed to understand Chinese students' ways of learning from the angle of personal development. That is, the way they learn and how they deal with ideas and day-to-day situations. In addition, very little studies have been conducted on the comparisons between Canadian university students and Chinese ESL university students. Hence, this project has tried to shed some light on the subject of learning preferences and learning styles of these two different cultural groups.

The next section discusses my methodology.
Chapter Three
Methodology

The Method

The researcher applied an exploratory research design for this project, and used David A. Kolb's Learning Style Inventory (KLSI Version 3.1) to investigate the different learning styles between Chinese ESL university students and Canadian university students. Exploratory research can be used to investigate a variety of research topics in education and is a convenient and inexpensive method of conducting research which allowed this researcher to recruit participants at the lowest cost. According to McDaniel and Gates (2010), “Exploratory research may be conducted to obtain greater understanding of a concept or to help crystallize the definition of a problem. It is also used to identify important variables to be studied. Exploratory research is preliminary research, not the definitive research used to determine a course of action”. That is, exploratory research is “preliminary research conducted to increase understanding of a concept, to clarify the exact nature of the problem to be solved, or to identify important variables to be studied” (p. 43). The researcher has chosen Kolb Learning Style Inventory (KLSI) for this study, an existing well proven questionnaire as to avoid any pitfalls in designing a new instrument (Cohen, Manion, & Morrison, 2000).

The Population

The researcher recruited participants from the University of Northern British Columbia (UNBC), Prince George campus in British Columbia, Canada. In 2013, UNBC ranked second among small primarily-undergraduate universities by MacLean’s university ranking (Dehaas, 2013). It is largely focused on undergraduate education with relatively fewer graduate programs and graduate students. According to the statistics released by UNBC (Our Students, 2011), the
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number of international students reached 396 out of the total students of 4266 during the 2010/2011 academic year; students were from 43 different countries. Besides education, the city of Prince George, BC’s Northern Capital offers great job opportunities and recreation as well. As the largest city in Northern British Columbia, Prince George has a strong growing economy and a cultural life of its own with a total population of over 80,000, of which 810 are of Chinese origin (Profile of diversity in BC communities, 2006). Also, Prince George has been selected as the host city of the Canadian Winter Game in 2015. It has attracted a large population of Canadian students, especially from its northern region where 70% of UNBC students are from, as well as attracting a large number of international students from all over the world.

Sampling Procedure

To examine group differences in learning styles, the researcher targeted (1) Canadian university students and (2) Chinese ESL university students at UNBC. The same number of students was recruited from each group. Canadian university students were those who were born and raised, and received their education in Canada. They identified themselves as Canadian and were studying at the university. Chinese ESL university students were recruited from those who were born and raised in China. They identified themselves as Chinese with English as a second language, and were also studying at the university. The researcher was on site during the data acquisition, and the two groups compared in this study represented convenience samples of Canadian and Chinese ESL university students. The participant recruitment process is described below.

Canadian University Students. Canadian students were recruited from the School of Education at UNBC with consent given by the Chair of the school (see Appendix C). Two classes were randomly chosen to recruit the participants for this study. The researcher gained
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permission from the class professor and went to the classes in person to solicit volunteers. The study was fully explained to all students in front of the classes, and those who were interested and willing to participate were given the consent form (see Appendix B) and the surveys. The surveys were administered by the researcher in class. The researcher collected 8 surveys of Canadian university students from the Fellowship of College and University Students (FOCUS) club, which is an international student organization under the International Student Ministry of Canada (ISMC).

Chinese ESL University Students. Chinese students were all from the Fellowship of College and University Students (FOCUS) club. The researcher was given consent to recruit students from FOCUS club and conduct research (see Appendix D). The researcher also handed out fliers (see Appendix F) to students to advertise and recruit volunteers, and talked to them face-to-face to explain the project. Those who were willing to take part in the research were given a consent form and the survey. They were asked to fill out the survey and return them to the researcher upon completion. The researcher received help with recruitment from the students, who expressed their willingness to hand out fliers which contained the information about the researcher and the study.

The survey received high interest among students. To make sure that the researcher gained sufficient responses for the study, 85 surveys were handed out, and they were all completed and returned (see Table 1). Eighty of them were included in the data analysis (40 Canadian university students and 40 Chinese ESL university students). The two classes from the School of Education with 35 Canadian students took the survey, and 32 of them could be used: one response from a Canadian university student could not be used as the participant was not in the age-group that the researcher was looking into; the other two surveys were incomplete,
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therefore, rejected. Among the 42 survey received from Chinese students, two were not filled out properly according to the instruction.

Table 1

Composite of the Sample in Numbers

<table>
<thead>
<tr>
<th></th>
<th>From Class (Used)</th>
<th>From FOCUS Club (Used)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Students</td>
<td>35 (32)</td>
<td>8 (8)</td>
<td>43 (40)</td>
</tr>
<tr>
<td>Chinese Students</td>
<td>0 (0)</td>
<td>42 (40)</td>
<td>42 (40)</td>
</tr>
<tr>
<td>Total</td>
<td>35 (32)</td>
<td>50 (48)</td>
<td>80 (80)</td>
</tr>
</tbody>
</table>

The Instrumentation

Since 1969, the Kolb Learning Style Inventory (KLSI) has undergone several changes. After over 40 years of development and modification, the new KLSI includes “new norms that are based on a larger, more diverse and representative sample of 6977 LSI users” (Kolb & Kolb, 2005, p. 10). By testing the results of studies that used KLSI Version 3.1, the KLSI 3.1 scales showed good internal consistency reliability. There is no sufficient data to meet the standards of predictive validity of experiential learning theory (ELT) and the KLSI; however, ELT has been widely accepted as a useful framework for learning-centered educational innovation judged by the standards of construct validity, and the LSI has been used as a means of construct validation for ELT (Kolb & Kolb, 2005). Before conducting the survey, the researcher gained approval from the Hay Group where KLSI is patented (see Appendix E). Due to copyright issue, the KLSI was not attached in this project.

The Kolb’s Learning Style Inventory Version 3.1 (KLSI) was developed based on Kolb’s experiential learning theory (ELT). Because Kolb’s model has been applied in the fields of cross-cultural and international studies (Ymazaki, 2005), this researcher has found the KLSI Version 3.1 suitable for data collection. The KLSI is used by individuals to self-test how they learn and
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how they deal with day-to-day situations. The survey was composed of 12 questions with a choice of four endings. Participants had to rank the endings for each sentence according to how well they thought each one would fit with how they would go about learning something. The survey used simple English which was easy to comprehend. For example, “when I learn: _ I am happy. _I am fast. _I am logical. _I am careful”. However, Chinese students who had difficulty understanding certain words in the survey were provided with a definition and an explanation by the researcher on site.

The KLSI was chosen because the instrument was developed to assess adult learning and could be used in formal and informal educational settings. Chinese students who come to Canada for their post-secondary study bring with them a host of familiar and cultural experiences from China. According to the experiential learning theory, their past learning experiences shape and actualize their learning styles. How they learn and deal with daily situations is different from Canadian students whose learning styles are shaped and actualized by Canadian society. By comparing group learning styles using the KLSI, this research has shed some light on what Chinese students’ learning styles are and what the differences are between their learning styles and Canadian students’ learning styles.

Data Collection

Data Collection Procedure

Completed questionnaires were returned, either directly to the researcher, or to Chinese student volunteer assistants. All questionnaires were checked for completeness, and coded to maintain anonymity.

The survey was conducted in English. In order to ascertain that Chinese ESL university students had no difficulties understanding the Kolb’s Learning Style Inventory (KLSI), a pretest
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was administered to five students and no comprehension problems were reported by those students other than a few words requiring clarification. The researcher gave most of the survey questionnaires to Chinese students either in small groups or individually so that the researcher could assist with translations and explanations. Overall, most of the Chinese students surveyed were able to understand the questionnaires and completed them by themselves. Canadian students did not report having difficulty filling out the questionnaires.

The overall data collection spanned a period of 2 months with great help from student helpers.

Administration of the Kolb’s Learning Style Inventory

Among the 43 responses from Canadian students, 35 were administered and recruited from two classes of the School of Education. The confidentiality letter, with full details of the researcher and this study (see Appendix A), was read out in class. A copy of the confidentiality letter was also projected on the screen. The researcher handed out the consent forms and the surveys and gave instruction on how to complete the questionnaire and on how to calculate the raw scores for the inventory. The researcher collected the signed consent forms and coded the questionnaires so that students’ anonymity was protected. It took another 10 minutes for students to finish the calculations as per the KLSI instructions. Students were free to ask questions regarding the survey and were told that they were able to withdraw from the study at any time during the process without penalty. Finally, the researcher gave her contact information to participants in case they had further questions regarding the study at a later time. Students were told that if they were interested in receiving the results of the study, they would be sent a copy upon request. The whole process of collecting data from each class took about 40 minutes in total. No one withdrew from the study.
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The rest of the survey for the other 8 Canadian university students and the Chinese ESL university students was conducted during a few events hosted by the Fellowship of College and University Students (FOCUS) club. Participants were approached and given a brief introduction about the researcher and the study with the information on the confidentiality letter. The survey was administered either in small groups with up to 5 students or on an individual basis. Students who had done the survey invited fellow students to the event using the advertisement fliers the researcher had handed-out. The survey was administered using the same procedure as with the Canadian university student group described above. However, some Chinese students needed help on translating a few words and on the instructions for calculating the raw scores. None of the students who needed help withdrew from the survey.

The process of collecting data was time consuming but fruitful. All participants were interested in helping and were very cooperative. All the data collected were entered into Excel sheets which were checked for accuracy with the help of another graduate student.

Statistical Analysis

In this study, the researcher had collected data from Canadian university students and Chinese ESL university students by using Kolb’s Learning Style Inventory (KLSI). The six test variables in the KLSI included the four learning modes, namely concrete experience (CE), abstract conceptualization (CE), reflective observation (RO), active experimentation (AE), and the two dialectically opposed dimensions, concrete experience/abstract conceptualization (AC-CE) and reflective observation/active experimentation (AE-RO). The scores of these six variables from the survey were tested on effect size by 5 demographic variables of ethnicity, age, gender, educational level and education specification. There were two ethnic groups labelled and tested: Canadian and Chinese, and two additional categorical variables: male and female. The
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Age variable was broken into four age-groups including 18-20, 21-23, 24-26 and 27-30. Canadian university students were categorized as students from an elementary teacher education program and students from a secondary teacher education program based on their program of study, while Chinese ESL university students were grouped into students from undergraduate programs and students from the English Language Studies (ELS) program. The researcher examined the raw scores of the six demographic variables using independent-sample t test, analysis of variance (ANOVA), and Scheffe post-hoc test if needed, and examined the pattern of learning styles using the \( \chi^2 \) goodness of fit test on one sample and using the \( \chi^2 \) test of independence when comparing two independent samples. The results of the statistical analyses and findings are presented and discussed in the next chapter.
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Chapter Four

Presentation of Research Finding

This study investigated the different learning styles of Chinese ESL university students and Canadian university students.

In this chapter, the researcher presents the results of her findings from a survey questionnaire administered to students from the University of Northern British Columbia (UNBC), including a description of the sample composition and structure according to ethnicity, age, gender education level and educational specialization.

Descriptive Statistics

Ethnicity. This study collected 80 responses, 40 Canadian university students and 40 Chinese ESL university students. Among all the Canadian students’ responses, only one student indicated that French was their first language. The rest of the students identified themselves as Canadians with English as first language. All the 40 Chinese ESL university student participants were from Mainland China, and came to Canada for further study. They all had a valid study permit, designated as international students, Chinese being their first language.

Age. The sample recruited in this study was close to the normal distribution in terms of age (see Figure 2). The mean age of Canadian university students was 23.725 compared to 22.175 of Chinese ESL university students. The mean of age of the total 80 students was 22.95. The researcher divided the Canadian university students and Chinese ESL university students into four age-groups: 18-20, 21-23, 24-26, and 27-30 respectively (see Table 2) for further analysis. There were no Chinese ESL university student participants between the age of 27 and 30.
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Table 2

Distribution of Student Participants in Different Age-Groups

<table>
<thead>
<tr>
<th>Age-Group</th>
<th>Chinese Students</th>
<th>Canadian Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>21-23</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td>24-26</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>27-30</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

Figure 2 Age distribution of all students.

Gender. The sample number of Chinese male students and the sample number of Chinese female students which the researcher collected were very close. On the other hand, the size of the male Canadian group was much smaller than the size of the female Canadian group (see Table 3).
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Table 3

Gender Distribution of Student Participants

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian University Students</td>
<td>31</td>
<td>9</td>
<td>40</td>
</tr>
<tr>
<td>Chinese Canadian Students</td>
<td>19</td>
<td>21</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>30</td>
<td>80</td>
</tr>
</tbody>
</table>

Education Level. The Chinese ESL university students recruited in this study totaled 40. Thirty-two were from various undergraduate programs at UNBC, while 8 were from the UNBC English Language Studies (ELS) program. The ELS program offers international students an academic and social environment to improve their English language proficiency and fluency, and meanwhile prepare them for their major study (UNBC English Language Studies, 2012).

Educational Specialization. This study investigated the differences of learning modes and learning styles between elementary education students and secondary education students in terms of their educational specializations. The participants from two classes of the UNBC School of Education (N=32) included 21 elementary education students and 11 secondary education students. The rest of the 8 Canadians were UNBC students from other undergraduate programs.

In this section, the frequency distributions were described according to ethnicity, age, gender, education level and educational specialization of participants. The results of tests are reported in the following sections.

Data Analysis

The researcher had 40 Canadian university students and 40 Chinese ESL university students finish the Kolb Learning Style Inventory Version 3.1 (KLSI). They were all between the age of 18 and 30. Among the 80 participants, 30 (37.5%) of them were male and 50 (62.5%) were female.
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The researcher used ANOVA and independent t-tests to see if there were group differences in the four modes of learning, namely, concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE). Additionally, the researcher was investigating the two dialectically opposed adaptive orientations, which are abstract conceptualization/concrete experimentation (AC-CE) and active experimentation/reflective observation (AE-RO), between Canadian university students and Chinese ESL university students. The four learning styles, namely diverging, converging, accommodating, and assimilating which were involved with the two opposed orientations, were also compared. Scheffe post hoc test was performed when needed. The level of significance was set at $p \leq .05$. The dependent variables CE, RO, AC, AE, AC-CE, and AE-RO were tested against demographic variables of ethnicity, gender, age, education level and educational specialization. In the next section, the results for Canadian students are discussed first followed by the results for Chinese students and comparisons for these two groups.

Canadian University Students’ Learning Modes

Age. One-way ANOVA indicated significant differences between four age-groups (18-20, 21-23, 24-26, and 27-30) on the concrete experience learning mode (CE), $F(3, 36)=4.85$, $p=.006$ (see Table 4). Scheffe post hoc analysis was then performed, showing that the mean difference between age-group 21-23 and age-group 24-26 was statically significant. It might suggest that Canadian students in the 24-26 age-group use more of a concrete mode of learning than students in the 21-23 age-group.
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Table 4
Summary for different Age-groups of Canadian Students

<table>
<thead>
<tr>
<th>Age-Group Measure</th>
<th>18-20 M (SD)</th>
<th>21-23 M (SD)</th>
<th>24-26 M (SD)</th>
<th>27-30 M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>24.50 (6.80)</td>
<td>21.86 (4.09)</td>
<td>30.71 (7.95)</td>
<td>22.83 (7.08)</td>
</tr>
<tr>
<td>RO</td>
<td>32.33 (8.96)</td>
<td>32.36 (8.35)</td>
<td>27.57 (10.25)</td>
<td>27.00 (3.35)</td>
</tr>
<tr>
<td>AC</td>
<td>35.00 (5.87)</td>
<td>30.07 (7.65)</td>
<td>30.07 (9.35)</td>
<td>36.17 (8.18)</td>
</tr>
<tr>
<td>AE</td>
<td>28.17 (8.84)</td>
<td>35.71 (7.32)</td>
<td>31.64 (6.10)</td>
<td>34.00 (7.54)</td>
</tr>
<tr>
<td>AC-CE</td>
<td>10.50 (10.29)</td>
<td>8.21 (10.53)</td>
<td>-.64 (12.19)</td>
<td>13.33 (14.00)</td>
</tr>
<tr>
<td>AE-RO</td>
<td>-4.17 (16.17)</td>
<td>3.36 (14.39)</td>
<td>4.07 (11.48)</td>
<td>7.00 (9.88)</td>
</tr>
</tbody>
</table>

**Gender.** In the comparison between male Canadian students and female Canadian students, male students (M=36.56, SD=8.34) scored significantly higher in abstract conceptualization (AC) than their female counterparts (M=30.32, SD=7.82), t(38)=2.07, p=.045, and they had a higher average score (M=14.22, SD=10.69) than female students (M=3.90, SD=12.05) on the AC-CE scale as well, t(38)=2.31, p=.026. It might imply that male Canadian students are more inclined to use abstract thinking than female Canadian students do. It must be noted that the number of male students in the Canadian group was very small (31 female students and 9 male students).

**Educational Specialization.** The learning modes of Canadian university students enrolled in the elementary education program differed significantly from students of the secondary education program. For example, difference in learning modes on concrete experience (CE), abstract conceptualization (AC), and the AC-CE scale were found significant. Students in the elementary education program (M=27.29, SD=8.29) favoured using the CE learning mode more than their peers from the secondary education program (M=21.18, SD=4.94), while students from the secondary education program (M=34.73, SD=8.03) favoured AC more than students from elementary education (M=28.52, SD=8.23). Also, secondary education students
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(M=13.55, SD=10.57) scored significantly higher than elementary education students (M=1.24, SD=12.65) on the AC-CE scale, which might suggest that secondary education students attach more importance to abstract conceptualization (AC) than concrete experience (CE) when they learn, while their peers attach less importance. Table 5 reports the group significance between the elementary education students and the secondary education students.

Table 5

**Significant ANOVA Summary for Canadian Student Participants’ Learning Modes by Educational Specialization**

<table>
<thead>
<tr>
<th>Learning Mode</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>4.987</td>
<td><strong>.033</strong></td>
</tr>
<tr>
<td>RO</td>
<td>.001</td>
<td>.972</td>
</tr>
<tr>
<td>AC</td>
<td>4.168</td>
<td><strong>.050</strong></td>
</tr>
<tr>
<td>AE</td>
<td>.000</td>
<td>.993</td>
</tr>
<tr>
<td>AC-CE</td>
<td>7.599</td>
<td><strong>.010</strong></td>
</tr>
<tr>
<td>AE-RO</td>
<td>.001</td>
<td>.976</td>
</tr>
</tbody>
</table>

Note: *p* ≤ .05, **p** ≤ .01.

**Canadian University Students’ Learning Styles**

The results have shown that there are no dominant learning style preferences among the Canadian group. Age and gender did not seem to influence their learning styles either. However, by comparing the results of elementary education students’ learning styles and secondary education students’ learning styles using the $x^2$ test of independence, there were significant differences in the learning styles between these two groups, $x^2(3, N=32)=11.61, p=.009$. None of the secondary education students fell into the category of diverging learning styles. Over half of the students from the secondary education program were assimilators while less than 10% of the students from the elementary education program fell into this category. More than one third of
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The students from the elementary education program were accommodators, and about 10% of the students from the secondary education program were in the same category (see Table 6).

Table 6

*Canadian Student Participants’ Learning Style Distribution by Educational Specialization*

<table>
<thead>
<tr>
<th></th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary Education</td>
<td>8 (38%)</td>
<td>3 (14%)</td>
<td>8 (38%)</td>
<td>2 (9%)</td>
<td>21</td>
</tr>
<tr>
<td>students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Education</td>
<td>2 (18%)</td>
<td>3 (27%)</td>
<td>0 (0%)</td>
<td>6 (54%)</td>
<td>11</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>32</td>
</tr>
</tbody>
</table>

Chinese ESL University Students’ Learning Modes and Learning Styles

The only statistically significant difference found in the Chinese within group comparisons in the learning modes was in active experimentation (AE) between male Chinese students and female Chinese students, $t(38)=-2.66$, $p=.011$. The results might suggest that female Chinese students ($M=31.79$, $SD=6.50$) are more active than male Chinese students ($M=26.76$, $SD=5.43$). Age, gender and education level (undergraduate students and English Language Study students) did not appear to have an influence on learning styles in the Chinese group. However, according to the one sample $X^2$ goodness of fit test, there seemed to be a dominant learning style preference among the Chinese group which is the diverging learning style as indicated by the results, $X^2(3,N=40)=10.20$, $p=.017$ (see Table 7).
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Table 7

Learning Style Distribution in Numbers and Percentages

<table>
<thead>
<tr>
<th></th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>5 (12.5%)</td>
<td>11 (27.5%)</td>
<td>5 (12.5%)</td>
<td>16 (40%)</td>
<td>40 (100%)</td>
</tr>
<tr>
<td>Canadian</td>
<td>11 (27.5%)</td>
<td>6 (15%)</td>
<td>9 (22.5%)</td>
<td>14 (35%)</td>
<td>40 (100%)</td>
</tr>
</tbody>
</table>

Comparisons of Canadian University Students’ Learning Modes and Chinese ESL University Students’ Learning Modes

**Ethnicity.** The significant t-test analysis result in terms of ethnicity was found in active experimentation (AE), $t(78)=-2.42, p=.018$. Canadian university students had a higher average AE score ($M=32.90$ $SD=7.39$), compared to Chinese ESL university students’ average AE score ($M=29.15$, $SD=6.41$). It may suggest that Canadian university students use doing and practicing as a learning mode more often than their Chinese counterparts do.

**Age.** The two-independent-sample t-test was used to compare the means of each age-group (18-20, 21-23, and 24-26) between Canadian university students and Chinese ESL university students. The results indicate in the 21-23 age-group comparisons, that there were significant differences in concrete experience (CE), $t(38)=3.02, p=.001$, and active experimentation (AE), $t(38)=-2.90, p=.006$. Chinese ESL university students between the age of 21 and 23 had a higher CE score ($M=28.04$, $SD=7.03$) than Canadian university students in the same age-group ($M=21.86$, $SD=4.992$), which may suggest that Chinese students in this age-group prefer learning through hands-on experience more than Canadian students in the same age-group. Canadian university students between the age of 21 and 23 had a higher score on AE ($M=35.71$, $SD=7.32$) than their Chinese counterpart ($M=29.27$, $SD=6.37$). This may imply that Canadian students in this age-group favour transforming experience into knowledge by practicing things out more than their Chinese peers do.
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Gender. Overall, the results indicate that gender may be a factor on type of learning mode. Male students ($M=34.87, SD=7.47$) scored significantly higher on abstract conceptualization (AC) than female students ($M=30.32, SD=6.85$), and female students ($M=32.58, SD=7.33$) scored significantly higher on active experimentation (AE) than male students ($M=28.43, SD=6.04$). The AC-CE scale was statistically significant as well, with male students ($M=8.93, SD=13.15$) scoring higher than female students ($M=3.46, SD=11.09$). The results of AC-CE support the findings of Kolb’s previous research (Kolb, 1976, 1985) in that male students attach more importance to abstract conceptualization (AC) than female students.

The researcher also compared male Canadian university students and male Chinese ESL university students, and found that male Canadian university students ($M=32.33, SD=5.83$) got significantly higher scores on active experimentation (AE) than male Chinese ESL university students ($M=26.76, SD=5.43$), $t(28)=-2.52, p=.018$. The results may further suggest that male Canadian university students are keener on using AE than their Chinese counterparts. Also, the test revealed a significant difference on AE-RO scale, $t(28)=-2.099, p=.045$, which may suggest that male Canadian university students ($M=3.56, SD=13.12$) preferred active experimentation (AE) to reflective observation (RO) more than their male Chinese peers ($M=-4.86, SD=8.54$). No significant differences were found comparing the two female groups.

Comparisons of Canadian University Students’ Learning Styles and Chinese ESL University Students’ Learning Styles

According to the analysis of the $x^2$ test of independence ($\alpha=0.05$), Canadian university students’ and Chinese ESL university students’ learning styles did not appear to have differences. The results of all three gender tests did not reach significance either (see Table 8-11). Also, no significance was found in the comparisons between Canadian university students’ learning styles and Chinese ESL university students’ learning styles in different age-groups (see
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Table 12-13). The results might suggest ethnicity, gender and age might not have any influence on learning styles between these two cultural groups. Even though there are some significant differences in the four learning modes (CE, AC, RO, and AE) and two dialectically opposed adaptive orientations (AC-CE and AE-RO), overall Canadian university students’ learning styles and Chinese ESL university students’ learning styles appear to be similar.

Table 8

*Learning Style Distribution by Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>6</td>
<td>15</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>11</td>
<td>25</td>
<td>28</td>
<td>80</td>
</tr>
</tbody>
</table>

Table 9

*Male Student Participants’ Learning Style Distribution*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Canadian</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>13</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 10

*Female Student Participants’ Learning Style Distribution*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Canadian</td>
<td>10</td>
<td>3</td>
<td>8</td>
<td>10</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>6</td>
<td>15</td>
<td>15</td>
<td>50</td>
</tr>
</tbody>
</table>
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Table 11

Summary of Learning Style Comparisons by Gender

<table>
<thead>
<tr>
<th>Categories</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Male and All Female</td>
<td>5.58</td>
<td>.134</td>
</tr>
<tr>
<td>Canadian Male and Chinese Male</td>
<td>4.43</td>
<td>.218</td>
</tr>
<tr>
<td>Canadian Female and Chinese Female</td>
<td>1.51</td>
<td>.680</td>
</tr>
</tbody>
</table>

Table 12

Learning Style Distribution by Age-Groups

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Accommodating</th>
<th>Converging</th>
<th>Diverging</th>
<th>Assimilating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Canadian</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>21-23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Chinese</td>
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<td>9</td>
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</tr>
<tr>
<td>Canadian</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>24-26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Canadian</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 13

Summary of Learning Style Comparisons between Canadian University Students and Chinese ESL University Students by Age-Groups

<table>
<thead>
<tr>
<th>Age-group</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>2.27</td>
<td>.518</td>
</tr>
<tr>
<td>21-23</td>
<td>2.70</td>
<td>.440</td>
</tr>
<tr>
<td>24-26</td>
<td>3.79</td>
<td>.285</td>
</tr>
</tbody>
</table>

Summary

The ANOVA and t-test results have shown that there were some significant differences in the comparisons of the four learning modes, concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE), and the two
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dialectically opposed orientations, abstract conceptualization/concrete experience (AC-CE) and active experimentation/reflective observation (AE-RO) between Canadian university students and Chinese ESL university students. However, not much was found in regards to the differences between their learning styles.

In the next chapter, there will be more discussion about what the data analysis might imply and what it might indicate for future studies.
This study has compared and described the learning modes and learning styles of Chinese English-as-a-second-language (ESL) university students and Canadian university students by administering the Kolb Learning Style Inventory (KLSI) Version 3.1.

The KLSI is a simple self-description test, based on experiential learning theory that is designed to measure adults’ preferences towards four adaptive learning modes as a learner. As mentioned in previous sections, the four adaptive learning modes are concrete experience (CE), abstract conceptualization (AC), reflective observation (RO), and active experimentation (AE). According to Kolb (1984), concrete experience (CE) and abstract conceptualization (AC) represent two different processes on one dimension of grasping experience either through reliance on conceptual interpretation and symbolic representation, or through reliance on tangible, immediate experience. Reflective observation (RO) and active experimentation (AE) are two opposed ways on the other dimension of transforming experience, either through internal reflection, or active external experimentation. These two dimensions result in four learning styles. (1) Grasping experience by AC and transforming it through AE is referred to as a converging learning style. (2) Grasping experience by CE and transforming it through RO is called a diverging learning style. (3) Grasping experience by AC and transforming it through RO is called an assimilating learning style. (4) Grasping experience by CE and transforming it through AE is called an accommodating learning style.

The Kolb inventory has helped the researcher describe ways in which Canadian university students and Chinese university ESL students learn and deal with ideas and day-to-day
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situations. In the next sections, the author will expand on the findings of this study, i.e., learning modes and learning styles of these two groups.

Learning Modes and Learning Styles

**Canadian University Students.** There were significant differences found between male Canadian university students' learning modes and female Canadian university students' learning modes. The male Canadian university student sample scored higher on abstract conceptualization (AC) than the female Canadian university student sample. This finding supports the results shown by Kolb and Kolb (2005) in that males were more abstract than females on the AC-CE scale. Willcoxon & Prosser suggested that results from gender comparison in learning style be interpreted carefully as educational specialization and career choices might be attributed to the difference (1996). Also, the small number of male participants might cast some doubt as to the value attained, although it might be because more men are attracted to sciences subjects which require more mental and conceptive process while more women choose to be in the field of art; a subject with less abstract conceptualization. Tests were run on the comparison between male Canadian university students' learning styles and female Canadian university students' learning styles, and no significant group differences were found. Gender appears to have no significant effect on learning styles in this case, or not as strong as other factors such as educational specialization.

Age-group tests showed a significant difference between the 21-23 age-group and the 24-26 age-group in terms of their concrete experience (CE) learning mode. That is, Canadian university students between the age of 24 and 26 appear to learn better from concrete experiences than their peers aged 21 to 23. Kolb (1976) has shown that there is an initial increase of preference for learning by action to middle age as measured by the AE-RO scale. The
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researcher predicts that as people grow in age and their knowledge accumulates, they tend to deal with their experiences immediately using what they have learnt from the past. No significant differences were found in the learning styles among any of the age-groups. Their learning styles stay more or less the same during their young adulthood.

As for the demographic factor of educational specialization, elementary education teacher candidates showed a stronger inclination towards active experimentation (AE) while secondary education teacher candidates showed having a more abstract conceptualization (AC) oriented learning mode. The learning styles of these Canadian students in the elementary education program were significantly different from those in the secondary education program. Kolb and Kolb predict that abstractness in learning style is related to an individual’s level of participation in formal education (2005). They have also written about educational specialization in that “students’ developmental pathways are a product of the interaction between their choices and socialization experiences in academic fields such that choice dispositions lead them to choose educational experiences that match these dispositions, and the resulting experiences further reinforce the same choice disposition for later experiences” (p. 164). As a result, it might be reasonable to suggest that this sample of Canadian students in the secondary education program develop further in abstract thinking as they go further in their program and even more as they enter their teaching profession. In addition, it may be the way they learn that leads them to their academic specialization whereby their learning experiences consolidate their career pathway towards teaching high school students. Therefore, this study suggests that they might be more suitable to teach students who are at a higher level of participation in formal education.

Based on my research results, the demographic factors of gender and age did not appear to have any effect on Canadian university students’ learning styles. Academic specialization did
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make a difference, which was predicted to be the outcome from the measure of AC-CE scale between the two educational groups: elementary and secondary education program. Learning styles are most likely to be shaped by ones' professional orientation through habits during their training and through the more immediate normative pressures involved in being a competent professional (Kolb & Kolb, 2005). However, it seemed to be not the case in this study, or yet. There might be other factors such as environmental demands pointed out by Willcoxson and Prossor (1996). No clear pattern of learning styles was shown, and probably would not until students started their professional practice in the future, be it more different or becoming similar.

Overall, the four learning styles are represented in the Canadian group, but there is no clear indication on which one shows strong dominance. Thirty-five percent of the Canadian university student sample in the assimilating learning style appears to be thinkers who learn by watching and listening, and transform knowledge by deep thinking. Twenty-seven percent appear to be accommodators who like to do things with their own hands. They are action-oriented and would rather obtain information from people than go through a logical analysis method. Twenty-five percent of them fall into the category of diverging learning styles and enjoy working in groups. They are people oriented, who enjoy learning from real people and real life by reflecting internally. The rest of the 15% are convergers who are problem solvers and decision makers. They tend to learn through ideas and theories, and want to put them into practice.

Chinese ESL University Students. Female Chinese ESL university students scored significantly higher in active experimentation (AE) than male Chinese ESL university students. Fridland (2002) obtained similar findings in that women Chinese teachers of English as a foreign language had a higher score in active experimentation than men Chinese teachers. However, he notes that “the difference was not strong enough to translate to a gender-related difference in the
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learning style distribution" (p.68). Chinese students in this study were university students whose educational specialization was not clarified but divided into two education level: undergraduate students and English Language Study students. Hence, there may not be sufficient evidence to suggest that “female Chinese ESL university students are more active than male Chinese ESL university students”. No significant differences were found between male Chinese ESL university students’ learning styles and female Chinese ESL university students’ learning styles.

Age-groups were also compared in this study, but it showed no effect on learning modes or learning styles. As to education level, no significant differences were found between Chinese English Language Study students and Chinese undergraduate students. In my sample of 32 Chinese undergraduate students, all completed their English Language Studies (ELS) courses while taking their undergraduate programs. The other 8 students were in the English Language Study when the survey took place. All of their learning modes and learning styles showed no differences from each other. The researcher assumes that the way they learn and deal with day-to-day situations stay similar to or have a tendency to remain the same as they were in China. This may suggest that Chinese university students’ learning styles do not change over time or that it requires a longer period for this change to develop.

This study has showed that gender, age and education level did not have a significant impact on Chinese ESL university students’ learning styles. According to the result from Chi-square ($\chi^2$) goodness of fit test, diverging learning style appeared to be the dominant learning styles among all the Chinese ESL university students. Among the 40 Chinese ESL university students surveyed, 16 (40%) were diverging learners, 14 (35%) were assimilating learners, 5 (12.5%) were converging learners and 5 (12.5%) were accommodating learners. Most of the Chinese ESL university students in this study were diverging learners. Fridland (2002), Kolb
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(1984) and the result of this study suggest that English and Language students are more inclined to have diverging learning styles. Overall, Chinese ESL university students had a general preference for a diverging learning style suggesting that this was the dominant learning style, with the assimilating learning style as the second most preferred style of learning; it is uncertain whether or not their learning styles had changed to a diverging learning style since being in Canada where they needed to learn and use English on an everyday basis.

Comparing the Learning Modes and Learning Styles of Canadian University Students and Chinese ESL University students

Previous studies have never focused exclusively on conducting descriptive and comparative studies on the learning styles of these two groups. Although many studies have generalized Chinese students' learning styles under the influence of the Confucian culture, they either lacked experimentation, based their conclusions on previous dated work, or they were American-based.

In the past, Joy and Kolb (2009) reported that culture had a significant effect on whether a person preferred abstract conceptualization over concrete experience or vice versa, although the result of their study on the dimensions of active experimentation and reflective observation is marginal. In this study, the researcher found that Canadian university students appeared to be more active experimentation oriented than their Chinese peers. Most Canadian education instructional methods use group work and student-centered teaching methods. Many courses in Canadian universities require that students work together as a team on projects and presentations, which is challenging for Chinese students because in the past they have been accustomed to individual learning. According to Zhang and Zhou (2010), "...Chinese students who have been mainly taught by the traditionally behaviorist oriented teaching approaches, the social-constructivist learning approach, which is widely used in Western education environments, is
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new to them and they may find it challenging to adapt to such teaching methods” (p. 45). Also, compared to the Chinese dominant teaching approach of lecturing, cooperative learning has been strongly advocated by Canadian educators and frequently practiced in many Canadian schools (Liang, 1998). Fridland (2002) also noticed that, “Traditionally, Chinese epistemology has been based on tradition, and education has stressed learning what the great thinkers of the past have written and relying on established authority” (p. 67). As a result of different teaching methods, researchers indicate that Canadian students act more like active social agents in their learning, and they work with each other on inquiry- and problem-based learning exercises by which they become used to “doing things themselves”, while their Chinese counterparts who are taught to watch and listen to their teachers or instructors learn passively in class.

In terms of gender, male students in the sample were found more abstract oriented learners than female students. There were no significant findings indicating differences between female Canadian university students’ learning modes and female Chinese ESL university students’ learning modes. Male Canadian students in general appeared to use abstract conceptualization as their main learning mode more than male Chinese students. In examining the relationship between learning styles and gender, no differences were found between male Canadian university students and male Chinese ESL university students, or between female Canadian university students and female Chinese ESL university students, or between all male university students and all female university students.

As for age-group, the only significant difference was found in the 21-23 age-group. Chinese students in that age-group seemed to be more concrete learners and tend to grasp experiences from the world more than their Canadian peers. Canadian students between 21 and 23 seemed to rely more on active experimentation to transform experiences into knowledge than
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Chinese students. No significant differences in the age-group comparison between the Canadian university students' learning styles and the Chinese ESL university students' learning styles were found.

As a result, the difference of gender and age on learning styles did not reach significance when comparing Canadian university students and Chinese ESL university students. Learning styles between these two culturally different groups did not appear to differ from each other. Education specialization was not taken into account in the Chinese group, but it seems to be a strong determinant of learning styles in the within group comparison between Canadian students in an elementary teacher education program and those in a secondary teacher education program. The results gave some insight on how learning styles could be so diverse in different career pathways, even though they were in the same profession.

Significance of the Research

Chinese students have a more significant presence in Canada than ever before, and their academic learning at North American universities has important implications for university administrators and other educators (Huang & Brown 2009). By looking into Chinese students' cultural background and learning preferences, university administrators and educators with more information at hand could be better prepared to assist Chinese students in their academic field and adaptation into Canadian society. The results of this project which was produced at the University of Northern British Columbia, Canada, might help teachers, instructors and professors develop a better understanding of their university students especially those from China as well as other foreign students. The findings of this research might contribute to designing and developing more effective curriculum and instructional methods. Furthermore, this research may
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contribute to the already existing body of knowledge on the relationships of learning styles with ethnicity, gender, age, education level, and educational specialization.

Limitations

There are a few potential limiting factors in this project considering the samples and the site where this project was undertaken.

All participants were from UNBC. A few students did not understand the meaning of some of the words found in the survey questionnaire and clarification was sometimes needed from the researcher. Though the researcher translated the meaning of those words to the Chinese students in Chinese, some may have misunderstood the context they were translated under.

Canadian students were selected mostly from a School of Education. It has been noted in the past that educational specializations have a strong influence on shaping learning styles, especially during university years (Kolb & Kolb, 2005). Therefore, perhaps and because the majority of Canadian university students from this project were from the same program, and because their learning modes and learning styles may have been shaped by the educational experiences of their program or career choices, to some degree, this may have influenced some of their responses to this survey.

This project was done with the help of UNBC students. Although the KLSI can be used with all adult individuals and in different settings, results might not be generalizable to other populations or ethnic age-groups. However, the results could be meaningful as a tool for instructors to develop or improve ESL curriculum and instruction for instructors of Chinese international students whereby benefitting students themselves.
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Implication for Practice

International students have unique needs, and those who provide services to them must be knowledgeable concerning their adjustment issues that lead to emotional or psychological stress (Hanassab & Tidwell, 2002). Since Chinese students travel far to Canada for a higher education, it is important to help them with their academic study which is their primary goal. By understanding Chinese ESL university students' learning modes and learning styles, universities may have more insight into curriculum development to improve Chinese students' learning.

In this project, the researcher has made several significant findings. For example, Chinese ESL university students were likely to have a diverging learning style which was a combination of concrete experience and reflective observation. They are less active in experimenting, and perform better in generating ideas by gathering information and learning from people. In order to successfully lead them to learning, their classroom experiences must connect in some way to their past learning experiences interacting with their new environment (Fridland, 2002). Though the traditional Chinese teaching method of lecturing and examination form seem to stand in the way of creativity for Chinese students (Greenspan, 2008), it is suggested that Chinese students do gain deep levels of understanding by using repetition (Kember, 1998; Entwistle & Ramsden, 1983), and that memorization helps them as English language learners to reduce their workload when studying a foreign language (Kember & Gow, 1989). Also, studies have shown that imposing western pedagogy on a cultural background that is strongly under the influence of Confucius has met with failure (Boekaerts, 1998). It might be helpful if Chinese students could have more knowledge about the learning environment they will be immersed in prior to the transition period. Orientations should be available not only on campus but also off campus so that Chinese students can have more information and more opportunities to familiarize
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themselves with western instructional modes of learning. Reading material relating to their new educational environment as texts would also be instrumental to their learning success. As they are more likely to learn from people and listen with an open mind to different opinions, Chinese students might enjoy meeting people who have had similar experiences so that they could learn from them. Moreover, it might be beneficial for Chinese ESL university students to have the option of staying in their comfort zone by having them grouped with other Chinese or international students, and Canadian students as well. Essential for their success is more interaction and involvement with instructors to reduce anxiety and increase self-confidence.

Implication for Future Research

The findings from this research can hopefully be of assistance to educators, administrators, and policy makers who service Chinese ESL university students or international students. The results can also be used to reformulate or modify existing policies so as to better respond to the needs of different groups of people, especially Chinese students. By recognizing, including, respecting and valuing all the perceptions of difference, some goals of internationalization can hopefully be realized (Grey, 2002), where international students can receive more help with their immersion in a new teaching and learning environment.

Based on my findings from the Canadian sample surveyed, although significant differences in learning styles were found comparing the two cohorts in the same teacher education program (elementary and secondary education program), it is still not clear whether educational specialization has an impact on the learning styles of Chinese ESL university students and Canadian university students. It would have been interesting to have compared the learning styles of the students of these two cultural groups participating in the same university program so as to minimize or eliminate the effect of academic specialization and career choice.
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By doing this, the factor of culture could have been isolated as much as possible and examined more closely. It would also have been helpful if students from other ethnicities had been recruited from similar programs.

This research has examined a limited number of Canadian university students and Chinese ESL university students, and has discussed learning styles in relation to variables of age, gender, education, and most importantly, but indirectly culture. The results might have been more meaningful if more information such as how long the Chinese students surveyed had stayed in Canada, and what their majors were. As the Kolb Learning Style Inventory has been rated well on its retest ability in the past, it would be interesting to follow-up (posttest) on whether there were any indications in changes in learning styles from the same group of Chinese students appeared after they had arrived to Canada. A larger sample of Chinese students from China would have been helpful as would the collection and comparison of other cultural groups’ learning styles. Perhaps this could help Chinese students study in other foreign countries besides Canada.
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Appendices

A. Letter of Introduction and Confidentiality
B. Student Consent Form
C. Consent for Access to the Class from the UNBC School of Education
D. Consent for Access to Chinese Students from the Fellowship of College and University Students (FOCUS) Club
E. Kolb Learning Style Inventory Research Approval from HayGroup
F. Flyer sample for Chinese Student Recruitment
Appendix A

Letter of Introduction and confidentiality

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA
3333 University Way, Prince George, BC, Canada V2N 4Z9

Principal Investigator: Yun Liang, MEd Student, School of Education, University of Northern British Columbia.
Contact number: (250) 552-0438 Email: yliang@unbc.ca
Supervisor: Dr. Yvon Cloutier, Assistant Professor, Bachelor of Education Coordinator, School of Education, University of Northern British Columbia: (250)-960-5926 Email: cloutier@unbc.ca
UNBC Research Ethics board: (250) 960-6735 Email: reb@unbc.ca

As a master’s student, and to fulfill the requirements of my degree, I need your help by means of completing a questionnaire for my project A Comparative Study of Chinese ESL University Students’ Learning Styles and Canadian University Students’ Learning Styles. The purpose of this project is to investigate if there are differences between the learning styles of Canadian university students and Chinese university students learning English as a Second Language (ESL) between the ages of 18 to 30.

I need 40 Canadian university Students and 40 Chinese ESL university students for this project. There are no physical or psychological risks involved in this study. Note that this questionnaire is not a test, and that there is no right or wrong answer. You only need to answer each question as honestly and accurately as possible.

Research Method

You will be asked to complete one ten-minute questionnaire of the Kolb Learning Style Inventory which contains twelve questions describing the way people learn and how they deal with ideas and day-to-day situations. To ensure anonymity, all questionnaires will be coded prior to administration and your name will not appear on the questionnaire.

Participation and Confidentiality

Your participation in this study is voluntary. A potential benefit from participating in this study is that your contribution may help to bring insight into the differences in learning styles of Canadian and Chinese ESL university students. The results of my findings may help university ESL instructors understand Chinese ESL students studying English in Canada. The results of my findings may also contribute to more effective ESL curriculum and classroom teaching methods. There are no anticipated risks associated with your participation.

Should you decide to participate in this study, your name and personal information will not appear on any of the questionnaires, the results, or data analysis. Your identity will remain confidential.

A copy of the results will be available to you at the end of the study upon request.

Data Storage

All information and data will be kept in my password protected computer which can be only accessed by me. The hard copies will be stored in the locked drawer of my room at home with an alarm system. All information and data will be kept for a period of four years, after which it will be removed and destroyed from my computer and any other electronic data storage devices. Hard copies will also be destroyed. Only the Principal Investigator and the project Supervisor will have access to the data.
Appendix A

Letter of Introduction and confidentiality

Your participation is strictly voluntary and you can withdraw from this study at any time. If you do withdraw, any information provided to me will be removed upon your request and the data will also be destroyed.

Thank you for your cooperation.

Dr. Yvon Cloutier
Assistant Professor, Bachelor of Education Coordinator,
School of Education

Yun Liang
MEd Student, School of Education
Appendix B
Student Consent Form

Consent Form Checklist:

○ I consent to fill out the questionnaire of the Kolb Learning Style Inventory which describes the way people learn and how they deal with day-to-day situations.

○ I fully understand that my participation in this study is voluntary. I may withdraw from this research project at any time without penalty. If you do withdraw, any information provided to me will be removed upon your request and the data will also be destroyed.

○ I know that I am free to ask questions about any procedure regarding this project.

○ I understand that the data will be destroyed four years after the study is completed.

○ I have read the information regarding this study.

○ I am completely honest with the information regarding my age, gender and education.

○ The procedures and requirements have been explained to me, and I understand them.

Please print your name ____________________________.

Signature: _______________ Date: ____________

For any questions about the project, please contact:

Principal Investigator: Yun Liang, MEd Student, School of Education, University of Northern British Columbia.

Contact number: (250) 552-0438 Email: yliang@unbc.ca

Supervisor: Dr. Yvon Cloutier, Assistant Professor, Bachelor of Education Coordinator, School of Education, University of Northern British Columbia: (250)-960-5926 Email: cloutier@unbc.ca

For any concerns or complaints related to this research, please contact:

Research Ethics Board: University of Northern British Columbia: (250) 960-6735 Email: reb@unbc.ca
Appendix C

Consent for Access to the Class from the UNBC School of Education

FW: about consent for access to the class from the UNBC School of Education
Peter MacMillan
Sent: Tuesday, November 29, 2011 2:20 PM
To: Yun Liang
Attachments: learningstylesassmt-revised.pdf (149 KB)

Dear Rachel (Liang Yun)

I have reviewed the Kolb Learning Style Inventory following your request for access to the School of Education BEd student lists in order to invite these students to participate in your Masters thesis research. I will see that you are provided with the group email, e.g., EY First Year (2011), lists for purposes of your research. You may have access to intact classrooms following permission of one instructor for each of these cohorts. This permission is subject to approval from the UNBC REB. The School of Education approval takes effect immediately upon their approval.

Best of luck,
Peter

Peter D. MacMillan, PhD, Associate Professor
Chair, School of Education
Cross Appointment: School of Health Sciences
University of Northern British Columbia
TAL 10-4026, 3333 University Way
Prince George BC V2N 4Z9 CANADA
TEL 250.960.5828 FAX 250.960.5536

Hi Peter,

How are you?

I write to ask if I could get a consent letter for access from the UNBC School of Education to collect data from the students.

My research is a comparative study of learning style between Chinese ESL university students and Canadian university students, and

I will use Kolb’s learning style inventory to measure students’ learning styles.

What I will do is that I will have students finish the inventory for me in class, and consent will be given by them before they start filling out the inventory.

Attached is Kolb’s Learning Style Inventory.

Please let me know if there is any further question.

Looking forward to your reply.

With respect

Rachel Yun Liang
Appendix D

Consent for Access to Chinese Students from the Fellowship of College and University Students (FOCUS) Club

RE: consent for access to Chinese students for my research on learning style

Brown Family [owbemane@telus.net]

Sent: Tuesday, January 24, 2012 6:50 AM
To: Yun Liang

Hi there,

We don't see any problem with this idea - you are welcome to set it up for after FOCUS.

Blessings,
Beth

-----Original Message-----
From: Yun Liang
[https://exch.unbc.ca/owa/redir.aspx?C=f30cf4f0a7b445d293af1de3dd034f9e&URL=mailto%3ayliang%40unbc.ca]
Sent: January-23-12 1:23 PM
To: beth@ismc.ca
Subject: consent for access to Chinese students for my research on learning style

Hi Beth and Owen,

How are you?

My name is Rachel Yun Liang, candidate of MEd, Multi-disciplinary Leadership.

I write to ask for consent for access to Chinese students for my research on learning style within or after FOCUS Club.

My research is a comparative study of learning styles between Chinese university students and Canadian university students.

Chinese students who attend FOCUS Club will be asked to fill out Kolb's Learning Style Inventory after all the FOCUS Club activities.

It's voluntary and students can withdraw from the survey anytime, and no
Appendix D

Consent for Access to Chinese Students from the Fellowship of College and University Students (FOCUS) Club

physical or mental harm in any form will be caused during the survey.

The inventory will help Chinese students be aware of their own learning styles and hopefully they will use the information to adjust their learning habits in Canada. And also the data will contribute to my research.

All the information collected will remain confidential and students will need to sign a consent form prior to survey.

Please grant me consent for access to Chinese students for my research. Feel free to contact me if you have any question.

Thank you for your time and effort.

Looking forward to your reply.

Best regards
Rachel Yun Liang
Congratulations! LSI Research Approved!
Polly Flinch [Polly.Flinch@haygroup.com]

Sent: Wednesday, May 09, 2012 8:53 AM
To: Yun Liang
Attachments: MCB 200C.PDF (46 KB); Mcb200d3.1.pdf (1 MB)

Hi Yun,

Congratulations! Your request regarding use of the learning style inventory (LSI) has been approved. Attached you will find the following documents:

- MCB200C - This is a copy of your LSI test. You may print or copy this document as needed for your research.
- MCB200D - The profile sheet contains the answer key for the test as well as the profiling graphs for plotting scores. This document may also be reproduced as necessary for your research. The AC-CE score on the Learning Style Type Grid is obtained by subtracting the CE score from the AC score. Similarly, the AE-RO score is AE minus RO.

These files are for data collection only. This permission does not extend to include a copy of these files in your research paper. It should be sufficient to source it.

I spoke with Alice Kolb, regarding your research paper, and she suggested that you use the LSI 4.0 online test for your study. If you would like to do this, let me know and I will set you up with an account - the fee associated with the LSI 4.0 online is $5 per participant (normally $35 per).

We wish you luck with your project and look forward to hearing about your results. Please email a copy of your completed research paper to Polly_Flinch@Haygroup.com or mail it to the following address:

LSI Research Contracts
c/o Polly Flinch
Hay Group
116 Huntington Ave, 4th Floor
Boston, MA 02116

Please let me know if you have any questions.

Best,

Polly Flinch
Senior customer service and sales representative
pollyflinch@haygroup.com

HayGroup®
+1.617.927.5026
f +1.617.927.5008
@ www.haygroup.com

Please consider the environment before printing this email.
你喜欢感觉（feeling）？
观察（watching）？
思考（thinking）？
还是动手实干（doing）？

你了解你的学习风格（Learning style）吗？

10分钟Kolb学习风格问卷让你了解自己是怎样学习！

研究员：梁铭，教育管理硕士研究生
研究对象：18-30岁中国留学生

联系电话：250.552.0438
邮箱：yliang@unbc.ca

欢迎踊跃参与！谢谢！